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<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
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</tr>
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</tbody>
</table>

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<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>S.No</th>
<th>Manuscript title</th>
<th>Page.No</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PROBABILISTIC REBROADCAST BASED ON NEIGHBOR COVERAGE IN MANETS</td>
<td>1 ~ 4</td>
</tr>
<tr>
<td>2</td>
<td>EFFECTS OF MODERATE INTENSITY INTERVAL TRAINING IN RUNNING ON CARDIOVASCULAR EFFICIENCY VARIABLES OF SEDENTARY NIGERIAN MALE ADULTS</td>
<td>5 ~ 7</td>
</tr>
<tr>
<td>3</td>
<td>AN EXPERT SYSTEM FOR HEART DISEASE PREDICTION USING DATA MINING TECHNIQUE: NEURAL NETWORK</td>
<td>8 ~ 13</td>
</tr>
<tr>
<td>4</td>
<td>STUDY OF INJURIES IN BODY CONTACT GAMES WITH A SPECIAL REFERENCE TO KABBADDI</td>
<td>14 ~ 16</td>
</tr>
<tr>
<td>5</td>
<td>ADEPT IDENTIFICATION OF SIMILAR VIDEOS FOR WEB-BASED VIDEO SEARCH</td>
<td>17 ~ 21</td>
</tr>
<tr>
<td>6</td>
<td>AN EFFICIENT WAY OF AGGLOMERATING ONLINE DOCUMENTS BY A SEMANTIC MODEL</td>
<td>22 ~ 24</td>
</tr>
<tr>
<td>7</td>
<td>VEHICLE TRACKING THROUGH RSSI</td>
<td>25 ~ 27</td>
</tr>
<tr>
<td>8</td>
<td>VLSI IMPLEMENTATION OF NOISE CANCELLATION IN AUDIO SIGNALS USING LMS AND RLS ALGORITHMS</td>
<td>28 ~ 30</td>
</tr>
<tr>
<td>9</td>
<td>GREEN METER MONITORING FOR SMART GRID HOUSEHOLDS WITH RENEWABLE SOURCE</td>
<td>31 ~ 33</td>
</tr>
<tr>
<td>10</td>
<td>AN RF SYSTEM TRACKING IN INDOOR ENVIRONMENTS</td>
<td>34 ~ 36</td>
</tr>
<tr>
<td>11</td>
<td>IMPLEMENTATION OF A SHARED MEMORY SWITCH FABRIC</td>
<td>37 ~ 40</td>
</tr>
<tr>
<td>12</td>
<td>AUTOMATIC DOCKING AND RECHARGING SYSTEM FOR AUTONOMOUS SECURITY ROBOT</td>
<td>41 ~ 44</td>
</tr>
<tr>
<td>13</td>
<td>REAL TIME TRACKING AND COMPARATIVE ANALYSIS</td>
<td>45 ~ 48</td>
</tr>
<tr>
<td>14</td>
<td>COMPARATIVE STUDY OF CBIR TECHNIQUES IN MEDICAL AND NON-MEDICAL APPLICATIONS</td>
<td>49 ~ 52</td>
</tr>
<tr>
<td>15</td>
<td>CONTINUOUS HILL RUNNING IMPROVES VO 2 MAX, SPEED ENDURANCE &amp; STRENGTH IN TEAM SPORT ATHLETES</td>
<td>53 ~ 56</td>
</tr>
<tr>
<td>16</td>
<td>A BLIND NON-INVASIVE ALGORITHM FOR SEPARATION OF MATERNAL AND FETAL ECG SIGNAL</td>
<td>57 ~ 59</td>
</tr>
<tr>
<td>17</td>
<td>VIDEO RETRIEVAL BASED ON SELECTED INFORMATION</td>
<td>60 ~ 63</td>
</tr>
<tr>
<td>18</td>
<td>IMPLEMENTATION OF MODULO 2N-2K-1 ADDER FOR RESIDUE NUMBER SYSTEM</td>
<td>64 ~ 67</td>
</tr>
<tr>
<td>19</td>
<td>8-BIT UART IMPLEMENTATION IN FPGA WITH BIST TECHNIQUE</td>
<td>68 ~ 72</td>
</tr>
<tr>
<td>20</td>
<td>A HYBRID NETWORK FOR GREENHOUSE MANAGEMENT USING CAN AND ZIGBEE</td>
<td>73 ~ 76</td>
</tr>
<tr>
<td>21</td>
<td>DETECTION OF RUNWAY USING NEURAL NETWORKS</td>
<td>77 ~ 79</td>
</tr>
<tr>
<td>22</td>
<td>EFFECT OF CONTINUOUS RUNNING FARTLEK AND INTERVAL TRAINING ON SPEED AND COORDINATION AMONG MALE SOCCER PLAYERS</td>
<td>80 ~ 82</td>
</tr>
</tbody>
</table>
ABSTRACT

Each node in mobile ad hoc networks (MANETs) is free to move independently in any direction. This movement of nodes leads to path failures and route discoveries. Broadcasting is a well known mechanism to discover the route and it causes broadcast storm problem. The broadcast storm problem performs too many rebroadcasting and also increases routing overhead in MANETs. Another problem is sometimes while discovering the route to the destination, the intermediary node loses its energy because of its less battery life time so that the intermediary node cannot forward the route reply on reverse path i.e. the reverse path forwarding of broadcast packets can be lost. This results rebroadcast, less packet delivery ratio and more end to end delay. To overcome the above mentioned problems, a neighbor coverage based probabilistic rebroadcast protocol is used for reducing routing overhead and broadcast storm problem. The Energy Optimal AODV routing protocol is used for reverse path forwarding of broadcast packets without any loss. Our approach reduces the number of retransmission so as to reduce the routing overhead, energy efficiency and can also improve the routing performance.

I. INTRODUCTION

A mobile ad hoc network is a self configuring and infrastructure less network of mobile devices connected by wireless. The nodes in MANETs can change locations and configure by itself. Because MANETs are mobile, they use wireless connections to connect to various networks. A MANET does not present any infrastructure and the network topology where the nodes may change its location dynamically in an unpredictable manner since nodes are free to move. A major challenge of MANET is to design dynamic routing protocols with good performance and less overhead. Dynamic routing protocols are used to share the information dynamically between routers, automatically updates the routing table when topology changes and determines the best path to the destination. The main purpose of a dynamic routing protocol is to discover remote networks, maintaining up-to-date routing information choosing the best path to destination networks and the ability to find a new best path if the current path is no longer available. It increases the routing performance. Even though it improves the performance of routing, it does routing overhead. The routing overhead occurs when finding the new route to the destination. Due to node mobility in MANETs leads to frequent link breakages which perform frequent path failures and route discoveries which could increases the overhead of routing protocols and reduces the packet delivery ratio. It also increases the end to end delay. On demand routing protocols such as Ad hoc On-demand Distance Vector Routing (AODV) and Dynamic Source Routing (DSR) have been proposed for MANETs which could improve the scalability of MANETs by reducing the overhead of routing when a new route is requested. They broadcast a Route Request (RREQ) packet to the networks, and the broadcasting induces excessive redundant retransmissions of RREQ packet and causes the broadcast storm problem [5], which leads to a considerable number of packet collisions, especially in dense networks. Therefore, it is indispensable to optimize this broadcasting mechanism. Some methods have been proposed to optimize the broadcast problem in MANETs in the past few years. Williams and Camp [8] categorized broadcasting protocols into four classes: “simple flooding, probability-based methods, area based methods, and neighbor knowledge methods.” For the above four classes of broadcasting protocols, they showed that an increase in the number of nodes in a static network will degrade the performance of the probability-based and area-based methods [4]. Kim et al. [4] indicated that the performance of neighbor knowledge methods is better than that of area-based ones, and the performance of area-based methods is better than that of probability-based ones. It also overcomes the end to end delay and increases the throughput of the network.
We now obtain the initial motivation of our protocol. Since limiting the number of rebroadcasts can effectively optimize the broadcasting [5], and the neighbor knowledge methods perform better than the area-based ones and the probability-based ones [8], then we propose a neighbor coverage-based probabilistic rebroadcast (NCPR) protocol. Therefore, 1) in order to effectively exploit the neighbor coverage knowledge, we need a novel rebroadcast delay to determine the rebroadcast order, and then we can obtain a more accurate additional coverage ratio; 2) in order to keep the network connectivity and reduce the redundant retransmissions, we need a metric named connectivity factor to determine how many neighbors should receive the RREQ packet. After that, by combining the additional coverage ratio and the connectivity factor, we introduce a rebroadcast probability, which can be used to reduce the number of rebroadcasts of the RREQ packet, to improve the routing performance. The main contributions of this paper are as follows:

1) We propose a novel scheme to calculate the rebroadcast delay. The rebroadcast delay is to determine the forwarding order. The node which has more common neighbors with the previous node has the lower delay. If this node rebroadcasts a packet, then more common neighbors will know this fact. Therefore, this rebroadcast delay enables the information that the nodes have transmitted the packet spread to more neighbors, which is the key to success for the proposed scheme.

2) We also propose a novel scheme to calculate the rebroadcast probability. The scheme considers the information about the uncovered neighbors (UCN), connectivity metric and local node density to calculate the rebroadcast probability. The rebroadcast probability is composed of two parts:

   a) additional coverage ratio, which is the ratio of the number of nodes that should be covered by a single broadcast to the total number of neighbors; and
   b) connectivity factor, which reflects the relationship of network connectivity and the number of neighbors of a given node.

II RELATED WORK

Broadcasting is an effective mechanism for route discovery, but the routing overhead associated with the broadcasting can be quite large, especially in high dynamic networks [9]. Ni et al. [5] studied the broadcasting protocol analytically and experimentally, and showed that the rebroadcast is very costly and consumes too much network resource. The broadcasting incurs large routing overhead and causes many problems such as redundant retransmissions, contentions, and collisions [5]. Thus, optimizing the broadcasting in route discovery is an effective solution to improve the routing performance. Haas et al. [3] proposed a gossip based approach, where each node forwards a packet with a probability. They showed that gossip-based approach can save up to 35 percent overhead compared to the flooding. However, when the network density is high or the traffic load is heavy, the improvement of the gossip-based approach is limited [9]. Kim et al. [4] proposed a probabilistic broadcasting scheme based on coverage area and neighbor confirmation. This scheme uses the coverage area to set the rebroadcast probability, and uses the neighbor confirmation to guarantee reachability. Peng and Lu [6] proposed a neighbor knowledge scheme named Scalable Broadcast Algorithm (SBA). This scheme determines the rebroadcast of a packet according to the fact whether this rebroadcast would reach additional nodes. Abdulai et al. [1] proposed a Dynamic Probabilistic Route Discovery (DPR) scheme based on neighbor coverage. In this approach, each node determines the forwarding probability according to the number of its neighbors and the set of neighbors which are covered by the previous broadcast. This scheme only considers the coverage ratio by the previous node, and it does not consider the neighbors receiving the duplicate RREQ packet. Thus, there is a room of further optimization and extension for the DPR protocol. Several robust protocols have been proposed in recent years besides the above optimization issues for broadcasting. Chen et al. [2] proposed an AODV protocol with Directional Forwarding (AODV-DFR) which takes the directional forwarding used in geographic routing into AODV protocol. While a route breaks, this protocol can automatically find the next-hop node for packet forwarding. Keshavarz-Haddad et al. proposed two deterministic timer-based broadcast schemes: Dynamic Reflective Broadcast (DRB) and Dynamic Connector-Connector Broadcast (DCCB). They pointed out that their schemes can achieve full reachability over an idealistic lossless MAC layer, and for the situation of node failure and mobility, their schemes are robustness. Stann et al. [7] proposed a Robust Broadcast Propagation (RBP) protocol to provide near-perfect reliability for flooding in wireless networks, and this protocol also has a good efficiency. They presented a new perspective for broadcasting: not to make a single broadcast more efficient but to make a single broadcast more reliable, which means by reducing the frequency of upper layer invoking flooding to improve the overall performance of flooding. In our protocol, we also set a deterministic rebroadcast delay, but the goal is to make the dissemination of neighbor knowledge much quicker.

III. MOTIVATION

The main motivation of this paper is to reduce the overhead in Mobile Ad hoc Networks by implementing the neighbor coverage based probabilistic rebroadcast protocol and the Energy Optimal Ad hoc On-demand Distance Vector Routing. The energy optimal AODV (EOAODV) routing protocol based on reactive routing protocol. In this proposed approach, source node does not send any RREQ, no enough energy (battery life time) and received RREP until the node density in its neighboring exceeds a particular threshold, the neighbor coverage knowledge and the probabilistic mechanism, which can significantly decrease the number of retransmissions so as to reduce the routing overhead, and can also improve the routing performance.
IV SYSTEM DESIGN

1. Architecture

MANET is an infrastructure less wireless network. Each node in MANET is free to move independently in any direction. In the figure 4.1, the source node sends RREQ packets to its neighbor node which is also called as intermediate node. The intermediate node rebroadcasts the RREQ packet to its neighbor nodes based on the neighbor coverage information and energy optimization of the life time of a node. Finally, the RREQ packet reaches the destination and the route has been created by giving route reply to the source node.

![Path finding from source to destination](image)

Fig 4.1 : Path finding from source to destination


In this section, we calculate the rebroadcast delay and rebroadcast probability of the proposed protocol. We use the upstream coverage ratio of an RREQ packet received from the previous node to calculate the rebroadcast delay, and use the additional coverage ratio of the RREQ packet and the connectivity factor to calculate the rebroadcast probability in our protocol, which requires that each node needs its 1-hop neighborhood information.

2.1 Uncovered Neighbors Set and Rebroadcast Delay

When node n1 receives an RREQ packet from its previous node s, it can use the neighbor list in the RREQ packet to estimate how many its neighbors have not been covered by the RREQ packet from s. If node n1 has more neighbors uncovered by the RREQ packet from s, which means that if node n1 rebroadcasts the RREQ packet, the RREQ packet can reach more additional neighbor nodes. Due to broadcast characteristics of an RREQ packet, node n1 can receive the duplicate RREQ packets from its neighbors. Node n1 could further adjust the neighbor knowledge. In order to sufficiently exploit the neighbor knowledge and avoid channel collisions, each node should set a rebroadcast delay. The choice of a proper delay is the key to success for the proposed protocol because the scheme used to determine the delay time affects the dissemination of neighbor coverage knowledge. When a neighbor receives an RREQ packet, it could calculate the rebroadcast delay according to the neighbor list in the RREQ packet and its own neighbor list. The rebroadcast delay is defined with the following reasons: First, the delay time is used to determine the node transmission order. To sufficiently exploit the neighbor coverage knowledge, it should be disseminated as quickly as possible. When node s sends an RREQ packet.

2.2 Neighbor Knowledge and Rebroadcast Probability

The node which has a larger rebroadcast delay may listen to RREQ packets from the nodes which have lower one. For example, if node n1 receives a duplicate RREQ packet from its neighbor n2, it knows that how many its neighbors have been covered by the RREQ packet from n2. Thus, node n1 could further adjust its UCN set according to the neighbor list in the RREQ packet from n2. We do not need to adjust the rebroadcast delay because the rebroadcast delay is used to determine the order of disseminating neighbor coverage knowledge to the nodes which receive the same RREQ packet from the upstream node. Thus, it is determined by the neighbors of upstream nodes and its own. When the timer of the rebroadcast delay of node ni expires, the node obtains the final UCN set. The nodes belonging to the final UCN set are the nodes that need to receive and process the RREQ packet. Note that, if a node does not sense any duplicate RREQ packets from its neighborhood, its UCN set is not changed, which is the initial UCN set. Now, we study how to use the final UCN set to set the rebroadcast probability. The above rebroadcast probability is defined with the following reason. Although the parameter Ra reflects how many next-hop nodes should receive and process the RREQ packet, it does not consider the relationship of the local node density and the overall network connectivity. The parameter Fc is inversely proportional to the local node density. That means if the local node density is low, the parameter Fc increases the rebroadcast probability, and then increases the reliability of the NCPR in the sparse area. If the local node density is high, the parameter Fc could further decrease the rebroadcast probability, and then further increases the efficiency of NCPR in the dense area. Thus, the parameter Fc adds density adaptation to the rebroadcast probability.

We evaluate the performance of routing protocols using the following performance metrics:

- **MAC collision rate**: the average number of packets (including RREQ, route reply (RREP), RERR, and CBR data packets) dropped resulting from the collisions at the MAC layer per second.
- **Normalized routing overhead**: the ratio of the total packet size of control packets (include RREQ, RREP, RERR, and Hello) to the total packet size of data packets delivered to the destinations. For the control packets sent over multiple hops, each single hop is counted as one transmission. To preserve fairness, we use the size of RREQ packets instead of the number of RREQ packets, because the DPR and NCPR protocols include a neighbor list in the RREQ packet and its size is bigger than that of the original AODV.
- **Packet delivery ratio**: the ratio of the number of data packets successfully received by the CBR destinations to the number of data packets generated by the CBR sources.
Average end-to-end delay: the average delay of successfully delivered CBR packets from source to destination node. It includes all possible delays from the CBR sources to destinations.

The experiments are divided into three parts, and in each part we evaluate the impact of one of the following parameters on the performance of routing protocols:

**Number of nodes:** We vary the number of nodes from 50 to 300 in a fixed field to evaluate the impact of different network density. In this part, we set the number of CBR connections to 15, and do not introduce extra packet loss.

**Number of CBR connections:** We vary the number of randomly chosen CBR connections from 10 to 20 with a fixed packet rate to evaluate the impact of different traffic load. In this part, we set the number of nodes to 150, and also do not introduce extra packet loss.

**Random packet loss rate:** We use the Error Model provided in the NS-2 simulator to introduce packet loss to evaluate the impact of random packet loss. The packet loss rate is uniformly distributed, whose range is from 0 to 0.1. In this part, we set the number of nodes to 150 and set the number of connections to 15.

V CONCLUSION

In this paper, we proposed a probabilistic rebroadcast protocol based on neighbor coverage to reduce the routing overhead in MANETs and Energy Optimal Ad-hoc On-demand Distance Vector routing to get Route Reply without any loss for finding the route to the destination. This neighbor coverage knowledge includes additional coverage ratio and connectivity factor. We proposed a new scheme to dynamically calculate the rebroadcast delay, which is used to determine the forwarding order and more effectively exploit the neighbor coverage knowledge. The proposed protocol generates less rebroadcast traffic than the flooding and some other optimized scheme in literatures. Because of less redundant rebroadcast, the proposed protocol mitigates the network collision and contention, so as to increase the packet delivery ratio and decrease the average end-to-end delay. The proposed protocol has good performance when the network is in high density or the traffic is in heavy load.

REFERENCES


ABSTRACT

This study examined the effects of 12-week moderate intensity interval training in running on cardiovascular efficiency variables of sedentary Nigerian male adults. The variables included systolic and diastolic Blood Pressure, Mean Arterial Pressure, Resting Pulse Rate and Double Product. A 2 x 3 factorial design was used for this study in which 30 medically certified healthy sedentary adult men aged, between 20-30 years were selected after obtaining their informed consent and were randomly assigned to experimental and control groups of 15 subjects each. The experimental group went through the interval training in running as an exercise mode performed at 55-68% of maximum heart rate done 4 times a week for 12 weeks. During the intervention period, three tests were conducted on both groups at baseline, midway and immediately after the termination of training at week 12. The data obtained was analysed using the Statistical Package of the Social Sciences (SPSS). The descriptive statistic of the mean and standard deviation were used for data description while the student independent t-test was employed to determine the difference between the experimental and control groups. The comparison of the difference between changes in test periods at zero, six and twelfth was made using the repeated measures ANOVA. The results of this study indicated significant decrease in all the cardiovascular efficiency variables examined. In light of these findings, it is recommended that moderate intensity interval training in running can be used to improve cardiovascular efficiency or fitness of sedentary Nigerian male adults.

I. INTRODUCTION

Numerous reports have indicated that abnormal blood lipid levels like total cholesterol (TC), triglycerides (TG), low-density lipoprotein cholesterol (LDL-C), and high density lipoprotein cholesterol (HDL-C) predispose individuals to cardiovascular and metabolic diseases (Gotto, 1994; Glew, et al, 1994; Chrysohoou, et al, 2000; Venkateswarlu, 2011). Okosun, et al; 2000; Okura, et al, 2003; McCarthy et al; 2005; Yang, et al, 2006; Gutin, et al, 2007) The risk of cardiovascular disease increases progressively with blood pressure above 115/75 mmHg (Appel, Brands, Daniels, et al, 2006). Clinical trials demonstrate that people who maintain arterial pressures at the low end of these pressure ranges have much better long term cardiovascular health. Hypertension is a widespread health problem effecting nearly 25% of the adult population in the United States (Fange et al, 2005). The importance of treating this “silent killer” lies in its associated risk to cardiovascular disease, as well as other maladies including renal disease, stroke, heart failure, and peripheral artery disease. The use of physical exercise training as modifier of most CVD risk factors is ongoing. The objective of each effort is to provide specificity with respect to the prescription of exercise for any particular condition. Like in other clinical practices, prescription of exercise must be targeted at some specific disease factors and conditions. Consideration should also be made to take care of gender, age and other disparities; among various populations. The attempt in this research was to try the use of moderate intensity interval training in running which is not known to have been used especially on sedentary Nigerian male adults. Since the optimal intensity or type of training necessary for reduction in CVD risk factors is unknown and the recommendations to make for exercise that will confer specific health benefits remains or is still elusive. This research was therefore carried out to investigate the effect of moderate intensity interval training in running on cardiovascular efficiency variables.

METHODOLOGY

Research Design

The research design used for this study is the 2x3 factorial research design. In this design, there were two groups, one group as experimental group which engaged in training and the other group as a control. These two groups were tested for all the variables investigated three times during the 12 weeks this research lasted. The first test was conducted at week zero (baseline), the second at week six and the third immediately at the termination of training in week 12.
Population
The population for this study comprised sedentary male Nigerian students of the College of Nursing and Midwifery, Yola, Adamawa State. They were adults between the ages of 20 and 30 years old and in the final year of their study.

Sample and Sampling Technique
A random screening of the subjects was carried by the researcher to meet the inclusion criteria. Only those who met the inclusion criteria and had given their informed consent for participation were used in this study. The random sampling technique was used to select 30 subjects for this study (Nwana 1982, Ojo, 2005, Olayiwola, 2007). The subjects were finally assigned to either experimental (n=15) or control (n=15) group using a simple random statistical technique (Lucky Deep). All odd numbers were assigned to the experimental group while even numbers to the control group.

MEASUREMENTS
i. Systolic and Diastolic blood pressure:
Although there are many methods that can be used to measure blood pressure, the auscultatory method was chosen for this research. This method which requires the use of a stethoscope and sphygmomanometer has a dual advantage of being simple and is commonly used in many health-related fields. Subjects were required to sit on a chair close to a table whose height was of the same vertical height as the heart. With the left arm on the table, a cuff was placed around the upper arm and attached to the aneroid manometer. The cuff fitted snugly and inflated manually by repeatedly squeezing a rubber bulb until the artery was completely occluded. With the help of the stethoscope, the tester listens to the brachial artery at the elbow. The tester slowly released the pressure on the cuff. When the occluded blood started to flow in the artery, the turbulent flow created a “whooshing” or pounding sound. The pressure at which this sound was first heard was the systolic blood pressure. The cuff will further be released until no sound was heard and here, the diastolic pressure is read and recorded accordingly for each subject.

ii. Mean Arterial Pressure
The MAP is the most important than systolic and diastolic pressures. It is the average pressure driving blood into the tissues throughout the cardiac cycle. MAP was calculated as systolic pressure minus diastolic pressure plus diastolic pressure divided by three. ( Pulse pressure + diastolic pressure /3)

iii. Resting Pulse rate
Subjects were made to rest by lying on couches for between 15 to 30 minutes on arrival at the testing room. This was done to calm down nerves and anxiety. With the use of a stethoscope placed on the left hand side of the sternum (5th intercostal space), (Guyton, (1991), the two heart sounds were heard for 60 seconds and recorded as pulse rate per minute.

iv. Double Product (DP)
The measure of the work load of the heart (DP) was determined as systolic blood pressure multiplied by heart rate.

DISCUSSION
Effects of 12 week Moderate Intensity Interval Training in Running on Cardiovascular Efficiency
Cardiovascular efficiency was examined in this study by observing changes in systolic and diastolic blood pressures, mean arterial pressure, resting pulse rate and double product. The result of this study showed improvement in cardiovascular efficiency by significant decreases in systolic and diastolic BP, MAP, RPR and DP. Similar findings were reported by Flowman and Smith (1997), Wallace (2003) and Cornelissen and Fagard (2005). This is an indication that moderate intensity interval training in running for as short as 12 weeks is enough to bring about substantial positive changes in cardiovascular efficiency variables of sedentary Nigerian male adults. The significant decrease in DP indicates a decrease in the load on the myocardium due to decrease in resting pulse rate and systolic blood pressure. These cumulative effects from moderate intensity interval training improve cardiovascular efficiency and minimize cardiovascular risk factors.

SUMMARY CONCLUSIONS AND RECOMMENDATIONS
Summary: Over the years, physical activity has been found to prevent and help in treating many established CVD risk factors, such as elevated blood pressure, insulin resistance and glucose intolerance, elevated TG concentration, LDL-C, HDL-C concentrations and obesity. Exercise in combination with weight reduction can decrease LDL-C concentrations and limit the reduction in HDL-C (Stelanick, et al, 1998). The magnitude of the exercise effect is said to be influenced by characteristics of the exercise intervention, individual variation and whether exercise produces concomitant reduction in body weight. The effect on CVD risk factors can be large in some individuals and obviate the need for other interventions. In general, the effects of exercise on CVD risk factors is substantial, especially when done in combination with other lifestyle changes, such as dietary composition and weight loss. Based on the above facts, this study was conducted to find out the effects of 12 week moderate intensity interval training in running on body fat patterns, lipids and lipoproteins, blood glucose and cardiovascular efficiency of sedentary Nigerian male adults. To achieve this purpose, 30 sedentary male adults were randomly selected and assigned to either experimental (N = 15) or control (N = 15) groups. The experimental group underwent the training 4 times each week for 12 weeks. The training consisted of warm up, main activity and warm down. In the first four weeks, subjects alternated the running distance between 100 meters and 200 meters. In second 4 weeks, the running distance was 200 meters and 300 meters and in the final 4 weeks subjects were alternating between 300 meters and 400 meters. The days involved were Mondays, Tuesdays, Thursdays and Fridays. This was done to enable subjects to run each alternate course two times in a week. During the 12
weeks, tests in all the variables under investigation were carried out at baseline, regarded as \( T_1 \), after 6 weeks (\( T_2 \)) and at the termination of training in week 12 (\( T_3 \)). Moderate intensity interval training in running performed 4 times a week for 12 weeks had significant effect on the cardiovascular efficiency variables examined in this research for sedentary Nigerian male adults. On the whole, the major contribution of this study was that it showed that, training induced changes vary from set of variables to set of variables. Moderate intensity interval training followed in this study showed significant improvements in cardiovascular efficiency

**CONCLUSIONS**

On the bases of the findings and in view of the limitations of this study, it was concluded that moderate intensity interval training in running can be prescribed for the improvement of cardiovascular efficiency or fitness.

**RECOMMENDATIONS**

In the course of the present investigation, the researcher came across several unresolved issues, which are suggested below for further research.

1. Moderate intensity interval training is recommended to improve cardiovascular efficiency
2. Studies similar to the present one should be conducted on different age and body weight groups.

**REFERENCE**


ABSTRACT
A major challenge facing healthcare organizations (hospitals, medical centers) is provision of quality services at reasonable costs. Quality service implies diagnosing patients correctly and administering treatments that are effective. Poor clinical decisions can lead to disastrous consequences which are therefore unacceptable. Also wants to minimize the cost of clinical tests. They can achieve these results by employing appropriate computer-based information and/or decision support systems. Most hospitals today employ some sort of hospital information systems to manage their healthcare or patient data. These systems are designed to support patient billing, inventory management and generation of simple statistics. Some hospitals use decision support system, but they are largely limited due to their disability of decision making on the existing database. Clinical decisions are often made based on doctors intuition and experience rather than on the knowledge-rich data hidden in the database. This practice leads to unwanted biases, errors and excessive medical costs which affects the quality of service provided to patients. Advanced data mining techniques can help remedy this situation. The main objective of this research has developed a prototype for Expert Heart Disease Prediction System (EHDPS) using data mining techniques namely, Neural Network [2, 17 18]. It can answer complex queries which traditional decision support systems cannot. Using medical profiles such as age, sex, blood pressure and blood sugar it can predict the possibility of patients getting a heart disease [33]. It enables significant knowledge, e.g. patterns, relationships between medical factors related to heart disease, to be established. It is implemented as web based questionnaire application. Based on the user answers, EHDPS is user-friendly, scalable, reliable and expandable. It is implemented on the PHP.
clinical and imaging data. For example, now the physicians can evaluate diagnostic information of a variety of patients with identical conditions. Similarly, they can verify their findings with the conformity of physicians working on similar cases from all over the world [7]. Medical diagnosis is regarded as an important yet complicated task that needs to be executed accurately and efficiently. The automation of this system would be extremely advantageous. Regrettably all doctors do not possess expertise in every sub specialty and moreover there is a shortage of resource persons at certain places. Therefore, an automatic medical diagnosis system would probably be exceedingly beneficial by bringing all of them together [11]. Medical history data comprises a number of tests essential to diagnose a particular disease [8]. Clinical databases are elements of the domain where the procedure of data mining has develop into an inevitable aspect due to the gradual incline of medical and clinical research data. It is possible for the healthcare industries to gain advantage of Data mining by employing the same as an intelligent diagnostic tool. It is possible to acquire knowledge and information concerning a disease from the patient specific stored measurements as far as medical data is concerned. Therefore, data mining has developed into a vital domain in healthcare [6]. It is possible to predict the efficiency of medical treatments by building the data mining applications. Data mining can deliver an assessment of which courses of action prove effective [12] by comparing and evaluating causes, symptoms, and courses of treatments. The real-life data mining applications are attractive since they provide data miners with varied set of problems, time and again. Working on heart disease patients databases is one kind of a real-life application. The detection of a disease from several factors or symptoms is a multi-layered problem and might lead to false assumptions frequently associated with erratic effects. Therefore it appears reasonable to try utilizing the knowledge and experience of several specialists collected in databases towards assisting the diagnosis process [2], [10]. The researchers in the medical field identify and predict the diseases besides proffering effective care for patients [2, 6, 31, 32, 13] with the aid of data mining techniques. The data mining techniques have been utilized by a wide variety of works in the literature to diagnose various diseases including: Diabetes, Hepatitis, Cancer, Heart diseases and the like [27, 28, 29, 30]. Information associated with the disease, prevailing in the form of electronic clinical records, treatment information, gene expressions, images and more were employed in all these works. In the recent past, the data mining techniques were utilized by several authors to present diagnosis approaches for diverse types of heart diseases [14, 9, 18,19, 20, 21].

2. Motivation
A major challenge facing healthcare organizations (hospitals, medical centers) is provision of quality services at reasonable costs. Quality of service implies diagnosing patients correctly and administering treatments that are effective. Poor clinical decisions can lead to disastrous consequences which are therefore unacceptable. Also wants to minimize the cost of clinical tests. They can achieve these results by employing appropriate computer-based information and/or decision support systems. Most hospitals today employ some sort of hospital information systems to manage their healthcare or patient data. These systems are designed to support patient billing, inventory management and generation of simple statistics. Some hospitals use decision support system, but they are largely limited due to their disability of decision making on the existing database. Clinical decisions are often made based on doctors intuition and experience rather than on the knowledge-rich data hidden in the database. This practice leads to unwanted biases, errors and excessive medical costs which affects the quality of service provided to patients. This raises an important question: “How can we turn data into useful information that can enable healthcare practitioners to make intelligent clinical decisions?” This is the main motivation for this research.

3. Research objectives
The main objective of this research is to develop a prototype of Expert Heart Disease Prediction System (EHDPS) using data mining modeling techniques are namely Neural Network. EHDPS can discover and extract hidden knowledge (patterns and relationships) associated with heart disease from a historical heart disease database [33]. It can answer complex queries for diagnosing heart disease and thus assist healthcare practitioners to make intelligent clinical decisions which traditional decision support systems cannot. By providing effective treatments, it also helps to reduce treatment costs.

4. Heart Disease
The term Heart disease encompasses the diverse diseases that affect the heart. Heart disease was the major cause of casualties in the United States, England, Canada and Wales as in 2007. Heart disease kills one person every 34 seconds in the United States [23]. Coronary heart disease, Cardiomyopathy and Cardiovascular disease are some categories of heart diseases. The term “cardiovascular disease” includes a wide range of conditions that affect the heart and the blood vessels and the manner in which blood is pumped and circulated through the body. Cardio Vascular Disease (CVD) results in severe illness, disability, and death [16]. Narrowing of the coronary arteries results in the reduction of blood and oxygen supply to the heart and leads to the Coronary Heart Disease
(CHD). Myocardial infarctions, generally known as a heart attacks, and angina pectoris, or chest pain are encompassed in the CHD. A sudden blockage of a coronary artery, generally due to a blood clot results a heart attack. Chest pains arise when the blood received by the heart muscles is inadequate [15]. High blood pressure, coronary artery disease, valvular heart disease, stroke, or rheumatic fever/rheumatic heart disease are the various forms of cardiovascular disease. The World Health Organization has estimated that 12 million deaths occurs world wide, every year due to the cardiovascular diseases. Half the deaths in the United States and other developed countries occur due to cardiovascular diseases. It is also the chief reason of deaths in numerous developing countries. On the whole, it is regarded as the primary reason behind deaths in adults [22].

5. Data mining
Data mining uses two strategies: supervised and unsupervised learning. In supervised learning, a training set is used to learn model parameters whereas in unsupervised learning no training set is used (e.g., k-means clustering is unsupervised) [37]. Each data mining technique serves a different purpose depending on the modelling objective. The two most common modeling objectives are classification and prediction. Classification models predict categorical labels (discrete, unordered) while prediction models predict continuous-valued data [35]. Decision Trees and Neural Networks use classification algorithms while Regression, Association Rules and Clustering use prediction algorithms [34].

Neural networks: Neural networks typically consist of two or more layers of neurons (or “cells”). The “input” cells may simply consist of the initial entered data values, typically between -1 and 1 in value. Their output may however be a non-linear transformation of the input value and be presented to multiple cells in another layer, for example, output cells. The receiving cells may have “thresholds” for the received values that further determine their responses to the input. Cells may obtain different weighting in the network as a function of “feedback” from cells further down the network.

6. Data Preprocessing
The extraction of significant patterns from the heart disease data warehouse is presented in this section. The heart disease data warehouse contains the screening clinical data of heart patients. Initially, the data warehouse is preprocessed to make the mining process more efficient. The preprocessed data warehouse is then clustered using the K-means clustering algorithm with K=2. This result in two clusters, one contains the data that are most relevant to heart disease and the other contains the remaining data. The frequent patterns are mined from the data, relevant to heart disease. The frequent patterns with significant weightage greater than a predefined threshold are chosen. These chosen significant patterns can be used in the design and development of heart disease prediction system. Cleaning and filtering of the data might be necessarily carried out with respect to the data and data mining algorithm employed so as to avoid the creation of deceptive or inappropriate rules or patterns [25]. The actions comprised in the pre-processing of a data set are the removal of duplicate records, normalizing the values used to represent information in the database, accounting for missing data points and removing unneeded data fields. In order for making the data appropriate for the mining process it needs to be transformed. The raw data is changed into data sets with a few appropriate characteristics. Moreover it might be essential to combine the data so as to reduce the number of data sets besides minimizing the memory and processing resources required by the data mining algorithm [26]. In our approach, the heart disease data warehouse is refined by removing duplicate records and supplying missing values.

6.1 Clustering Using K-Means Algorithm
The categorization of objects into various groups or the partitioning of data set into subsets so that the data in each of the subset share a general feature, frequently the proximity with regard to some defined distance measure, is known as Clustering. The clustering problem has been addressed in numerous contexts besides being proven beneficial in many applications. Clustering medical data into small yet meaningful clusters can aid in the discovery of patterns by supporting the extraction of numerous appropriate features from each of the clusters thereby introducing structure into the data and aiding the application of conventional data mining techniques. Numerous methods are available in the literature for clustering. We have employed the renowned K-Means clustering algorithm in our approach. The k-means algorithm is one of the widely recognized clustering tools that are applied in a variety of scientific and industrial applications. K-means groups the data in accordance with their characteristic values into K distinct clusters. Data categorized into the same cluster have identical feature values. K, the positive integer denoting the number of clusters, needs to be provided in advance. The steps involved in a K-means algorithm are given subsequently

- K points denoting the data to be clustered are placed into the space. These points denote the primary group centroids.
- The data are assigned to the group that is adjacent to the centroid.
- The positions of all the K centroids are recalculated as soon as all the data are assigned.
- Steps 2 and 3 are reiterated until the centroids stop moving any further. This results in the segregation of
Research Paper

Data into groups from which the metric to be minimized can be deliberated. The preprocessed heart disease data warehouse is clustered using the K-means algorithm with K value as 2. One cluster consists of the data relevant to the heart disease and the other contains the remaining data. Later on, the frequent patterns are mined from the cluster relevant to heart disease, using Neural Network.

7. Data source
A total of 909 records with 15 medical attributes (factors) were obtained from the Cleveland Heart Disease database [33]. Figure 1 lists the attributes. The records were split equally into two datasets: training dataset (455 records) and testing dataset (454 records). To avoid bias, the records for each set were selected randomly. For the sake of consistency, only categorical attributes were used for all the three models. All the non-categorical medical attributes were transformed to categorical data. It is assumed that problems such as missing data, inconsistent data, and duplicate data have all been resolved.

8. Heart Attack Prediction System Using Neural Network
The design of the Expert heart disease prediction system with the aid of Neural Network is presented in this section. The method primarily based on the information collected from precedent experiences and from current circumstances, which visualizes something as it may occur in future, is known as prediction. The degree of success differs every day, in the process of problem solving on basis of prediction. The Neural Network is probably the most popular data mining technique.

8.1 Feed Forward Networks
Show below is a representation of a basic cell. Each "synapse" or input is given some weight. We indicate there are N + 1 input, the last always having a value of 1.0. A function of the sum (the activation) of the weighted inputs determines the output of the cell.

While the activation function may impact the speed of the neural network, it is the weights which primarily control the operational characteristics of the network. The above hypothetical cell may be an output layer neuron or one of a hidden layer. Feedforward networks typically have only input and output layers. It is calculated based on the weightage of each attribute present in the pattern and the frequency of each pattern. The formula used to determine the significant weightage (SW) is as follows:

Table 1: Input Factor.

<table>
<thead>
<tr>
<th>S.NO</th>
<th>PARAMETERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Male and Female</td>
</tr>
<tr>
<td>2</td>
<td>Age</td>
</tr>
<tr>
<td>3</td>
<td>Smoking</td>
</tr>
<tr>
<td>4</td>
<td>Overweight</td>
</tr>
<tr>
<td>5</td>
<td>Alcohol Intake</td>
</tr>
<tr>
<td>6</td>
<td>High salt diet</td>
</tr>
<tr>
<td>7</td>
<td>High saturated fat diet</td>
</tr>
<tr>
<td>8</td>
<td>Exercise</td>
</tr>
<tr>
<td>9</td>
<td>Sedentary Lifestyle/Inactivity</td>
</tr>
<tr>
<td>10</td>
<td>Hereditary</td>
</tr>
<tr>
<td>11</td>
<td>Bad cholesterol</td>
</tr>
<tr>
<td>12</td>
<td>Blood Pressure</td>
</tr>
<tr>
<td>13</td>
<td>Blood sugar</td>
</tr>
<tr>
<td>14</td>
<td>Heart Rate</td>
</tr>
<tr>
<td>15</td>
<td>Stress</td>
</tr>
</tbody>
</table>
Where $W_i$ represents the weightage of each attribute and $f_i$ denotes the frequency of each rule. Subsequently the patterns having significant weightage greater than a predefined threshold are chosen to aid the prediction of heart attack

$$SFP = \{ x : S_{W}(x) \geq \Phi \}$$

Where SFP represents significant frequent patterns and $\Phi$ represents the significant weightage. This SFP can be used in the design of heart attack prediction system.

9. Experimental Results
The results of our experimental analysis in finding significant patterns for heart disease prediction are presented in this section. We have implemented our approach in PHP. The heart disease dataset we have used for our experiments was obtained from [33]. With the help of the dataset, the patterns significant to the heart disease prediction are extracted using the approach discussed. The heart disease data set is preprocessed successfully by removing duplicate records and supplying missing values using data mining technique. The refined heart disease data set, resultant from preprocessing, is then clustered using K-means algorithm. Then the frequent patterns are mined efficiently from the cluster relevant to heart disease. Subsequently, the significant patterns are extracted with the aid of the significance weightage greater than the pre-defined data. The values corresponding to each attribute in the significant patterns are as follows: blood pressure range is greater than 140/90 mm Hg, cholesterol range is greater than 240 mg/dl, maximum heart rate is greater than 100 beats/minute, abnormal ECG and unstable angina. The sample combinations of heart disease parameters for normal and risk level Table. 1 shows the parameters of heart disease prediction. Using this parameters and corresponding values are analysis using Neural Network. The screenshots of heart attack prediction with different risk levels are shown in Figure 3.
Conclusions

Data mining in healthcare management is not analogous to the other fields due to the reason that the data existing here are heterogeneous in nature and that a set of ethical, legal, and social limitations apply to private medical information. Most recently, the utilization of knowledge and experience of a variety of specialists and clinical screening data of patients collected in a database throughout the diagnosis procedure has been extensively recognized. In this paper, we have presented an Expert heart disease prediction system using data mining and Neural Network techniques that result to provision of quality services at reasonable costs. The experimental results have illustrated the efficacy of the designed prediction system in predicting the heart disease Figure 3. EHDPS can be further enhanced and expanded. For example, it can incorporate other medical attributes besides the 15 listed in Table 1. It can also incorporate other data mining techniques, e.g., Time Series and Association Rules. Continuous data can also be used instead of just categorical data. Another area is to use Text Mining to mine the vast amount of unstructured data available in healthcare databases. Another challenge would be to integrate data mining and text mining.

References

[5] Hsinchun Chen, Sherrilynne S. Fuller, Carol Friedman, and William Hersh, "Knowledge Management, Data Mining, and Text Mining In Medical Informatics", Chapter 1, eds. Medical Informatics: Knowledge Management And Data Mining In Biomedicine, New York, Springer, pp. 3-34, 2005.
ABSTRACT
Sports medicine has emerged as an important branch of sport science. It is a multi specialty branch which involves health care professionals, researchers and educators from wide variety of disciplines. The injuries in sports are caused by many factors. They may be from environmental to physiological or psychological. The prevalence of injuries in contact games is very high when compared to non contact games and sports. It is more so in a game like kabbaddi which demands agility, muscular co-ordination, quick physical response and a great deal of presence of mind. Hence the chance of injury rate is very high.

I. INTRODUCTION

LIST OF COMMON INJURIES

Open Wounds: This category of injury includes a wide range of conditions of varying severity from a simple scratch on the skin to a compound fracture.

Abrasions: Abrasion means when there is a loss of epidermis is done and dermis is exposed on the surface in the injured area.

Laceration: As defined, a laceration is a separation of the skin with relatively sharp edges. Laceration means, when there is a complete cut in the skin and both dermis and epidermis are lost and subcutaneous tissues are exposed. These injuries are caused by the impact of a cricket ball, hockey sticks, or blunt edged instruments.

Puncture Wound: Puncture wound is one made by a penetrating object which pierces through all layers of skin.

Blister: Blister is caused by mechanical thermal or chemical burning in which the layers of skin are separated by an exudation of fluid.

Sprain: The sub-committee on Athletic nomenclature of the A.M.A. committee on sports medicine has confined that strain should apply to the muscle-tendon unit and sprain to the ligament injury. Strain: A strain sometimes referred to by the layman as a muscle pull, a tear or rip in the muscle itself or in the adjacent tissue such as the facial or muscle tendons.

Contusions: The contusion is an injury caused by a blow without breaking the skin or in simple language — a bruise.

Contusion to a joint: A contusion to a joint will invariably causes an outpouring of fluid within the joint, which arises from the living membrane of joint known as the synovial membrane, and the condition is known as synovities. The immediate treatment is the application of a firm pressure bandages around the joint. The later treatment is largely one of exercise, with heat arid massage if necessary.

Nerve Contusion: At various parts of the body nerves are exposed to external violence, such an are being the head or top of the fibular bone which runs down the outside of the lower leg at this spot, the external popliteal nerve runs around the head of the bone and is vulnerable. Any blow struck on such an exposed part will causes pain to run down the course of the nerve and will affect the area of the body which is supplied by that nerve, the total effect lasting for period which may range from seconds to hours.

Contusion to Bone: Contusion to bones is obstinate conditions to clear up. Every bone is covered entirely with a thin film of protective cartilage known as the periseteum, and once it is a sore spot for a considerable period. The tenderness seems as though it has to wear out of the bone, and makes felt for a long time. A very frequent area of suffering from this type of injuries is that of the sole of the foot, eased by the athlete jumping on a hard surface from a height or upon a stone when running.

PREVENTION OF SPORTS INJURIES
a. Use of Proper Equipment
b. Maintenance and Appropriateness of Playing Surfaces
c. Adequate Adult Supervision and Commitment to Safety
d. Proper Preparation
e. Warm up and Stretching
f. Prevent injuries by training correctly

My study aims at analyzing the cause of injuries in Kabbaddi and it focuses light on the kind of injuries that occur. The 76 subjects were selected from the All India Inter University Women Kabbaddi players during the south west and all India inter-university competitions. After having conceived the plan of study we had discussion with a group of medical physicians, physical directors and coaches. After due observation a comprehensive survey was done. In order to achieve the desired accuracy in the studying extensive medical opinion was sought.
1. SHOWING THE TYPES OF INJURIES

<table>
<thead>
<tr>
<th>S.No</th>
<th>Types of Injuries</th>
<th>Number of Injuries</th>
<th>% of Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Ligaments Injury</td>
<td>7</td>
<td>29.17%</td>
</tr>
<tr>
<td>2</td>
<td>Muscle Injury</td>
<td>15</td>
<td>62.50%</td>
</tr>
<tr>
<td>3</td>
<td>Joint Injury</td>
<td>4</td>
<td>16.66%</td>
</tr>
<tr>
<td>4</td>
<td>Nerve Injury</td>
<td>1</td>
<td>4.17%</td>
</tr>
</tbody>
</table>

Total = 27

Table – I showing the types of injuries. From the table to it is observed that throughout the competition 27 injuries have been reported. Out of 27 injuries, muscles injuries 62.50 %, (15) .29.17 (7) ligament injuries, joint injury16.66%(4),nerve injury 4.17 % (1).

There is no injury in bone, head injury and cardio respiratory injuries.

2. NATURE OF THE INJURY

<table>
<thead>
<tr>
<th>S.No</th>
<th>Injury</th>
<th>Number of Injuries</th>
<th>% of Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Sprain</td>
<td>7</td>
<td>29.17%</td>
</tr>
<tr>
<td>2</td>
<td>Strain</td>
<td>2</td>
<td>8.33%</td>
</tr>
<tr>
<td>3</td>
<td>Abrasions</td>
<td>7</td>
<td>29.17%</td>
</tr>
<tr>
<td>4</td>
<td>Contusions</td>
<td>3</td>
<td>12.5%</td>
</tr>
<tr>
<td>5</td>
<td>Dislocations</td>
<td>4</td>
<td>16.66%</td>
</tr>
<tr>
<td>6</td>
<td>Cutting Blood Vessel</td>
<td>1</td>
<td>4.17%</td>
</tr>
</tbody>
</table>

Total Injury = 24

Table-2 shows the nature of the injury observed through the tournament were 24. Out of 24, abrasion 29.17 % (7), sprain 29.17%(7) ,dislocation 16.66 % (4), contusion 12.5(4), strain 8.3%(2) cutting of blood vessel 4.17%(1).

From the chart we observed that sprain, abrasion that equal number of common injuries.

3. REGIONAL WISE INJURIES

<table>
<thead>
<tr>
<th>S.No</th>
<th>Place of Injury</th>
<th>Number of Injuries</th>
<th>% of Injuries</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Right Cheek</td>
<td>1</td>
<td>4.17%</td>
</tr>
<tr>
<td>2</td>
<td>Shoulder</td>
<td>1</td>
<td>4.17%</td>
</tr>
<tr>
<td>3</td>
<td>Chest</td>
<td>1</td>
<td>4.17%</td>
</tr>
<tr>
<td>4</td>
<td>Hands</td>
<td>5</td>
<td>20.83%</td>
</tr>
<tr>
<td>5</td>
<td>Stomach</td>
<td>1</td>
<td>4.17%</td>
</tr>
<tr>
<td>6</td>
<td>Cutting Blood Vessel in Hand</td>
<td>1</td>
<td>4.17%</td>
</tr>
<tr>
<td>7</td>
<td>Ham String Muscle</td>
<td>1</td>
<td>4.17%</td>
</tr>
<tr>
<td>8</td>
<td>Thigh Muscle</td>
<td>1</td>
<td>4.17%</td>
</tr>
<tr>
<td>9</td>
<td>Knee joint</td>
<td>7</td>
<td>29.17%</td>
</tr>
<tr>
<td>10</td>
<td>Ankle</td>
<td>5</td>
<td>20.83%</td>
</tr>
</tbody>
</table>

Total Injury = 24

Table-3 shows the Regional Wise Injuries. From the table it is observed that 29.17 % are of knee injury, 20.83 % of ankle and hand injuries, 4.17 % of following injuries Right Cheek Injuries, Of Shoulder Injuries, Chest Injuries, Stomach Injuries, Cutting Blood Vessel Injuries, Ham String Muscle Injuries, Thigh Muscle Injuries. From the table observed that place of injuries.
The following conclusion may be drawn from the result of this study.

1) The result of the study reveals that 29.17% (7) sprain and abrasions, 16.66% of dislocation, 12.5% of contusions, 8.3% of strain.

2) It may be concluded that usually sprain, strain, abrasions are higher in all body conduct game. Here from all me above the dislocation injuries were reported seriously for the kabbaddi players.

3) Based on the result of the study the injury reach was high in the lower extremity than the upper extremity. The lower extremity has are14 injuries, upper extremity as 2 injuries.

4) Though the game kabbaddi is a body contact game the injury ratio was very minimum in the overall observation form the south-west zone and all India women kabbaddi tournament. It should be noted that the players fitness and the competition, play field arrangements and high level organization of the tournaments are some of the factors that have a role to play in the reduction of the number of injuries.

RECOMMENDATION
The game kabbaddi is a body contact game with high level of skills and technique and presence of mind. The players need systematic training to minimize the injuries. The rehabilitation process and injuries preventive measures were taught to the players to minimize and avoid the injuries. By doing this process the drop out sport many injuries will be reduced. The same stays may be conducted for ends players for different level of competitions. The study will be helpful to the players and coaches to know the right way and prepare the players for the compaction and to over come the injuries. The same study may be conducted for different disciplines and different age groups and at various levels of competitions.

BIBLIOGRAPHY:
ADEPT IDENTIFICATION OF SIMILAR VIDEOS FOR WEB-BASED VIDEO SEARCH

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ABSTRACT
Adept identification of similar videos is an important and consequential issue in content-based video retrieval. Video search is done on basis of keywords and mapped to the tags associated to each video, which does not produce expected results. So we propose a video based summarization to improve the video browsing process with more relevant search results from large database. In our method, a stable visual dictionary is built by clustering videos on basis of the rate of disturbance caused in the pixellize, by the object. An efficient two-layered index strategy with background texture classification followed by disturbance rate disposition is made as core mapping methodology.

I. INTRODUCTION
Currently videos do cover a large part of data on the online server. Videos have become one of the most important base for information and it is widely improving its range of use in the teaching field. More than all this they provide great reach for people who expect online entertainment. We have large number of websites dedicated especially for browsing and viewing videos. We type in keywords and retrieve videos, as simple as that. But not much importance is given to criteria ‘relevancy’ when videos are considered. Since videos are of great entertainment values, they will reach almost all age group people who are online. In such case, relevancy and faster retrieval becomes a major need which has been ignored till now. In all the video oriented websites, the searching is based on the keywords which we type in. Using the keywords, the engine will search for all the matching tags available in the videos. Each video will have many tags associated to it. Here tags refer to the concept on which the video is based on. Definitely a video will contain a minimum of five tags. Most of the websites allow the user who uploads the video to specify their own tags. So the tags are completely independent of the website’s vision. In other websites, the words in the name of the video specified by the user will be used as the tag words. Here neither of the methods deal with the actual content of the video but just takes words as filtering criteria for a video base search. Thus existing system shows the following flaws are 1. Browsing time is very high, since the results produced are vast. 2. Results are not relevant. Since the tag words may be generic, the database search is lengthy and time consuming. 3. There is no filtering of redundant videos. Thus here we propose a better method of filtration with help of content based video retrieval. Here we take into account the actual content of the video and not any words which are provided by the user over it.

2. RELATED WORK
There many works related to our proposal which have adopted a similar objective with a different perspective. The initiation started way back in 2002, when video was getting more attention from the online user. But that time they were only able to propose a theoretical procedure for structure analysis of the images of the video for better filtration and retrieval [4]. But that proposal failed to explain the practical implementation of it. Later to overcome the difficulty of variation of in the dimension between the videos, a proposal came over to match low with high dimensional videos over comparing which did a contribution to video comparison factor [7]. With all the advancements, came up the new idea of feature extraction for comparison of videos in content matter with help of video signature [6]. Even though this notion gave good similarity results, it is not practical to implement it in a busy network like internet because of its high complexity and time consuming factor. Since time matters, indexing was simplified with the help of vector based mapping which uses slicing the videos [8] and using pointers, which performed great solely. Later dynamic binary tree generation [9] came into being to avoid storage problems which saved storage space but
consumed time. A very similar proposal to ours but complicated in its implementation came up which uses threshold and color histogram [10] to do content based analysis which has large complexity which we have resolved. Later came up a completely dedicated searching and retrieval method for MPEG-7 [5] which is not much use now days. Personalized video searching with reusability depending on user came up with high caches [3] which can be used for private use but not much for a public explosion. When queries become difficult to express, a proposal came up to implement a application based technology combined with multi-touch exploitation which would result in compelling the user to give entry to an external application inside their browser [2]. Finally, the base of our proposal was from a content based retrieval idea [1] which uses a complex B+ tree method to retrieve videos using symbolization, which is feasible except for its complexity. Here we try to have the complexity level at minimum with high responsive and relevant videos with limited time consumption.

3. SYSTEM DISCRIPTION

We propose an efficient CBVR (Content based video retrieval), for identifying and retrieving similar videos from very large video database. Here searching is based on the input given as a video clip rather than caption. We store the video in an efficient manner so that retrieving is easier and more relevant. This is mapped by two-level indexing, first segregated on basis of background texture, followed by object pixellize disturbance. There are three major modules which defines the proposed system as the figure (1) shows. Here the first module of key frame generation is the major part. Where the videos are divided into the multiple images as keyframes. Then we are going to trace the actual background of the video. Then the background key frame is used as the first level of filtration done in the database. We apply the following step to trace the background of a video.

ALGORITHM

i. Initially the video is converted into multiple frames of pictures.
ii. Now number each frame \(N_1, N_2, \ldots, N_n\)
iii. Compare pixel(k) \(N_i[k] == N_{i+1}[k]\)
iv. If they are same update store them in key frame(kf[k])
v. Key frame may result in more than one, if the video has highly different backgrounds.
vi. Again continue the same with kf to produce a single background key frame.

4. IMPLEMENTATION

The proposed idea can be implemented in system using the following modules.

4.1 KEYFRAME GENERATION

Major module which includes the key frame generation. Initial steps include the following:

- Break up the video into multiple images.
- Map out the background key frame.
- Plot the position of the object in the video, by sorting out the disturbance.

4.1.1 BACKGROUND KEYFRAME GENERATION

Here we are going to trace the actual background of the video. This background key frame is used in the first level of filtration done in the database. We apply the following step to trace the background of a video.

ALGORITHM

i. Initially the video is converted into multiple frames of pictures.
ii. Now number each frame \(N_1, N_2, \ldots, N_n\)
iii. Compare pixel(k) \(N_i[k] == N_{i+1}[k]\)
iv. If they are same update store them in key frame(kf[k])
v. Key frame may result in more than one, if the video has highly different backgrounds.
vi. Again continue the same with kf to produce a single background key frame.
vii. Some pixels may not be filled, they can be computed from the surrounding pixels.

Fig.3 Background Keyframe Generation.

4.1.2 OBJECT POSITION IDENTIFICATION

ALGORITHM
i. Now we have kf, which shows the key frame of the video segment which has same background.
ii. Compare the pixel(k) kf[k] with the same pixel middle frame from that video segment.
iii. Fill the object key frame pixels with black when they match.
iv. Only few pixels won’t match.
v. That position will be filled with the color of the selected frame’s corresponding pixel.

Fig.4 Identification of Object Position by filtering the pixel that do not match.

4.2 MAPPING IN DATABASE

Database mapping are typically implemented by manipulating object comparison to retrieve relevant search videos. It includes the two level of filtering used to find relevant videos in the database. Given a query video, First the background of each keyframe are mapped by looking up the visual dictionary in which the related videos has been stored. Then, the video segments (frames) containing these backgrounds are retrieved, so the potentially similar video results are displayed according to their matching rate. Second is by identifying the object position which compares the pixels of two keyframes, we assume that they are matched if they are similar, and unmatched otherwise. However, since the neighboring clusters in multidimensional space may be overlapped with each other, two similar subdescriptors falling into the overlapping part of clusters may be represented as different pixel matching, thus, misjudged or misplaced as dissimilar ones. These dissimilar ones are considered to be the disturbance rate called the objects. Accordingly, the matched keyframes to the pixels containing overlapping frames may be considered as unmatched, which degrades the accuracy of pixel sequence matching. Therefore, the unmatched pixels are considered to be the rate of disturbance called the error rate. With this error rate we can retrieve the second level of filtration that is object identification. As a result, retrieval will be easier and effective by our two layered filtration as shown in fig (5 and 6)

Fig.5 Sample background keyframes mapping with query keyframes.

Fig.6 Mapping by Object disposition.
4.3 RETRIEVING RELEVANT VIDEOS

To retrieve similar videos more efficiently and effectively, several key issues need to be noted. First, a video is required to be represented compactly and informatively. This issue is important, as a video typically contains a number of keyframes, and the similarity between two videos is usually measured by finding the closest match or minimum error rate for every single keyframe of them. Thus, searching in large databases over a raw video data is computationally expensive. The second issue is how to measure the similarity between videos based on their pixel matching rate. To overcome this, we used the most effective and efficient two layered filtration, first is background keyframe generation and object identification. Therefore, the user can select any retrieved videos and playback the video clip. Figure 7 shows one of the sample example of retrieval result. The retrieval results will be even better when the backgrounds are masked out. On the other hand, if the background becomes much clumsy or its area increases, the results will degrade gradually. But the current video search engines are based on lexicons of semantic concepts and perform tag based queries. These systems are generally desktop applications or have simple web interfaces that show the results of the query as a ranked list of keyframes. For each result of the query it is shown the first or similar frames of the video clip. These frames are obtained from the video streaming database, and are shown within a small video player. Users can then play the video sequence and, if interested, zoom in each result displaying it in a larger player that shows more details on the video player and allows better video detection. The extended video player also allows to search for visually similar video clips. Therefore at the bottom of the result lists there are the concepts which are related to the video results. By selecting one or more of these concepts, the video clips returned are filtered in order to improve the information retrieval process. The user can select any video element from the results list and play it as they needed. This action can be repeated for other videos, returned by the same or other queries. Videos, out of the list can be moved along the screen, resized or played. Therefore the overall retrieval process is simple and effective which gives the results faster.

CONCLUSION

In this paper, we discussed our proposal for all video search engines and their related issues. It extracts various video metadata from a video query themselves on a large database and displays the most relevant videos on the webpage. Then our paper also deals with the identification and extraction of keyframes and pixelate matching followed by the video retrieval. Then, we presented an effective disturbance rate disposition, to measure the similarity between two video clips by taking into account the visual features and sequence contexts of them. Finally, we introduced a two tier indexing scheme, which outperforms the existing solutions in terms of efficiency and effectiveness.

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ABSTRACT
Most of the documents clustering techniques are hinge on the concept of single term or phrase-based analysis of the document data set. Document clustering is especially useful in many applications such as automatic categorization of documents, grouping search engine results, building taxonomy of documents, and others. Statistical analysis usually identifies the key terms by means of their frequency within a document. However, more than one term may contain the identical occurrences within the document, however a specific term plays major role towards sentence semantics comparing to the remaining term. Therefore the fundamental web document clustering method should specify term which identifies meaning of the text. In this case, the semantic-based method identifies expressions that represent the sentence semantics, which are very helpful in determining the document’s subject. This mining model analyses words or expressions on the individual sentences, documents, and core level. The semantic-based model dramatically distinguishes among insignificant terms against the meaning of the sentences and terms which are more close to the sentence semantics. The proposed method has two phases; the first phase finds similar concepts among documents, with respect to the meaning of their sentences and the second phase is to construct the semantic suffix tree for representing the documents which are sharing the concepts. The similarity between the documents is approximated by a similarity measure which is based on concepts. By using the semantic organization of sentences in the web documents, a considerable improvement in the quality of web document clustering is achieved.

I. INTRODUCTION
Today, the internet is used as a major data storage environment, and it is struggling with the problem of information overload. At the same time, more number of peoples uses the web as their fundamental source of information. The availability of a large quantity of information with the dynamic and disparate characteristics of the web makes information retrieval as a vague process for the normal user. Many applications have been developed to assist the users, in order to fulfil their information needs easily and quickly. Normally, a person looking for information surrenders a query which consists of a set of keywords to a search engine. Then the search engine does correct matching among the query terms and the key words that describe each web page and exhibit the outcome to the user. Usually the outcomes of the search engines are long list of URLs, which are very difficult to search. Also, users lacking in domain knowledge or unfamiliar with the proper phraseology are frequently submits the incorrect query terms, which leads many unrelated pages will be displayed in the result. The above mentioned situation has motivated the growth of novel methods to help the users to track, find and organise the web documents on hand effectively. The main objective of these methods is finding results which are more related to the users needs. Document clustering is one of the methods that play a significant role for obtaining this objective. Later, wide ranges of clustering algorithms were developed for improving the significance of document clustering and to fulfil the needs of applications which are related to information processing or management.

2. PREVIOUS WORK
Normally, text clustering methods tries to split the documents into clusters or groups. Each document in a group has some common properties and each group is differentiated from others by means of the topics they represent. Most of the documents clustering techniques are depend on the method called “Vector Space Model (VSM)”. In the field of the text classification and clustering, VSM is a commonly used data representation. According to “Vector Space Model”, every document is represented by a set of feature vectors. Every feature vector in a document holds term weight (i.e. term frequency), which represents the importance of a term in a document. The homogeneity among the documents is
calculated via measures of similarity (e.g. Cosine measure, Jaccard measure). The text clustering process generally includes the methods like conceptual clustering, decision trees, neural nets, rule-based system, statistical analysis, clustering based on data summarization, and inductive logic programming. In document clustering, one of the important tasks is to select the important features, which best represent the document properly. This task has a great impact on the clustering results. Furthermore, calculating weight of these features accurately also plays a major role in the accuracy of clustering process’s results.

3. SEMANTIC BASED MODEL

The above discussed methods in the previous work are used for document clustering, but these methods are used for clustering the documents which are available on system. But, the proposed work is going to make use of web documents instead of plain text documents. As given in Fig. 1, this web document clustering method makes use of concept-based mining model which analyses the important terms at the sentence level, document level, as well as at the core level. Also, this model has a “concept-based similarity measure”, and that helps to improve cluster quality even more. The proposed system accepts web documents as the input and processes them to produce the best clusters which improve the quality of search-engine results. Each document is confined with the well-defined sentences. The semantic role labeller assigns labels to each sentence in a document that best determines the terms which are very close to the meaning of the sentence. Generally, the verb argument structure is used to characterize the sentence-semantic structure and it makes a connection among the arguments of the input query with their corresponding semantic-role. The “Support Vector Machines (SVMs)” are used for identifying the arguments of verbs in a sentence. Also, SVMs classifies the arguments by their semantic roles like Agent, Theme, and Goal. SVMs results improved performance over the earlier classifiers.

Step 2: Removal of stop words and stem words

Once forming the verb argument structure, a data cleaning process is performed to eliminate the stop words, and Porter Stemmer algorithm is used for stemming the words. After the removal of stop word and stem words the resulting terms are called as concepts.

3.2 Semantics-Based Analysis

The “semantics-based analysis” is mainly used to get perfect investigation about concepts on every sentences and documents, as well as on the core level instead of analysing the documents only in single-term fashion.

3.1 Data Preprocessing

Step 1: Separation of sentences and label terms

The process of mining the relationship among verbs and their arguments in a sentence is capable of analysing the terms contained in a sentence. As a result of identifying this relationship, the importance of every term in a sentence towards the sentence semantics will be known easily. In this proposed web document clustering method, the semantic role labeller assigns labels to each sentence in a document that best determines the terms which are very close to the meaning of the sentence. Generally, the verb argument structure is used to characterize the sentence-semantic structure and it makes a connection among the arguments of the input query with their corresponding semantic-role. The “Support Vector Machines (SVMs)” are used for identifying the arguments of verbs in a sentence. Also, SVMs classifies the arguments by their semantic roles like Agent, Theme, and Goal. SVMs results improved performance over the earlier classifiers.

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3.2 Semantics-Based Analysis

The “semantics-based analysis” is mainly used to get perfect investigation about concepts on every sentences and documents, as well as on the core level instead of analysing the documents only in single-term fashion.

Concept Analysis at Sentence Level: The frequency of the labelled term (or concept) is calculated by using a frequency measure, known as “conceptual term frequency (ctf)” which analyses the concepts at sentence level.

A. Computing ‘ctf’ for labelled terms in a Sentence

The ‘ctf’ for a concept is calculated as, how many times a labelled term occurred in the verb argument structure corresponding to a sentence. At this point, the frequency measure analyses concepts within a sentence.

B. Computing ‘ctf’ for labelled terms in a Document

A same labelled term (or concept) may have various ‘ctf’ values at different sentences in a document. Therefore, the frequency of a labelled term in a document is computed using:

$$c t f = \frac{\sum_{n=1}^{sn} c t f_n}{sn}$$

where $sn$ represents the number of sentences holds the given concept in a document.

Concept Analysis at Document Level: Each concept is analysed at document level by using the “concept based term frequency (tf)” and it is computed by means of calculating, the number of times a concept is occurred in the given document. At this point, the ‘tf’ of a concept is analysed at the document level.
Concept Analysis at Corpus Level: The concepts or labelled terms which are making best discrimination among documents are extracted by using the “concept-based document frequency (df)”. The value of ‘df’ clearly tells how many documents that contain a given concept. The ‘df’ is a kind of global measure because, here the concept is analysed at the corpus level.

3.3 Concept-Based Document Similarity
The measure which involves concept based similarity is influenced by the following important features: First, the labelled terms which determine each sentence’s semantic structure, produced by the pre-processing step are considered as concepts. Second, the number of occurrences of a labelled term helps to identify the importance of the term towards the sentence-semantics, in addition to the document’s main subject. Third, the concept-based document frequency ‘df’ is used to distinguish between documents while computing the document similarity. The similarity among the documents, doc1 and doc2 in terms of concept is computed by,

\[ \text{Sim}_{c}(\text{doc}_1, \text{doc}_2) = \sum_{i=1}^{m} \max \left( \frac{l_{i1}}{L_{v1}}, \frac{l_{i2}}{L_{v2}} \right) \times \text{weight}_{i1} \times \text{weight}_{i2} \]

4. CONCEPT-BASED SUFFIX TREE
The proposed Web Document clustering method makes use of suffix tree clustering (STC) algorithm. STC treat a document as a sequence of words. The execution time of STC algorithm is always linear that is based on identifying the phrases that are common to groups of documents.

Usually STC is constructed for representing the phrases/sentences which are similar among the documents. But this paper proposes a new concept-based suffix tree which is constructed for grouping the documents which are sharing the similar concepts. STC is a kind of fast document clustering algorithm, so it will have a significant role in clustering web documents. After constructing the suffix tree for each concept, the k-means algorithm is used for reducing the base clusters.

CONCLUSION
This work makes an association among text mining and natural language processing disciplines. The “semantic-based mining model” is being used by the proposed system will results substantial improvements in the quality of the clusters. The determination of sentence semantic structure in documents plays an important role in producing better clustering results. The quality of the output clusters obtained by this method can have considerable improvements than the traditional single term or phrase-based approach. A novel concept-based suffix tree method, which is proposed in this paper, will reduce the number of suffix trees needed to address a document and it groups the documents which are sharing the concept each other. So, the concept-based suffix tree helps to search the more relevant results with less amount of time.

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ABSTRACT
The Global Positioning System (GPS) consists of popular localization schemes, but usually fails to function indoors, underground, or in forest areas. This paper is about tracking the object without using GPS this is done by using Received Signal Strength Indicator (RSSI). RSSI could be exploited to gain information on the relative position of those transmitters to pinpoint the receiver’s position. Ranging based localization techniques often produce better localization than range free techniques. This paper is about implementing the real time tracking of the objects like vehicles or boats which are to be tracked continuously in order to keep them in range. If they cross the range or they take a different route they are stopped and guided with a correct route.

I. INTRODUCTION
Now a days there is a need for the security concern when it comes to the vehicles and boats that need to be tracked to make them travel in a correct path or make them travel within the range. Mostly GPS is used to track an object but when the object is in a place like dense forest or underground or in a vast oceans where the GPS signal cannot be reached, there is an alternate approach that can be done using Received Signal Strength indicator (RSSI). These kind of approaches are more beneficial and at a low cost serves our needs. In this the transmitter is fixed to the object which is to be tracked and the receiver is far from the transmitter fixed to a Computer or PC to track the object in a graphical representation on the monitor. This paper, based on the studies of current RSSI propagation models, with the goal of accuracy and self-adaptability of model.

I. IMPLEMENTATION
Implementation of the object tracking is done by fixing the transmitter section in the vehicle or boat which is to be tracked. The receiver is connected to the computer and the tracked object is mapped on the monitor. There is a continuous monitoring of the object. The transmitter and receiver block diagrams are shown in Fig 1 and Fig 2. The transmitter consists of microcontroller, zig bee module, UART, WSN, ultrasonic and vibration sensors, LCD, Voice board and DC motor controlled with relay. The receiver consists of zig bee module, computer.Microcontroller which is used here is PIC microcontroller there are other variants which can be used like, Atmel, ARM etc. The type of PIC microcontroller which is used is PIC16F877A which is an 40 pin microcontroller, it has 5 ports- port A, port B, port C, port D, port E. It has 3 timer/counters they are timer 0, timer 1, and timer 2. Two capture, compare PWM modes, synchronous serial port (SSP) with SPT, I2C. It consists of a USART/SCI for communication and a parallel slave port. It has a total of 15 interrupts in which 2 interrupts are external interrupts. It has 256 bytes of data EEPROM and 368 bytes of data RAM. Port A consists of 6 pins in which 5 pins are for A to D functions and 1 pin for timer0, it consists of all analog functions. Port B consists of 8 pins used for external interrupts and it contains programmable pins used to program PIC microcontroller and to access the memory. Port C consists of 8 pins it consists of all serial communication features like I2C, SPI, USART, PWM modules, it also consists of timer 1. Port D consists of 8 pins used for general purpose or parallel slave ports (PS). Port E consists of 3 pins, it has 3 analog channels for ADC and contains control signal for PS. Microcontroller is programmed to control all the peripherals like motor, UART, Zig bee, Voice board, LCD etc.

LCD is used to display the values and calculation results of the distance vibrations and RSSI values of the Ultrasonic sensor, Vibration sensor and RSSI calculations. LCD used here is a 16×2 LCD, this is programmed using microcontroller to display the values, each character in the display of size 5×7 pixel matrix.

Follow these simple steps for displaying a character or data
E=1; enable pin should be high
RS=1; Register select should be high
R/W=0; Read/Write pin should be low.
To send a command to the LCD just follows these steps
E=1; enable pin should be high
RS=0; Register select should be low
R/W=1; Read/Write pin should be high.

Voice board is used here is to notify using a voice process, if notifies is any vibration occurs or if the vehicle is out of range or if any obstacle is detected by ultrasonic sensor. The voice board used consists of APR9600 IC. Total recording period is 60 seconds with a sampling rate of 4.2 kHz. No
battery backup required. Operating current is 25 mA typical. Standby current is 1 µA typical. Ultrasonic sensor is used to detect the obstacles and calculates the distance between the vehicle and the obstacle and displays it through the LCD. An ultrasonic proximity sensor uses a piezoelectric transducer to send and detect sound waves. Transducer generate high frequency sound waves and evaluate the echo by the detector which is received back after reflecting off the target. Vibration sensor is used to detect the vibrations when an accident occurs. The basic principle used in this setup is piezoelectricity. It is a phenomenon of internal accumulation of charge in crystals in response to external mechanical force applied on it. All the calculations and values obtained in the transmitter section are transmitted to the receiver through zig bee module.

In the receiver section a zig bee module is present to receive the signals transmitted from the transmitter present in the vehicle or boat. These values are calculated using RSSI algorithm and mapped and represented graphically using visual basic in computer.

**II. PRINCIPLES OF RSSI**

The principle of RSSI ranging describes the relationship between transmitted power and received power of wireless signals and the distance among nodes. \( P_r \) is the received power of wireless signals, \( P_t \) is the transmitted power of wireless signal, \( d \) is the distance between the sending nodes and receiving nodes, \( n \) is the transmission factor whose value depends on the propagation environment. The calculations of Received Signal Strength Indicator are:

\[
P_r = P_t * (1/d)^n
\]

Taking Logarithm on both sides of Eq. 1 then the equation is transformed to:

\[
10 \log P_r = 10 \log P_t - 10n \log d
\]

10 log \( P_r \) is the expression of the power converted to dBm. Eq. 2 can be written as:

\[
P_r \text{ (dBm)} = A - 10n \log d
\]

Parameter \( A \) and parameter \( n \) determine the relationship between the strength of received signals and the distance of signal transmission. The power of received signals of nodes located in the distance of \( d \) can be determined by the following formula’s

\[
P_r(d) = P_tG_tG_r\lambda/2/(4\pi)^2d^2
\]

\[
PL \text{ (dB) } = 10 \log P_t/P_r = -10 \log \left( \lambda^2 / (4\pi)^2 d^2 \right)
\]

\( G_t \) and \( G_r \) are antenna gain, and \( L \) is system loss factor which has nothing to do with the transmission. \( G_t = 1, G_r = 1 \) and \( L = 1 \) are usually taken.

**III. WORKING PROCEDURE**

Before The object tracking using RSSI is about tracking the vehicle or a boat and calculating the distance between the transmitter and receiver using RSSI algorithms, the working is as follows. The vehicle or a boat which is to be tracked is setup with transmitter and it is tracked with the receiver connected to the computer. The transmitter which consists of microcontroller which is programmed to control the peripherals in the transmitter. When the vehicle starts moving the sensors and the peripherals get activated by the power supply which is given to them by a step down transformer and a rectifier. LCD is initialized and display is on. The sensors start to calculate, ultrasonic sensor which is present in the transmitter transmits the echo continuously until it receiver it back by the echo received it calculates the distance from obstacle, all these values and the distance are shown on the LCD display. Ultrasonic sensor is set to a value such that is the distance from the obstacle is less than the given value the value is monitored by the microcontroller and commands the relay to stop the motor in this way the motor is stopped and the vehicle also stops until the distance between the vehicle and obstacle becomes more. Another sensor that is active is vibration sensor this sensor continuously calculates the vibration that is occurred during the vehicle movement. When an accident occurs the vibration values are displayed on the LCD and sent to microcontroller the vibration values are checked and if the vibration is high the vehicle is stopper and the indication is sent to the receiver section. Along with the LCD and sensors a voice board is present in the vehicle which announces if any damage or heavy vibrations occur or if and obstacle is present in front of the vehicle. If also notifies the voice commands from the receiver like the vehicle is going out of range from the receiver. All the calculations and indications are sent to the receiver section by using zig bee. The transmitted signals from the transmitter are sent to receiver using zig bee as a medium of communication, by this signals the receiver can monitor the
vehicle. Now as the sensor values and calculations are monitored there is also a major module in the system called Receiver Signal Strength Indicator (RSSI), by this algorithms the receiver requests a signal to transmit from the transmitter, when the transmitter transmits the signal, depending of the power which is used by the transmitter to transmit the signal the RSSI algorithm is to calculate the distance from the receiver and transmitter, the more power the transmitter uses to transmit the signal the more distance the transmitter is from the receiver. Certain ranger are preloaded in the system such that if the calculated distance between the transmitter and receiver is out of that range automatically the microcontroller is instructed to stop the vehicle until it comes back to the range indicated. All the monitoring of the vehicle is displayed on the computer in a graphical and numerical representation using visual basic.

IV. RESULTS

The results are shows the distance from the transmitter that is setup in the vehicle and the sensor values of ultrasonic sensor which is shown in distance column which specifies the distance from the object. The vibration sensor values are shown in the vibration column when vibration occurs the amount of vibration is shown in that column. The RSSI values specified in three columns where the first column shows the value of RSSI in dB that is the signal power and other shows the fixed range. The vehicle is limited to that ranges and should not cross the distance specified to it.

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ABSTRACT

In this paper the eminence of the Recursive Least Squares (RLS) algorithm over LMS algorithms is provided. This algorithm is designed to provide similar performance to the LMS algorithm while reducing the computation time. This paper represents the performance analysis and comparison between LMS and RLS adaptive filter. Simulations are performed with these algorithms to compare both the computational burden as well as the performance for adaptive noise cancellation. Simulations show that RLS offers comparable performance with respect to the LMS. Power, Area and time required for both the algorithms are also analysed.

I. INTRODUCTION

In the digital signal processing the major problem occurs while designing the filter, at the receiver processing in order to transmit enormous amount of data within the filter band. Interest in adaptive filters continues to grow as they begin to find practical real-time applications in areas such as channel equalization, echo cancellation, noise cancellation and many other adaptive signal processing applications [1]. On the contrary in the case of adaptive filters, they are implemented wherever there is a need for the digital filter [2] characteristics to be variable adapting to changing signal. Adaptive filtering consists of two basic operations, the filtering process which generates an output signal from an input data signal, and the adaptation process which adjusts the filter coefficients in a way to minimize a desired cost function. This Adaptive noise cancellation [3] is the best possible solution for noise removal in a wide range of fields. A desired signal which is accidentally corrupted by some unwanted noise can often be recovered by an adaptive noise canceller using the least mean squares (LMS) algorithm. But the disadvantage in using LMS algorithm is its excess mean-squared error, or misadjustment which increases linearly with the desired signal power. This leads to deteriorating performance when the desired signal exhibits large power fluctuations and is a grave problem in many speech processing applications. From the standard point of performance, it is known that the Recursive Least-Squares (RLS) algorithm offers fast convergence and good error performance in the presence of any noise. This criterion makes this algorithm beneficial for adaptive noise cancellation. The adaptive filter automatically adjusts its own impulse response through the algorithm. The adaptive filter has self-regulation and tracking capacities. Adaptive filter can be divided into linear and nonlinear adaptive filter. Non linear adaptive filter has more signal processing capabilities. However, due to the non linear adaptive filter more complicated calculations, the actual use is still the linear adaptive filter.

The primary aim of an adaptive noise cancellation algorithm is to allow the noisy signal through a filter which suppresses the noise without disturbing the desired signal. The basic block diagram is given in fig.2.

The design tool should be chosen carefully as the signal processing applications enforce substantial limits on area, power dissipation, speed and cost. Digital signal processors (DSPs), Field programmable gate arrays (FPGAs) and application specific integrated circuits are the most widely used tools for the design of such application. The DSP used for very complex math-intensive tasks but can't process great
sensing rate applications due to its architecture. ASIC faces lack of flexibility and need extensive design cycle. The limitations of DSP and ASIC are overcome by single FPGA [4]. Therefore FPGA has become the best choice for the signal processing system designs due to their greater flexibility and greater bandwidth, resulting from their parallel architecture [5].

**LMS ALGORITHM**

Least mean square (LMS) algorithm is stochastic gradient algorithm developed by Widrow and Hoff in 1959 [6] and widely used in adaptive signal processing applications.

The LMS algorithm is a linear adaptive filtering algorithm, which consists of two basic processes:

1) A filtering process, which
   a) Computes the output of a linear filter in response to an input signal and
   b) Generates an estimation error by comparing this output with a desired response.
2) An adaptive process, which adjusts the parameters of the filter in accordance with the estimation error.

From Fig. 1, the output of the filter y(n) is given by

\[
y(n) = w^T(n)x(n)
\]

Where w(n) is weight vector and the error signal is given by

\[
e(n) = d(n) - y(n)
\]

Substituting (1) in (2) yields

\[
e(n) = d(n) - w^T(n)x(n)
\]

According to the mean square error criterion optimum filter parameters \(w_{opt}\) should make \(\xi = E\{e^2(n)\}\) as minimum.

The mean square error can be expressed as

\[
\xi = E\{d^2(n)\} - 2w^T r + w^T R_{xx}
\]

Where \(r_{xd} = E\{x(n) d(n)\}\), is a cross-correlation vector and \(R_{xx} = E\{x(n)x^T(n)\}\), is autocorrelation matrix. It can be seen that the mean square error \(\xi\) is a quadratic function of \(W\), and the matrix \(R_{xx}\) is positive definite or positive semi definite, so it must have a minimum value. Due to this gradient of \(W\) is zero, so the minimum when \(w_{opt}\) meet \(\Delta \xi = 0\) and when \(R_{xx}\) get a unique solution \(w_{opt} = R_{xx}^{-1}r_{xd}\) is considered.

In LMS algorithm the gradient of the instantaneous squared error can be used instead of the gradient of the mean square error. To update the weights for each iteration of the adaptive filter a step size parameter \(\mu\) is introduced to control speed of convergence of the algorithm.

\[
W(n+1) = W(n) + 2\mu e(n)x(n)
\]

The step size parameter affects the stability, convergence speed and steady state error [7-8], so to reduce steady state error small step size is used but it decreases the speed of the convergence of the algorithm. For better speed of Convergence the step size value is increased but this affects the filter stability.

**RLS ALGORITHM**

The Recursive least squares (RLS) adaptive filter [9] is an algorithm which recursively finds the filter coefficients that minimize a weighted linear least squares cost function relating to the input signals [10]. This in contrast to other algorithms such as the least mean squares that aim to reduce the mean square error. For the derivation of the RLS, the input signals are considered deterministic, while for the LMS and similar algorithm they are considered stochastic. Compared to most of its competitors, the RLS exhibits extremely fast convergence.

The RLS algorithm exhibits the following properties:

Rate of convergence that is typically an order of \(m\) magnitude faster than the LMS algorithm.

Rate of convergence that is invariant to the Eigen value spread of the correlation matrix of the input vector.

**RLS Algorithm Formulation:**

The idea behind RLS filters is to minimize a cost function \(C\) by appropriately selecting the filter coefficients updating the filter as new data arrives. The error signal \(e(n)\) and desired signal \(d(n)\) are defined. The error implicitly depends on the filter coefficients through the estimate

\[
e(n) = d(n) - d'(n)
\]

The weighted least squares error function \(C\) is the cost function we desire to minimize being a function of \(e(n)\) is therefore also dependent on the filter coefficients:

\[
c(w_n) = \sum_{\nu=0}^{\nu n-1} e^2(n)
\]

This form can be expressed in terms of matrices as

\[
R_x(n)w_n = r_d(n)
\]

Where \(R_x(n)\) is the weighted sample correlation matrix for \(x(n)\), and \(r_d(n)\) is the equivalent estimate for the cross-correlation between \(d(n)\) and \(x(n)\). Based on this expression we find the coefficients which minimize the cost function as

\[
w_n = R_x^{-1}(n)r_d(n)
\]

We have

\[
P(n) = R_x^{-1}(n)
\]

\[
= \lambda^{-1}p(n-1) - g(n)x^T(n)\lambda^{-1}p(n-1)
\]

Where \(g(n)\) is gain factor

With the recursive definition of \(P(n)\) the desired form
Follows
\[ g(n) = p(n)x(n) \]
We derive
\[ w_n = p(n)r_{d,d}(n) \]
\[ w_n = w_{n-1} + g(n)[d(n) - x^T(n)w_{n-1}] \]
\[ = w_{n-1} + \alpha(n)g(n) \]
\[ (11) \]
Where \( \alpha(n) = d(n) - x^T(n)w_{n-1} \) is a priori error. Compare this with the a posteriori error; the error calculated after the filter is updated
\[ e(n) = d(n) - x^T(n)w_n \]
\[ (12) \]
Thus we have correction factor as
\[ \Delta w_{n-1} = g(n)\alpha(n) \]
\[ (13) \]

RESULTS AND DISCUSSIONS

In order to compare the performance of LMS and RLS filters, respective filter algorithms were implemented in MODELSIM in an adaptive noise cancellation system.

In fig.3 Performance of adaptive filter is observed by using LMS algorithm. It is observed that by using LMS adaptive filter noise of the speech signal is reduced. In the above two figures the input signals are noisy audio signals. After reducing the noise by using both the algorithms we will get noisy-free signal. This can be measured by mean square error value. In fig.4 Performance of adaptive filter is observed by using RLS algorithm. It is observed that by using RLS adaptive filter noise of the speech signal is reduced and convergence time also gets reduced compared to LMS algorithm. These results show that RLS filter performs better than LMS filter and is most suitable in noise removal applications. In Table.1 represents power, area and time taken by these two adaptive filters. It shows that RLS filters are reducing the computational time compared to LMS filters.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>LMS Filter</th>
<th>RLS Filter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Logic elements</td>
<td>692</td>
<td>563</td>
</tr>
<tr>
<td>Static Power (mW)</td>
<td>18.05</td>
<td>18.23</td>
</tr>
<tr>
<td>Dynamic Power (mW)</td>
<td>48.08</td>
<td>35.09</td>
</tr>
<tr>
<td>Computational Time(µS)</td>
<td>0.022</td>
<td>0.012</td>
</tr>
</tbody>
</table>

Table.1 Comparison of parameters

CONCLUSION

In this paper, the superiority of RLS algorithm over LMS algorithm was provided. Simulations are done in order to compare the performance of these filters for noise cancellation. After thorough simulations, it is clear that the RLS algorithm is a highly suitable solution for adaptive filtering applications. RLS algorithm filter the convergence rate is faster than the LMS algorithm, the convergence is unrelated with the spectrum of input signal, filter performance is superior to the least mean squares algorithm, but its each iteration is much larger operation than LMS.

REFERENCES

GREEN METER MONITORING FOR SMART GRID HOUSEHOLDS WITH RENEWABLE SOURCE

ABSTRACT
The automatic meter reading is the common approach for establishing two way communication between the households and grid. Once smart grids came into line then everything changes and a net metering of energy is to be monitored and send the data and energy back to the grid. Since the energy is transferred back to the grid so we need to estimate the power transferring correctly. Proposed paper is based on new monitoring approach for the smart monitoring and here we are transferring the energy back to grid and for this purpose we are going to produce the power using a renewable energy resource wind. In this way the Net metering is possible and customer can earn benefits.

I. INTRODUCTION
There is incorporation of mobile technology into MSEB automation system due to the rapidly advancing mobile communication technology and the decrease in costs. We propose a system that collects the energy consumption from residential as well as corporate zones and send it directly to the central server where processing is done on that data for preparation of bills. AMR system can be divided into wire AMR system and wireless AMR system according to communication medium used. In existing system for collection of energy consumption data is that the representatives of MSEB monthly comes and visit every residential, take the snapshot and corporate and manually reads the consumption data from the meter. This collected data is recorded on a piece of paper along with a snapshot of the meter and finally submitted to the local MSEB office. There after the official’s read the snapshot and meter readings and then gives it to the local software for bill calculations and generation of bill. We as a consumer then make the payment for the received bill. This process is so much hectic process. Man made mistakes can be countless. Human resources wasted and many other problems do occur. We finally thought of building a system that will do the above process automatically. Microcontroller is attached with our traditional energy meters that will Scan the meter reading after particular period. Wirelessly, these meters readings will transmitted to the centralized server along with their unique meter number. This data will be processed by the server and automatically generates the bill. After generation of bill it will send to every consumer via SMS facility.

II. LITERATURE SURVEY AND RELATED WORKS
For measuring the usage of the consumption of energy electronic meter or electromechanical meter is fixed in existing system. Currently the meters take the recording kWh units. There are many AMR systems which are based on GPRS, Bluetooth, GSM technology. For long distance data transmission GPRS is used but it is impossible to implement as still the regular use of GPRS is not possible to common people. In GSM technology instant billing system is introduced but there may be chances of missing SMS which decreases system performance but in proposed system this problem is overcome.

III. SYSTEM ARCHITECTURE
In proposed system, we replaced the traditional meter by metering module which consist of metering IC and microcontroller which scans the energy meter automatically after every month and transmits this collected data to the remote station. The AMR module will be having digital meter analog meter, microcontroller and zigbee module. The output from the digital meter will be pulse. All the data’s will be stored in the temporary storage buffer. The microcontroller will be programmed such that for once in every thirty days the data i.e meter readings will be sent to the zigbee module. The power source will be operated by the Li battery of 5 volts. The AMR module will be in Sleep mode. Once in thirty days the module will transmit the reading through the antenna i.e Transreceiver through the GSM network. After receiving this data is stored in the database and process on it for the creation of bills. As soon as bills are generated, it will send to the consumers via GSM network. Here we are going to use a dc motor for the energy production and we are going to produce power using the wind vane which is renewable energy resource.
IV. SYSTEM DESIGN

This GSM energy meter is constructed using the microcontroller, a display, GSM modem and microchip. In this, meter is designed using embedded GSM modem and by using existing GSM network to send wirelessly its energy consumption value as SMS to energy provider. At the time of sending the message every time, this data is stored in the non-volatile memory (EEPROM). We use RTC module also with meter to have all recording of usage details about energy consumption. In the office, the this GSM unit will receive these collected data and local software will process on that data and calculate the total power consumption of each user. The system design can be discussed as two broad categories, Hardware implementation and software web portal design implementation.

4.1 HARDWARE IMPLEMENTATION

In this system power supply is provided to meter. A GSM unit shows the interfacing with the microcontroller. Transmission of usage details is send to office modem using user modem. Every consumer has unique number provided by corresponding authority. Hardware implementation includes following points as discussed below

4.1.1 POWER SUPPLY

Power supply is provided to microcontroller and other device from direct ac lines or from AC to DC adapter.

4.1.2 EXTERNAL EEPROM MEMORY

This EEPROM memory device is used for storing the data in the form of amount of unit the user consumed the energy at the time of transmission of SMS i.e. for off line process.

4.1.3 REAL TIME CLOCK (RTC)

RTC is used mainly for maintain the real time and date in the state of the system when power supply is off. RTC used for this system is DS1307 as it can run long years and also it has low cost.

4.1.4 IMPLEMENTATION

In The metering IC creates the output in the form of pulses which are counted using the default timer of PIC microcontroller unit. These pulses are identified by the transition of high and

low voltage of the automatic voltage regulator. A TTL inverter circuit is used to reverse the produced pulse before applying to the counter. For reading the data from the metering IC, microcontroller is programmed using software interfacing. When microcontroller reads the energy usage, this data is stored and updated in software. In this, meter is measured for 1 unit of energy is used to update time date information. EEPROM is used to stored the content.

4.2 SOFTWARE DESIGN IMPLEMENTATION

In software design part we have created web portal design. In this users are categorized as consumer and staff. Any time any where user can login using login option. Administrator can perform various tasks like registration, updating the database, message setting. Using serial port/ USB admin can connect the GSM modem to web portal. For that initially hardware setup is required then selecting particular port admin can connect to the system. For receiving SMS from meter. It is disconnected only when administrator disconnects it. Registration of consumers, preparation of bills is performed in this part.

4.2.1 AUTOMATIC BILL SOFTWARE

For managing all SMS readings, e-billing, updating the database we created web oriented GUI. It computes monthly bill, notify it to consumer through SMS facility and authority is provided for preparation of bills and analysis of collected of data.Net Beans 7.0 is used as integrated development environment with java framework. It is used to develop GUI and applications with the window form applications, websites, and web applications with proper coding. For this system source code is written in java. Once it is hosted user can access it through internet. In this application, we categorized users as a administrator and consumer. Administrators have various facilities like View customer details, View bill history and Add scratch card. New users have online registration facility through he/she gives all required details which is stored in database. Consumer also have various facilities provided like View current bill, View bill history, Recharge account, View account balance and Change pass

CONCLUSION

Electronic meters have been developed at the higher level. The GSM networks plays an important role because it has good coverage facility and to manage fault tolerance. In this system, it manages the energy flow. The proposed system is highly effective as it provides security, accuracy at the higher level. SMS rates are standard for sending message to every consumer as per their electricity usage. The collected data is transmitted to the centralized sever in very fast manner therefore this system will be
able to calculates the bills instantly.

REFERENCES:
ABSTRACT
A tracking technique that utilizing the RF (TX & RX) antenna in the HF range for the applications in the GPS-denyed (Indoor) environments and urban scenarios is proposed. The prototype model for this tracking system is realized and successfully demonstrated.

I. INTRODUCTION
The ability to accurately track the location of a source in complex and GPS-denyed environments is useful for a wide variety of applications such as fire and earthquake rescue missions and for various security systems. Another application of this system pertains to real time positioning and tracking of robotic platforms that are used to handle tactical situational awareness in complex environments including urban and indoor scenarios. At present i.e. in the existing system the information is collected by Google; many secrecy groups have judged this collection of information by Google as a security hazard. The question they ask is that what happens when this information gets into the hands of a third party? Also such a database will be on the various hands of government organizations as the platform for their various operations. But Google entitles that the information collected will not be given to the third party. The disadvantages of the existing system are: no GPS, only traced in open sky, getting the values only in longitude and latitude.

This project deals with transmission of received satellite data from open to sky system to closed loop hardware placed inside the building at each floor with a near field communicator, which communicates with the encoder. The purpose is to visualize the individuals inside the building which is not possible by GPS technology as the noise ratio will be high inside the building. Encoder can be used to recognize as altitude i.e. to visualize the floor at which the individual is available. Using these data we can develop an application for security reason as we are receiving longitude, latitude, and altitude values. Based on these data we can find the exact location of a person even inside the building, also we can find whether any intruder had entered the building etc. The advantages of the proposed system are: each person monitoring, using global position system, tracing inside the building by using RF technology and attitude measurable.
II. DESCRIPTION AND WORKING

The RF module consists of an RF transmitter and RF receiver which operate at 433 MHZ. The encoder IC HT12E converts incoming parallel data to serial data i.e. parallel to serial conversion takes place. RF Transmitter transmits this serial data wirelessly through its antenna connected at pin 4. The transmission occurs at the rate of 1Kbps - 10Kbps. The transmitted data is received by an RF receiver which operates at the frequency as that of the transmitter. The RF module is used with a pair of encoder and decoder. The encoder encodes the parallel data for transmission feed, while reception is decoded by a decoder. HT 12E - HT 12D, HT640-HT648, etc. are some of the commonly used encoder and decoder pair ICs. We deploy these encoder sections as shown in Fig 1.3 in a GPS denied environment, for example say as in each and every floor of the building. So whenever the person is moving in the floor, RF transmitter will be transmitting the signals, and RF receiver as shown in Fig 1.2 receives the incoming signals hence we can find the altitude values i.e. in which floor the person is present or moving. And through UART in the receiving section we monitor it in the PC and through the WSN we connect it to the GPS as shown in Fig1.1 and hence we get longitude and the latitude values of the location. The flow chart representation of the proposed technique is given below.

III. DESIRED OUTPUT

The output is monitored in PC by using the visual basic software. The below Fig 1.5 shown is a snap shot of the output, here the GPS values are taken in the $GPGGA format. In the below figure “lat” indicates the latitude value and the “lon” indicates the longitude values, and the “floor” indicates the floor of the building in which person is moving.

CONCLUSION

A source tracking technique utilizing HF antenna for applications in GPS denied environments such as indoor and urban scenarios is proposed. The system prototype has been tested for various scenarios with different levels of multipath.
The test results show that a source in a complex GPS-denied environment can be successfully localized using the proposed approach.

REFERENCE


ABSTRACT
Shared memory switch fabric is high speed switches. To implement scalable architecture dynamic address allocation and efficient internal timing management. Here we are using 3D NOC bc it can reduce area and power. This paper presents the architectural design of a 4\*4 shared memory switch fabric which operates at 20Gbps. The architecture uses barrel shifter mechanism to perform parallel writes into different banks of buffers without the need to have multiplexer with higher speed. Broadband networks satisfy to carry integrated traffic involving different types of information such as voice, video and data. Shared memory switch architectures provide access to shared memory for all input ports at the same time. A central controller is managing the read/write operations in/out of shared memory. Although the central controller can be a bottleneck by in heavy loads, but based on management algorithm that is deployed in central controller, shared memory architecture could achieve 100% throughput.

I. INTRODUCTION
Switch fabric is a network topology in which network nodes interconnect via one or more network switches. Because a switched fabric network spreads network traffic across multiple physical links, it yields higher total throughput than broadcast networks. It provide point-to-point connectivity between processor and peripheral devices are sometimes referred to as fabric. Network traffic control is the process of managing, controlling or reducing the network traffic, particularly Internet bandwidth. The capacity of a switch fabric is highly depends on how good its architecture is designed and then how good it is implemented in practice. The function of switches is to make routing decisions and forward the packets from input to the appropriate output. It is possible that multiple arriving packets from different input ports have to be routed to the same output port. Shared memory is memory that may be simultaneously accessed by multiple programs with an intent to provide communication among them or avoid redundant copies. Shared memory is an efficient means of passing data between programs. Depending on context, programs may run on a single processor or on multiple separate processors. Using memory for communication inside a single program, for example among its multiple threads, is also referred to as shared memory. Shared memory switch architecture has also its own challenges. Shared memory switch needs to operate much faster than input data rate, because input ports are time multiplexed to access the shared buffer. Switching and buffering operations should be done by controlling memory read/write functions. However, reducing access time to the shared memory physically restricted. In addition, the main area of the chip is occupied by shared memory and its related circuits. Shared memory switch architecture would be expensive; moreover, if the packet size is not a multiple of memory width, it would make difficulties to design a shared memory. Dividing packets to the fixed size cells can be helpful in dealing with this problem in high speed networks.

RELATED WORK
The switch fabric is divided into four planes (plane 0 to plane 3) that are used to evenly distribute traffic across the switch fabric. Each switch fabric plane is independent and is not synchronized with one another. Each cell traverses the switch fabric using a single switch fabric plane. (Cells are not bit-sliced across the switch fabric.) Congestion can occur in the switch fabric if multiple input data cells are being switched to the same destination egress MSC. Typically, little congestion exists between the S1 and S2 stages because there is little or no contention for individual links between the switch components. However, as multiple cells are switched from the S2 and S3 stages to the same egress MSC, cells might contend for the same output link. To reduce the possibility of data cells being delayed during periods of congestion, the switch fabric uses 2 times (2x) speedup to reduce contention for S2 and S3 output links. The switch fabric achieves 2x speedup by providing two output links for every input link at the S2 and S3 stages. A 4\*4 scalable shared memory ATM switch has been described which is implemented by FPGA technology. In the proposed architecture, there is an address controller that consists of free cell address queue, write cell address controller and read cell address controller. When a new cell with the fixed size of 16B is entered, its write address in the shared buffer is linked to the end of a special linked list. When a cell is being from shared memory its address is set free and inserted in free address queue. The design has used a FIFO to
store empty addresses. Shared memory utilizes scalable pipeline RAM system and can support high bandwidth for high switching throughput of the shared memory. The implemented design is operating in 40MHz. The proposed design has initial latency which is driven by SPRAM memory and also it is not cost effective from hardware implementation point of view due to the use of another memory as an empty address queue.

**OVERVIEW OF THE SHARED MEMORY ARCHITECTURE**

In the shared memory switch architecture, output link share a single large memory, in which logical FIFO queues are assigned to each link. Although memory sharing can provide better queuing performance than physically separated buffers, the prime purpose of ATM switch is to route incoming cells, arriving a particular input link to the output link, which is also called the output port. Associate with appropriate route, the inputs and outputs in a crossbar switch are connected at switch point called crossbar points like a matrix manner. Shared memory switch consists of a single dual-ported memory shared by all inputs and outputs lines, packets arriving on all input lines are multiplexed into a single stream that is fed to the common memory for storage, inside the memory, packets are organised into separate output queues, one for each output line, simultaneously, an output stream of a packet is formed by retrieving packets from the output queues sequentially, one per queue, the output stream is de-multiplexed and packets are transmitted to the output lines, from different input lines may be destined for the same output, there are three possibility for a queuing in a packet switch, buffer at the input (input queuing) buffer at the output (output queuing). Shared memory switch architectures provide access to shared memory for all input ports at the same time. A central controller is managing the read/write operations in/out of shared memory. Although the central controller can be bottleneck in heavy loads, but based on management algorithm that is deployed in central controller, shared memory architecture could achieve 100% throughput.

**IV. PROPOSED SHARED MEMORY SWITCH ARCHITECTURE**

The shared memory architecture is constructed by interleaved memory banks that are implemented internally with SRAM memory blocks. The proposed switch architecture has five main components.

- Input FIFO;
- Crossbar;
- Shared memory;
- Memory controller;
- 3D NOC;

**INPUT FIFO**

Input part of the switch architecture includes four input ports which can accept serial data. Each cell is 64byte. First of all, incoming packets are stored in input FIFOs. Packets have fixed size called cells. The cell size is 64 Byte which consists of 16 words of 4 bytes. All inputs are stored into the memory location and fetched the data.

**CROSSBAR**

Crossbar switch is a switch connecting multiple inputs to multiple outputs in a matrix manner. Originally the term was used literally, for a matrix switch controlled by a grid of crossing metal bars, and later was broadened to matrix switches in general. It is one of the principal switch architectures, together with a rotary switch memory switch and a crossover switch. The crossbar module makes decision about the memory location in which the incoming cells should be written. The algorithm for getting free address location of memory banks. The function of sorter module is such that in the first clock, A0, B1, C2 and D3 are entered the crossbar and based on barrel shifting algorithm in crossbar they go diagonally across the memory banks. I/O port make decision to allow data through crossbar to generate address to store the data in the register bank. Here it has one more FIFO to buffer the input data in case of any overflow occurs in register bank. Incoming data from different neighboring routers, or from the connected processing element, are first stored in the input buffer and waiting to be processed. This step is considered as the first pipeline stage of the switch. After being stored, the flit is fetched form the FIFO buffer and advances to the next pipeline stage. The destination addresses (data0, data1, data2, data3) are decoded in order to extract information about the destination node’s location (register bank).

**SHARED MEMORY**

Shared memory switch architectures provide access to shared memory for all input ports at the same time. Most of accesses to the interleaved memory banks are sequential. Another words, a unique address are used in order to access all banks. In this paper we develop a novel architecture by merging the remarkable properties of multi port memories and Interleaved memories.
MEMORY CONTROLLER

Memory controller is responsible for managing the allocation of addresses in memory banks and it also manages read and write operations. An algorithm is implemented to allocate addresses for incoming cells. This algorithm is also used to select a word when a cell must be read into the special output port. Memory controller can add an address to a linked list and fetch a free address from the free addresses linked list in one clock. There is a linked list for each output port. To insert a request in SRAM memory, memory controller requires two accesses to this memory. In first access, it will register the cell address which is the address of the location that the cell is. There is a pointer as a head pointer for each linked list. The Management and updating process of these pointers would be performed by First-Last module. When the memory controller wants to fetch an address from an inked list, it refers to its head pointer and then read the address that it points to. After that, memory controller sends this address to the memory banks for reading data which belong to this address. Moreover, after reading out from memory banks, these addresses are set free from their linked list and should be inserted to the free addresses linked list. Consequently, there are two accesses in a readout operation. The first access is for reading an address from a linked list and the other access is for inserting the freed address to the free addresses.

3D NOC FIFO

Many issues in 2D NoC architecture and design have been studied for the past several years such as design flow, implementation evaluation and design space exploration. However, 3D NoC architectural evaluation is limited as the technology is still under active research many Organizations. In, they reported 3D NoC performance Evaluation for data parallel using cycle accurate simulator, showing improvement of about 34% over 2D architecture. Each input port has one buffer built using 16 words FIFO Based dual port RAM architecture to support a maximum of 16 data blocks transfer. As XY routing is deadlock free and we do not implement priority packets transfer, the virtual Channel implementation is not useful. We use round robin Arbitration for output port selection when there is more than one input requesting the same output route. Switching method is used for packet transfer in the NoC because it does not require large buffer and has lower latency. For the routing, deterministic coordinate based routing is implemented using XYZ coordinate where each packet will travel first in the X direction followed by Y direction and finally through Z direction (vertical). We use multiplexer based crossbar because it uses less area as well as less power compared with matrix crossbar. Each router has vertical port for connection to other router in the top tier using microbumps. 3D NOC offers greater device integration, faster vertical interconnects and more power efficient interlayer communication. Due to the beneficial attribute of short through silicon via in 3D IC technologies however TSV pads used for bonding to a wafer layer, occupy significant reduction in 3D IC’s yield and high power densities compared to 2D NOC’s, power efficient and low cost inter layer communication. Area and power improvements compared to a symmetric 3D NOC’s.

V. RESULTS

The proposed shared memory architecture has been synthesized and implemented by Xilinx ISE 12.3 tools. Also
the architecture is implemented using VHDL programming language. The two critical factors for evaluating a hardware design are hardware speedup which is shown by operational frequency and the design hardware complexity.

VI. SIMULATION AND COMPARISON RESULTS

In this paper we are using 3D routers, compared to 2D routers area, power reduced ,speed is increased.

AREA COMPARISON

In this paper, by using with round robin method we are reducing area is shown in table I.

**TABLE I: AREA REDUCTION**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>AREA(LE'S USED)</th>
<th>SPEED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without round robin method</td>
<td>1469</td>
<td>235.41 MHZ</td>
</tr>
<tr>
<td>With round robin method</td>
<td>1308</td>
<td>217.34 MHZ</td>
</tr>
</tbody>
</table>

**TABLE II: PIPELINE**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>AREA</th>
<th>SPEED</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without pipeline</td>
<td>1308</td>
<td>217.34 MHZ</td>
</tr>
<tr>
<td>With pipeline</td>
<td>1364</td>
<td>240.27 MHZ</td>
</tr>
</tbody>
</table>

**TABLE III: GATED CLOCK TECHNIQUE**

<table>
<thead>
<tr>
<th>TYPE</th>
<th>POWER DISSIPATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without gated clock</td>
<td>130.25 mw</td>
</tr>
<tr>
<td>With gated clock</td>
<td>125.34 mw</td>
</tr>
</tbody>
</table>

Also, increasing data width results in more wire length which in turn results in more capacitance effect in hardware design because the wire capacitance is a function of wire length and coupling capacitance between adjacent wires. In fact, there are some tradeoffs in choosing appropriate internal data width. For a given system throughput, smaller data width forces us to increase the frequency of clock pulse to keep up with the required throughput. Moreover, smaller data widths leads to less delay due to less routing resources in FPGA, less capacitance effect and therefore less area overhead . Also it results to less power consumption,

CONCLUSION

In this paper has presented the architectural details of a scalable, high speed 4*4 shared memory switch fabric for high speed networks. This design has used FPGA technology to achieve the desired throughput. switch architecture implements shared memory architecture by using interleaved memory banks and barrel shifter method. A memory controller is designed to manage accesses to the shared memory by applying linked list structure to maintain packet addresses in the shared buffer. to provide the desired throughput and less delay due to reduction of the routing resources capacitance effect, less area overhead and less power consumption. we are implementing FPGA implementation.

REFERENCES


ABSTRACT
This paper represents the development and characterization of a robot with automatic wireless recharging capabilities for security. This system consists of two sections: Warfield section and the control room section. In the former section, Passive IR motion detectors are usually designed to provide an indication in response to detecting IR that is indicative of motion of the object. Someone enters secured places, immediately it will send an indication to the control room section through wireless communication. ZigBee modules are used for wireless communication in both sections. At the same time, the camera keeps on capturing images at the host place and saves them into a computer. When the security people in supervisory room get an indication to the host section by alarm, they can view all information of the war field section images by PC and they can operate the weapons if the enters people were opponent persons. When the on-board battery is too low, people in the control room can operate the robot to reach near the docking station for wireless recharging.

I. INTRODUCTION
With the rapid development of microelectronics and wireless communication technologies, mobile robots are being widely used in industrial automation, home automation, hospitals, entertainment, space exploration, military, etc. In recent years, as the size and the cost of mobile robots have decreased significantly, they are finding increasing uses in home environments. More and more mobile robots are now working around us and they will help us a lot in our daily lives. Various home robots have been proposed to do housework such as cooking, cleaning, house plant watering, pet feeding, and taking care of children. Security is one of the typical applications of robots. In traditional security systems, monitoring devices are usually mounted on fixed locations such as doors, windows, and walls. A home surveillance system based on an embedded system with multiple ultrasonic sensor modules has been presented in [1]. If any intruder passes through the ultrasonic sensing area, the ultrasonic transmission will be blocked by the human body. The authors use a Majority Voting Mechanism to process the output signals from multiple ultrasonic receivers. Although most of the home security systems can work normally, it is inconvenient to maintain a lot of sensors and accessories everywhere in the rooms. Due to irregular room structures and various physical limitations of sensors, there often exist some regions that cannot be covered by the sensors. In view of these drawbacks, a more flexible and more efficient solution for home security is to deploy a mobile robot equipped with surveillance devices such as pyroelectric infrared sensors and cameras.

In most of the home security applications, the mobile robots often have to work continuously for several days or even several weeks without human intervention. In addition to being robust in their hardware and software design, such robots must be capable of long-term autonomy with sustainable energy. Although some methods exist for energy conservation of mobile robots, a docking station remains widely used for recharging as most modern robots use batteries for their energy resources. In most of the home security applications, the robots often have to work continuously for several days or even several weeks without human intervention. In addition to being robust in their hardware and software design, such robots must be capable of long-term autonomy with energy. Although some methods exist for energy conservation of mobile robots, a docking station remains widely used for recharging as most modern robots use batteries for their energy resources. To keep the autonomous mobile robot in continuously working condition, power supply is an important issue. Typically, rechargeable batteries may provide few hours of peak usage. Recharging is necessary before the power of the batteries has exhausted. The docking station with an wireless recharging is implemented in this paper.
II. SYSTEM DESIGN

The architecture consists of a LPC2148 Microcontroller, PIR sensor, Ultrasonic sensor, LCD display, two ZigBee modules and two coils. When a person or motor vehicle enters into a monitored area, PIR motion detectors will send a signal to the microcontroller as well as it will send an indication to the control room through alarm. Ultrasonic sensor is used for obstacle detection. ZigBee modules are used in both control room and Warfield sections for wireless communication. Coils used in docking station and robot are used for wireless recharging. The Hardware components of proposed robot and prototype are given below.

A. The Surveillance Robot

The hardware architecture of the surveillance robot is shown in Fig. 1. The two DC motors provide power for rotating the two rear wheels. The voltage detection module is mainly used for real-time detection of the battery status. The robot depends on two infrared sensors to perform obstacle avoidance and to detect the human body. The robot communicates with the control room section through ZigBee. The person from the control room section can control the robot using ZigBee and can move the robot to the docking station for wireless recharging.

B. Docking Station

The hardware components of the docking station include a charging module, two transformers and power supply. It consists of driver circuit and timer circuit to generate the frequency. Coils will produce the magnetic flux.

C. ZigBee module

It is a wireless data transfer interface and one of the module in the prototype based on 802.15.4 standard. It works at 2.4GHz frequency which means smaller board and antenna size. It suits for High level communication protocols and it will transfer a power of 1mw. Serial communication is used for ZigBee modules.
III. WIRELESS CHARGING SYSTEM

The proposed wireless charging system essentially consist of electro-magnetic induction.

A. Electro-Magnetic Induction:

Electro-magnetic induction wireless systems have existed for decades [4]. Two kinds of power transmission via electromagnetic field are possible; the first is accomplished by using an electrical dipole and the second is by using a magnetic dipole. The electrical dipole is used since it consists of a simple transmitter-receiver resonant connected to it to send and receive an electrical signal moving in an electrical field. This equipment is called radio waves transceiver. It usually operates between 1 MHz to 400 MHz in radio frequency transmission. The magnetic dipole is a well known technology without much application due to the fact that the magnetic field dipole generation is c times less than the electric field dipole. Electro-magnetic field is still under investigation and companies such as Braun, General Motors and Toyota are designing equipment using electro-magnetic wireless transmission. There are many fields in this technology which can be investigated, studied and applied for various purposes. The proposed circuit consists of a coil around a permanent magnet, which receives AC voltage from a transformer that is directly connected to the power supply[5]. The transformer converts the single phase voltage from 120 V to 24 V. Another coil connected to the 24 AC secondary coil of the transformer is wound around a permanent magnet with a magnetic flow ready to embrace another coil with a permanent magnet in an external device called receiver. In other words, it is a linear transformer which is connected at a full rectified wave bridge.

IV. SOFTWARE DESCRIPTION

A. Visual Basic 6

Visual Basic is a third-generation event-driven programming language and integrated development environment (IDE) from Microsoft for its COM programming model first released in 1991. Visual Basic was designed to accommodate beginner programmers. Programmers can create both simple and complex GUI applications. Visual Basic was derived from BASIC and enables the rapid application development (RAD) of graphical user interface (GUI) applications, access to databases using Data Access Objects, Remote Data Objects, or ActiveX Data Objects, and creation of ActiveX controls and objects. A programmer can create an application using the components provided by the Visual Basic program itself. Programs written in Visual Basic can also use the Windows API, but doing so requires external function declarations.

1) System requirements:

Operating system- Windows 95, Windows 98, Windows XP, Windows 7 etc.

Visual Basic 6 is used to control the robot from host place through PC. To connect the device we need to enter the Comm Port Number. In this proposed system ZigBee is connected to Comm Port 2.
By using the keys in visual basic we can control the robot. If any person enters into the warfield section, PIR sensor sends the signal to the PC through ZigBee and it will be displayed in the PIR robotics window.

**Fig. 5. Screen shot of PIR robotics in visual basic**

We have presented the design and implementation of a surveillance robot with automatic wireless recharging capabilities for security. Via visual basic’s keyboard operator will give commands to robot and robot moves as per the commands given. By seeing the live feed of camera the robot can be operated.

**REFERENCES**


ABSTRACT
This paper distinguishes two different approaches for tracking a target object in a real-time video dataset. In equivalence to the still images, video sequences render more information on how objects and their scenarios vary overtime. It is always an ambitious task in order to formulate an efficient appearance model. Imprecise extraction of target object and background in model adaptation causes a serious drift problem which leads in degradation of tracking performance. During Pre-processing stages, challenges like illumination, pose variation, occlusion are to be looked upon. This problem can be overcome by continuous detection approach of the target object in each frame. In first approach we formulate a binary classification with the help of a naive Bayes classifier in a compressed knowledge base(domain). In second approach we formulate a simplified version of Kanade-Lucas-Tomasi (KLT) technique to precisely predict and robustly track facial features of the target object.

I. INTRODUCTION
Over the decades of research on object tracking, a huge number of tracking algorithms have been formulated and enhanced in each particular application. Many assumptions concerning the object, camera movement, the scene have been brought in to constrain the tracking. However, object tracking continues to be a challenging problem owing to appearance change occurred by illumination, pose variation, motion blur, occlusion and few others. An effective object tracking is of first and major important for any tracking algorithm that has to be implemented[4-7]. Different approaches in object tracking used in past decades are given below.

Geometry-based approaches
Early efforts on object recognition and tracking were concentrated on using geometric models of objects to account for their appearance variation due to standpoint and illumination variation. Much attention was made to draw out geometric primitives like lines, circles etc., that are constant to viewpoint change[10].

Appearance-based algorithms
In variation to early attempts on geometry-based object recognition employments, nearly recent efforts have been centred on appearance-based techniques as most advanced feature descriptors and pattern recognition algorithms are formulated [3]. Most accurately, the eigenface methods have been pulled in much attention because it is one of the first face recognition systems that are computationally efficient and comparatively accurate.

Feature-based algorithms
The main idea of feature-based object recognition algorithms lies down in detecting interest points, often take place at intensity discontinuity, which are invariant to change due to scale, illumination and transformation. The scale-invariant feature transform (SIFT) descriptor, proposed by Lowe, is effectively one of the most extremely used feature representation schemes for vision applications[3]. On the other side, they also necessitate advanced indexing and matching algorithms for effective object recognition[3] [2].

Two different methods are used in this paper for tracking a target object in a real time application. Naive-bayes classifier separates the target object from the surrounding as it is a discriminative approach and the object is well represented by the features extracted in the compressive domain. This algorithm involves four main steps. First step is ‘frames’: the video sequence is converted into frames. Second step is ‘sampling’: the positive and trained negative samples are extracted from each frame. Third step is ‘compression and feature extraction by algorithm’: both samples from each frame are compressed with the help of sparse matrix and object features are extracted by naive-bayes algorithm. Fourth step is ‘classifier and its updater’: tracked object on the rectangular window position for each frame gets updated by classifier update based on object movement. Second method,
Kanade-Lucas-Tomasi (KLT) algorithm detects the facial expression that has to be tracked from a video frame. This algorithm involves three main steps. First step is ‘Face detection’: the target object (face) is detected from the first frame of a video sequence. Second step is ‘Facial features identification’: KLT algorithm tracks a set of feature points across the video frames. Third step is ‘Face tracking’: on initializing a geometric transform estimator, which calculates the translation, rotation and scale of the tracked face between the frames[15].

The remaining section of this paper is prepared as follows: section II describes the Methodology. Section III shows the Processing stages. Section IV gives the Comparative performance results and discussion. Section V deals with the Conclusion.

II. METHODOLOGY

Database

In this paper a real time video dataset is used where the illumination and the resolution of each video varies from the other. This dataset is challenging because some videos are of a low resolution, the illumination is very poor and some other videos are of high resolution with good illumination. So tracking in these two extremities has been done by these two algorithms.

Naive-Bayes Classifier

A naive-bayes classifier is a simple probabilistic classifier based on applying Bayes’ theorem with strong (naive) independence assumptions. Bayesian Classification provides a useful perspective for understanding and evaluating many learning algorithms.

Our tracking model is generative[1] as the object can be well represented based on the characteristics extracted on the compressive domain. It is also discriminative[14] because we use these features to separate the target from the surrounding background via a naive Bayes classifier. Discriminative algorithms pose the tracking trouble as a binary classification task to find the decision boundary for distinguishing the target object from the background. Avidan[7] broadens the optical flow access with a support vector machine classifier for target object tracking. Collins et al[8] demonstrate that the most discriminative features can be learned online to separate the target object from the background. Grabner et al[9] propose an online boosting algorithm to choose features for tracking. However, these trackers[7–9] only use one positive sample (i.e., the current tracker location) and a few negative samples when updating the classifier.

C. Block Diagram

Video sequence is given as input. It is converted into frames. Sampling is applied to first frame and to the corresponding frames. In processing stage, a series of following processes take place. Classifier, tracks the object in first frame and updater helps to track all other frames.
I. Kanade-Lucas-Tomasi (KLT) algorithm

In order to avoid tracking all pixels in each frame and within a given target object, a variety of techniques for tracking objects based only on a fixed set of feature points have been proposed in many literatures. This is due to its simplicity and few assumptions made about the fundamental image.[11] The KLT tracks an object in two basic steps, it locates the trackable features in the first frame, then tracks each one of the detected features in the remaining frames by means of its displacement. Despite being more than 20 years old, the KLT algorithm is still widely used, as it operates in a fully automatic way and its performance in terms of feature point quality and runtime is competitive compared with other methods.[12]

J. Block Diagram

Video sequence is given as input. Face detection is done by Viola-Jones detection Algorithm. Image features like facial expressions are the extracted. Face tracking is done by KLT Algorithm.

K. Face detection

Detecting face from a video sequence is done by cascade object detector system, uses the Viola-Jones detection algorithm and a trained classification model for detection.[13] Detector is configured to detect faces, but it can be used also to detect any other objects.

L. Facial features identification

The KLT algorithm tracks a set of feature points across the video frames. Once the detection locates the face, the next step in the example identifies feature points that can be reliably tracked.

M. Face Tracking

To track the face over time, this example uses the Kanade-Lucas-Tomasi (KLT) algorithm. While it is possible to use the cascade object detector on every frame, it is computationally expensive. It may also fail to detect the face, when the subject turns or tilts his head. This limitation comes from the type of trained classification model used for detection. The example detects the face only once, and then the KLT algorithm tracks the face across the video frames.

III. COMPARATIVE PERFORMANCE RESULTS AND DISCUSSION

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Compressive Naïve Bayes Algorithm</th>
<th>Kanade-Lucas-Tomasi algorithm (KLT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Detection Time</td>
<td>0.68sec</td>
<td>0.54sec</td>
</tr>
<tr>
<td>Accuracy Rate</td>
<td>94%</td>
<td>96%</td>
</tr>
<tr>
<td>Illumination Change</td>
<td>Overcome</td>
<td>Overcome</td>
</tr>
<tr>
<td>Low Resolution</td>
<td>Detected</td>
<td>Detected</td>
</tr>
</tbody>
</table>

For each parameter the performance of two algorithms vary. The Input, Face detection and Face tracking results for both algorithms are shown in below figures.

![Fig 1. Input Video Frame Image](image1)

![Fig 2. Block Diagram of KLT Algorithm](image2)
CONCLUSION

Challenges like Illumination, Pose variation, Occlusion and resolution change have been achieved. Tracking a target object from a video sequence is implemented by naive-bayes classifier in compressive domain and by Kanade-Lucas-Tomasi (KLT) algorithm with a high accuracy rate. This paper have achieved prominent detection and tracking results with real time video dataset of varied resolution. In future, these both techniques can be used to track multiple target objects in a video sequence.

REFERENCES

ABSTRACT
Image Retrieval system is an effective tool for handling immense image databases. The challenge is in retrieval efficiency in case of having all kind of images as query. This depends on the features it utilizes to execute the similarity measurement. In this paper a content based image retrieval system has been designed as diagnosis assistance in medical applications. This paper outlines features of image that are extracted and used as the fundament for a resemblance match between images. The image retrieval techniques based on color and texture features are compared and assessed based on non-medical images and medical images. In regard to the huge size of database, the system has furnished beneficial outcomes.

I. INTRODUCTION
There is an increase in the interest over the digital images during the past few years. Users in many professional areas are overworking the chances extended by the ability to access and control outback-stored images[5]. The process of locating an image in a large, wildly different collection can be a source of significant thwarting. The troubles of image retrieval are realized, and the solutions are explored as an increase in research and development. Adenotation of the growth can be acquired from the number of journal articles published over a period on the field. Problems with conventional methods of image indexing have guided to the development in techniques for retrieving images on the fundament of extracting features such as color, texture and shape – an engineering, mostly mentioned as Content-Based Image Retrieval (CBIR). After a long period of more concentrative research, CBIR technology took out of the research lab and into the world, in the class of commercial products. Yet, it still lacks compatibility, and is not used on a substantial standard. Due to the lack of definite results regarding the efficiency of CBIR techniques, the confidence is lowered in implementing over real-life applications. And it is not evident where and how CBIR can be most beneficial. Content based image retrieval (CBIR) functions on an entirely unique precept, retrieving stored images from a database by measuring features extracted from the images[7]. The CBIR essentially works on two main operations; firstly feature extraction, which is extracting feature set from the query image which is mostly known as feature vectors which correspondsto the content of each image in the collection[3]. The second task is resemblance measurement, which fundamentally measures the distance between the query image and each image in database using the worked out feature vectors and thus retrieves the most confining match/matches[12].

II. DATABASE
In this paper, two datasets of two thousand images each are been created while one is a non-medical image dataset consisting of random images and other is a medical image dataset consisting of lung and retina.

<table>
<thead>
<tr>
<th>CLASS</th>
<th>NO. OF IMAGES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Medical Images</td>
<td>2000</td>
</tr>
<tr>
<td>Medical Images- Lung</td>
<td>1000</td>
</tr>
<tr>
<td>Medical Images- Retina</td>
<td>1000</td>
</tr>
</tbody>
</table>
III. BLOCK DIAGRAM

IV. FEATURE EXTRACTION

A. Color Features:
Color is a crucial prompt for image retrieval. The image retrieval established on color features has demonstrated efficient for a large image database. Color descriptors of images can be global and local. Global descriptors determine the overall color content of the image but with no selective information about the spatial organization of these colors[10]. Local descriptors associate to specific areas and depict the spatial placement of the colors. Generally colors are determined in three dimensional color spaces. These are RGB (Red, Green, and Blue), HSV (Hue, Saturation, and Value). A color histogram depicts the distribution of colors within an entire image or within a fixed area[8]. Color searches will commonly require quantizing color histograms. The histogram does not consider semantic data, and two images with similar color histograms can be of complete different contents.

B. Texture Features:
Texture is the characteristic appearance of a surface having a tactile quality and each having characteristics of homogeneity[9]. It comprises crucial data about the geomorphic arrangement of the surface. It also depicts the state of the surface to the close environment. In simple words, it is a feature that depicts the typical physical composition of surface. Texture characteristics include: Coarseness, Contrast, Directionality, Regularity, Line-likeness and Roughness. Texture is one of the most significant features of an image. It is qualified by the spatial distribution of grey levels in the neighborhood. Primarily, the image is decomposed into four sub-images[6]. The energy of all sub images is estimated at the same standard. These energy level measurements are stored to be used later.

V. RESEMBLANCE MEASUREMENT

A. Color Features:
Quadratic Distance Metric equation is used in deducing the distance between two color histograms. This paper used Global color histograms in acquiring the color features of images[13].

B. Texture Features:
The query image is decomposed and the energy is calculated. Euclidean distance is calculated between the query image energies and energies of ith image in the database[4]. This process is repeated until every image in the database is equated with the query image. At the end we have an array of Euclidean distances, which is then sorted. The uppermost images are then exhibited as an outcome of the texture search.

VI. PERFORMANCE METRICS

A. Precision:
Precision gives the state or degree of being precise; the quality of having high accuracy and consistency of retrieval system. Precision is one of the most important measures used in calculating the effectiveness of an image retrieval system[1].

\[
\text{Precision} = \frac{\text{No. of similar images retrieved}}{\text{Total number of images retrieved}}
\]

B. Recall:
Recall measures the speed of the performance of retrieval system. It also measures the efficiency of CBIR system in finding the similar images in a search for a query image[1].

\[
\text{Recall} = \frac{\text{No. of similar images retrieved}}{\text{Number of similar images in the database}}
\]

VII. RESULTS AND DISCUSSION

Since, the relevant images in database for a query image(100) are more than retrieved images(10) precision and recall are same in this case. The efficiency and accuracy of image retrieval is very high for non-medical images compared to
medical images.

<table>
<thead>
<tr>
<th>FEATURE TECHNIQUES</th>
<th>PRECISION/RECALL</th>
<th>RETRIEVAL TIME</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Color</td>
<td>Texture</td>
</tr>
<tr>
<td>Medical Img1</td>
<td>0.6</td>
<td>0.6</td>
</tr>
<tr>
<td>Medical Img2</td>
<td>0.6</td>
<td>0.3</td>
</tr>
<tr>
<td>Medical Img3</td>
<td>0.5</td>
<td>0.6</td>
</tr>
<tr>
<td>Non-Medical Img1</td>
<td>0.9</td>
<td>0.8</td>
</tr>
<tr>
<td>Non-Medical Img2</td>
<td>1</td>
<td>0.6</td>
</tr>
<tr>
<td>Non-Medical Img3</td>
<td>0.5</td>
<td>0.7</td>
</tr>
</tbody>
</table>

The average precision for color based and texture based retrieval is around 0.8 and 0.7 respectively, while medical images have less than 0.6.

Therefore color based search is efficient for large databases in case of non-medical images. And average retrieval time of medical image and non-medical image is less for texture based retrieval[14]. In case of medical images, we have to employ performance measures to a greater extent so that most beneficial outcomes are obtained.

**CONCLUSION**

The extent to which CBIR technology is currently in use is clearly still very limited. In particular, CBIR technology has so far had little impact on the more general applications of image searching. Only in very specialist areas such as crime prevention has CBIR technology been adopted to any significant extent. We have introduced a system for seeking and retrieving images to aid the practitioner in detecting and diagnosing lesions and tumors. In regard to the huge size of database, the system has furnished beneficial outcomes. The efficiency can be improved by implementing both techniques as a combined technique. Employing performance measures to a greater extent we can surely furnish with the most beneficial options of retrieval as default parameters.

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CONTINUOUS HILL RUNNING IMPROVES VO₂ MAX, SPEED ENDURANCE & STRENGTH IN TEAM SPORT ATHLETES

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ABSTRACT
The purpose of this study was to examine the effect of continuous hill running on VO₂ max, speed endurance & elastic leg strength among school football players over the period of 12 weeks. This investigation involved pre test and post test randomized control group design. A total of 24 healthy male high school football players volunteered to participate in this study. They were divided randomly into 1 of 2 groups: hill continuous running group (Hill end run; n = 12) and control group (CG; n = 12). Subjects in the experimental group ran hill 2 days a week, for 12 weeks, which involved continuous running training. Balke VO₂ max Test - VO₂max (general endurance), Speed endurance - 150 metre Endurance Test, Leg Strength Test - elastic leg strength were measured pre and post training. Paired t-test and ANCOVA were used to evaluate the effect of training. In all the cases 0.05 level of confidence was fixed to test the hypothesis. The result of this study indicate that continuous hill running over an 12 week preseason period in high school football players yielding improvements in VO₂max (aerobic capacity), reduced 150mts sprinting speed timing (speed endurance) and lower body elastic leg strength. This study shows that endurance training program on hill surfaces may result in the most physical and physiological changes in young football players.

I. INTRODUCTION
Today’s sports person faces some unique challenges. The standard are higher, the competition is tougher the stakes are greater attention in these days. Coaches, physical educationist and sports scientists have always expressed a great need to know more about those physical and physiological variables. Which are helpful in improving the motor skill of the athletes (Gangopadhyay, 1993). Professional football is characterised by high physical demands and frequent changes in exercise intensity. Thus, power and speed abilities are generally believed to be relevant in decisive situations in Football. Regular endurance training improves performance during tasks that rely mainly on aerobic energy metabolism, in large part by increasing the body’s ability to transport and utilize oxygen and by altering substrate metabolism in working skeletal muscle (Saltin & Gollnick, 1983). The main characteristic of any endurance based training programme is a large training volume of which the majority of the training intensity (≥50%) will be devoted to the development of a strong aerobic base fitness level, involving training at an Easy/moderate training intensity (Pate and Branch, 1992; Martin and Coe, 1997). “Whether to build strength or to condition themselves for hilly races, most top runners use hills in their training.” -Hal Higdon (1992). Biomechanical characteristics of human locomotion that is, walking and running at different speeds and slopes have been well documented in literature together with mechanical efficiency. Geographical factors relate to geomorphology and the variations in surfaces and terrain, including the slope of the running surface. It is evident that there are differences in mechanical variables between level and uphill running, in which alterations are required to adapt to the environmental circumstances. Research has suggested that hill running is associated with increased metabolic cost. Hill training is a highly specific way to strengthen the muscles used during running; in fact it is probably the most running specific strength workout you can do. Whilst it is clear that hill running has many benefits for runners there has always been a debate as to what is the best type of hill training. Hill training is a highly specific form of strength/resistance training that has many benefits for the endurance runner including improvements in stride frequency and length, muscle strength and power, neuromuscular coordination, running economy, fatigue resistance, muscular endurance, speed, aerobic and anaerobic power and protects leg muscle-fibres against damage and delayed onset muscle soreness (DOMS). Research has shown that high intensity hill running leads to a greater level of muscle fibre activation and recruitment in a number of muscle groups compared with running on a level slope (Sloniger et al., 1997). Many distance runners use hill training as a means of improving aerobic fitness, stamina and strength (Tulloh, 1998). A high training volume may be particularly important for increasing
the %VO2max that can be sustained and may lead to improvements in the economy of motion (Noakes, 1991; Jones, 1998)\textsuperscript{16,10}. Most runners concentrate solely on running up hill intervals with very slow down hill recoveries; however research suggests that the combination of uphill and downhill intervals may be particularly effective at improving the maximum running speed\textsuperscript{17,18}. Hill training is known to be a highly specific form of resistance training that can enhance endurance running performance (Barnes et al., 2013)\textsuperscript{1}. Clearly, there are strong evidences in the research on hill running offer physical performance of various sport and game. Therefore the purpose of this study was to examine the effect of continuous hill running on VO\textsubscript{2}max, speed endurance & strength among school football players over the period of 12 weeks. It is hypothesized that two session a week for 12 week of hill endurance training would result in significant improvements on VO\textsubscript{2}max, speed endurance & strength in high school football players.

**II. METHODS**

**Experimental Approach to the Problem**

This investigation involved pre test and post test randomized control group design was used to evaluate the effect of 12 week of uphill continuous running training directed toward VO\textsubscript{2}max, speed endurance, explosive power & strength. A total of 24 healthy male high school football players volunteered to participate in this study.

**Subjects**

A total of 24 healthy male high school football players’ (Mean ±SD; age: 16.3 ± 1.51 years; weight: 60.8 ± 3.57 kg; Body height: 1.63 ± 3.4cm) volunteered to participate in this study. Subjects were selected from the govt hr sec schools of Thuvarankkurichy, Thiruchirapalli. They were divided randomly into 1 of 2 groups: hill continuous running group (Hill end run; n = 12) and control group (CG; n = 12). Hill endurance running group participates in 12-week continuous running training but CG didn’t participate any training.

**Procedure**

**Training**

Subjects in the experimental group ran hill 2 days a week, for 12 weeks, which involved continuous running training. Subjects focused on 60-75% maximal heart rate (slightly faster pace) during the course of training. With all hill sessions \textit{warm up} before and \textit{cool down} after the hill session - easy jog for 5 to 10 minutes followed by stretching exercises was strictly followed by the researcher.

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Sessions comprising of

1. **Fartlek runs** - at varying paces. Five minutes slow jog was followed by striding for 150 mts, then jogging for 150 mts. This was repeated 3 times. Following this, subjects completed a series of stride hard for 30 sec, jog 60 seconds. Repeat 3 times with decreases in recovery jog and completing the session with 5 min recovery jog. The duration of this fartlek training gradually increased from 15 min in the first week to 35 min in the 12 week.

2. **Continuous run** – continuous run - The duration of this run gradually increased from 20 min in the first week to 45 min in the 12 week.

**Testing**

Participants were tested pre and post the 12-week training period. Before testing (Pre & Post Training), participants performed a 5-minute warm-up protocol consisting of sub maximal running, active stretching, and jumping exercises. This warm-up was chosen because of its positive effects on power production. Balke VO\textsubscript{2}max Test - general endurance (VO2max) - Subject instructed to run around a track for 15 minutes – the aim is to run as far as possible. The total distance achieved in the 15 minutes to the Nearest 25 metres taken for the assessment. The formula used to calculate VO\textsubscript{2}max is: VO\textsubscript{2}max = (Total distance covered / 15) – 133) x 0.172 + 33.3. Speed endurance - 150 metre Endurance Test - sprints as fast as possible from a standing stationary position at the start line to the 150 metre finish line - records the time taken for the 150 mts distance. Leg Strength Test - elastic leg strength- player starts 10 to 15 mts behind the starting line, Using a jog run up, the athlete starts hopping on the dominant leg from the first cone, then repeated with the other leg - records the average of the two recorded times and uses this value to assess the performance.

**Statistical analysis**

The data pertaining to the variables in this study were examined by using dependent’t’ test to find out the significant improvement and analysis of covariance (ANCOVA) for each variables separately in order to determine the difference and tested at .05 level of significance.

**III. RESULT ANALYSIS**

The analysis of dependent’t’ test on data obtained for VO\textsubscript{2}max, Speed endurance and elastic leg strength of the pre test and post test means of experimental and control group have been analyzed and presented in Table I.
The obtained ‘t’ ratio value of experimental group on VO2max, Speed endurance & elastic leg strength is higher than the table value, it is understood that hill endurance running had significantly improved the performance of VO2max, Speed endurance and elastic leg strength. However, the control group has no significant improvement as the obtained ‘t’ value is less than the table value; because it was not subjected to any specific training. The analysis of covariance on the data obtained on dependent variables due to the effect of 12 week of hill endurance running and control group have been analysed and presented in Table II.

Table II shows that the obtained ‘F’ ratio value are 87.17, 183.77 and 58.62 which are higher than the table value 4.32 with df 1 and 21 required to be significant at 0.05 level. Since the obtained value of ‘F’ ratio is higher than the table value, it indicates that there is significant difference among the adjusted post-test means of hill endurance Running and control group on VO2max, Speed endurance and elastic leg strength.

IV. DISCUSSION

Previous research has shown that hill running is an effective training for improving improvements in training distances, anaerobic capacity, and strength2. The main finding of this study revealed a significant increase in general endurance (VO2max), and a decrease in 150mets speed endurance timing so that speed endurance performance was improved, further, elastic leg strength increased on experimental group due to the effect of 12 weeks of hill endurance training. A 1977 article in the European Journal of Applied Physiology concluded that runners who followed an intense six-week program of hard uphill running enjoyed "significant improvements in training distances, anaerobic capacity, and strength." “A chapter in the International Olympic Committee's 1992 book Endurance and Sport reported a study of runners who did 12 weeks of regular training, plus 'hill training with 'bounce running.'” After the 12 weeks, the subjects' running economy (or how efficiently they ran) increased by an average of three percent. (Burfoot, 2005)2. Mackenzie has this say when speaking about increasing Vo2 max with hill running: “Mixed hill running can also be used to improve running economy and boost an athlete's VO2 max11. Uphill running has been suggested to be a high-velocity resistance-to-movement exercise capable of improving distance running performance in a manner similar to other high-velocity and/or high-intensity resistance-to movement training14. The above findings are comparable to with the present study results. This current study state that the increases obtained in the VO2 max, speed endurance and elastic leg strength as a result of 12 weeks training might have been due to these characteristics of hill endurance training.

CONCLUSION

The result of this study indicate that continuous hill running over an 12 week preseason period in high school football players yielding improvements in VO2max (aerobic capacity), reduced 150mets sprinting speed timing (speed endurance) and lower body elastic leg strength. This study shows that endurance training program on hill surfaces may result in the most physical and physiological changes in young football players.

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http://www.runnersworld.com/article/0,7120,s6-238-263-264-7519-0,00.html


ABSTRACT

In the last decades, many blind source separation algorithms like ICA, JADE, SOBI has been introduced for the extraction of Fetal ECG Signal from Maternal signal. The ECG signals are acquired from maternal thoracic and abdominal signal through a non-invasive multi-channel system. The proposed algorithm extracts the noise from the ECG signal and separate the maternal and fetal ECG signal. The separated maternal and fetal signal can be used for diagnosis of disorders in heart such as tachycardia, bradycardia etc. The proposed algorithm is implemented in TMS320C6416 DSP Processor and the efficiencies of the proposed algorithm are compared based on few criterions like output waveform and Signal-to-Noise Ratio.

I. INTRODUCTION

In the present day scenario both man and women have to work together to lead the family which leads to lot of stress for women. The environment is polluted with toxic gases, the life style and new habits like smoking cigarette by women has increases lot of abnormalities in the fetus inside their womb. An ECG shows the precise sequence of electrical events occurring in the cardiac cells throughout that process. It allows the nurse to monitor phases of myocardial contraction and to identify rhythm and conduction disturbances [1-5]. Electrodes placed on the skin measure the direction of electrical current discharged by the heart. That current is then transformed into waveforms. The measurement faces many difficulties in term of interferences and noise like baseline interference, muscular noise, low frequency noise etc. In BSS the word blind refer to the fact that the ratio in which the signals are mixed is unknown i.e. the original signal is estimated without the knowing the parameters of mixing or filtering process [6-12]. In this paper, an algorithm is proposed to extract random noise and separate maternal and fetal ECG signal for the better diagnosis of heart disorders.

DATABASE ACQUISITION

The ECG acquired in real time scenario is used for better analysis of the algorithm.

ECG Workstation

In the workstation 12 lead electrodes recording is considered, in which two are thoracic, four are abdominal signals, four are limb lead electrodes and two are ground reference. Suitable abdominal signal with visible trace of fetal pattern and thoracic signal is selected from these 12 channels for FECG and MECG separation.

PhysioNet

More than 50 sample signal from database input, ‘Abdominal and direct fetal ECG database (adfecgdb)’ and ‘Non-Invasive fetal ECG Database (nifecgdb)’ are used for separation analysis from PhysioBank.

Daisy

It is the database for Identification of Systems containing 8-lead system ECG with 3 thoracic and 5 abdominal signals. The first abdominal signal ($x_1$) and third thoracic signal ($x_8$) is mainly considered as the fetal signal presence is detected. It is having a sampling rate of 1 KHz and duration of 1 minute.

II. METHODOLOGY

The ECG printed in the paper is in the image form. This is converted to signal by converting the scanned ECG image to gray scale. The corresponding ECG signal is estimated w.r.t to pixel value of black in which ECG waveform is represented.

![General block diagram for separation of MECG and FECG by proposed algorithm](Fig 1: General block diagram for separation of MECG and FECG by proposed algorithm)
In Figure 1, the direct MECG denoted as $x_1(t)$ and FECG denoted as $x_2(t)$ are mixed to form abdominal and thoracic signal, which could be denote by time varying signals, $y_1(t)$ and $y_2(t)$,

$$
y_1(t) = m_{11}x_1(t) + m_{12}x_2(t)
$$

$$
y_2(t) = m_{21}x_1(t) + m_{22}x_2(t)
$$

(1)

where ‘$m_{11}$’, ‘$m_{12}$’, ‘$m_{21}$’ and ‘$m_{22}$’ are the mixing coefficients which mainly depends on the distance between the maternal and fetal heart.

The mean is removed to decrease the dependency between the two signals. It is followed by pre-whitening where the values are centered for uniform distribution. After that the original matrix is converted into cumulant matrix where the input is doubled and it also finds the correlation of the signals,

$$
\text{Cum} = C - \left(\frac{Z_3 \ast Z_4}{T}\right) \ast \sum_{i=0}^{N} \frac{Z_1(i) \ast Z_2(i)}{T}
$$

(2)

The ‘C’ is the initial cumulant matrix, $Z_1$, $Z_2$, $Z_3$ and $Z_4$ are components of the signal with total time of ‘T’ period. The cost function consists of two functions. The first function is used for separation whereas the second function plays an important role in separation of sources and alignment of estimated sources. Here the second cost function is only focused and it is minimized. The demixing ratio is calculated after recovering of the whitening signal.

### III. RESULTS AND DISCUSSIONS

The suitable thoracic and abdominal signals from the database are the mixed signal that are given as input to the TMS320C6416 DSP Processor as plotted in Figure 2(a).

The estimated maternal and fetal signal using the proposed algorithm is plotted by multiplying the mixed signal with the calculated de-mixing matrix as mentioned in Figure 2(b).

<table>
<thead>
<tr>
<th>BSS Algorithms</th>
<th>SIR (dB) Maternal</th>
<th>SIR (dB) Fetal</th>
<th>Exec Time (sec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ICA</td>
<td>20.524205</td>
<td>0.35618</td>
<td>0.974076</td>
</tr>
<tr>
<td>FASTICA</td>
<td>23.610983</td>
<td>0.776554</td>
<td>0.853178</td>
</tr>
<tr>
<td>MCCA</td>
<td>3.920088</td>
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<td>1.882137</td>
</tr>
<tr>
<td>SCBI</td>
<td>24.712684</td>
<td>-10.341892</td>
<td>1.010432</td>
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<tr>
<td>JBSS_SOS</td>
<td>25.530359</td>
<td>-3.0103</td>
<td>1.015907</td>
</tr>
<tr>
<td>JADE</td>
<td>18.30732</td>
<td>1.251214</td>
<td>1.046762</td>
</tr>
<tr>
<td>JBSS_CUM4</td>
<td>29.589071</td>
<td>7.443055</td>
<td>0.968229</td>
</tr>
<tr>
<td>PROPOSED ALGORITHM</td>
<td>30.566782</td>
<td>8.37477</td>
<td>0.867547</td>
</tr>
</tbody>
</table>

The SIR values of various blind source separation algorithms for a particular sample is listed in Table I. It is observed that the proposed algorithm gives better SIR for both the estimated maternal and fetal ECG signal.

### CONCLUSION

The BSS algorithm experience permutation and scaling issue. The execution time is 0.01 sec greater for proposed algorithm compared to FASTICA. The average SIR of proposed algorithm for estimated mother signal is 30.55 dB and estimated fetal signal is 8.34 dB for 8 lead systems. The separated maternal and fetal ECG can be used for diagnosis of any heart disorders in both mother and fetal. Thus the heart problem can be rectified in the early stage.

### ACKNOWLEDGMENT

The authors thank Karunya University for providing seed money to purchase ECG workstation which is very useful for real time ECG acquisition.

### REFERENCES


ABSTRACT
In this paper, an integrated system for video summarization is proposed, browsing and presentation, based on large amount of personal and web video clips. This system automatically collects content-consistent video clips and generates an one-shot presentation using them. It can facilitate family album management and web video categorization. A novel video composition system which generates aesthetically enhanced long-shot videos from short video clips are developed.

I. INTRODUCTION
With the popularity of personal digital devices, the amount of home video data is growing explosively. These digital videos have several characteristics: Compared with former videos recorded by non-digital camcorder, nowadays videos are usually captured more casually due to the less constraint of storage, and thus the number of clips is often quite large; Many videos may only contain a single shot and are very short; and their contents are diverse yet related with few major subjects or events. Users often need to maintain their own video clip collections captured at different locations and time. These unedited and unorganized videos bring difficulties to their management and manipulation. For example, when users want to share their story with others over video sharing websites and social networks, such as YouTube.com and Facebook.com, they will need to put more efforts in finding, organizing and up loading the small video clips. This could be an extremely difficult “Puzzle” for users. Previous efforts towards efficient browsing such large amount of videos mainly focus on video summarization. These methods aim to capture the main idea of the video collection in a broad way, which, however, are not sufficiently applicable for video browsing and presentation. In this paper, we further investigate how to compose a content-consistent video from a video collection with an aesthetically attractive shot presentation. One-shot videos or long-shot video, also known as long-take video (we will exchange ably use them hereafter), means a single shot that is with relatively long duration. Long shot has been widely used in the professional film industry, MTV video and many other specific video domains owing to its uniqueness in presenting comprehensive content in a continuous and consistent way. However, capturing a high-quality long-shot video needs an accurate coordination between the camera movement and the captured object for a long period, which is usually difficult even for professionals. Here we introduce a scheme, “Video Puzzle”, which can automatically [1] generate a virtual one-shot presentation from multiple video clips. Given a messy collection of video clips, Video Puzzle can select a clip subset with consistent major topic (similar with finding the clues and solving the Puzzle Games among the images). The topic can refer to a person, object, or a scene here. It can be specified by users or found with an automatic discovery method. In this paper section I give a brief introduction of the paper and section II relates to the previous work done. System prototype and description is viewed in section III. test results are described in section IV.

I. PREVIOUS WORK
Zhang et al. provide a solution based on an unsupervised inference of view-dependent depth maps for all video frames. Yan et al. transfer desired features from a source video to the target video such as colorizing videos, reducing video blurs, and video rhythm adjustment. Recently, Wang et al. have studied automatic [1] broadcast soccer video composition. There also exist studies on video texture which aims to provide a continuous and infinitely varying stream of images. Rav-Acha et al. explored time flow manipulation in video, such as the creation of new videos in which events that occurred at different times are displayed simultaneously.

II. SYSTEM DESCRIPTION
A. System Prototype
The step by step process of system architecture is as below

1 Converting Input Videos In to Frames
First we will take input videos with different resolutions after that convert all the videos into frames by using Matlab syntax and total video [2] converter and we will resize all the frames to equal resolution and finally merge that all the videos into video. This merged video having equal resolution network devices despite the issues that the industrial space presents. We will see about Viola Jones Algorithm

2 Viola Jones Algorithm
The basic principle of the Viola-Jones algorithm is to scan a sub-window capable of detecting faces across a given input
The standard image processing approach would be to rescale the input image to different sizes and then run the fixed size detector through these images. This approach turns out to be rather time consuming due to the calculation of the different size images. Contrary to the standard approach Viola-Jones rescale the detector instead of the input image and run the detector many times through the image – each time with a different size. At first one might suspect both approaches to be equally time consuming, but Viola Jones have devised a scale invariant detector that requires the same number of calculations whatever the size. The basic principle of the Viola-Jones face detection algorithm is to scan the detector many times through the same image – each time with a new size [3]. Even if an image should contain one or more faces it is obvious that an excessive large amount of the evaluated sub-windows would still be negatives (non-faces). This realization leads to a different formulation of the problem: Instead of finding faces, the algorithm should discard non-faces. The thought behind this statement is that it is faster to discard a non-face than to find a face. With this in mind a detector consisting of only one (strong) classifier suddenly seems inefficient since the evaluation time is constant no matter the input. Hence the need for a cascaded classifier arises. The cascaded classifier is composed of stages each containing a strong classifier. The job of each stage is to determine whether a given sub-window is definitely not a face or maybe a face. When a sub-window is classified to be a non-face by a given stage it is immediately discarded. Conversely a sub-window classified as a maybe-face is passed on to the next stage in the cascade. It follows that the more stages a given sub-window passes, the higher the chance the sub-window actually contains a face.

In a single stage classifier one would normally accept false negatives in order to reduce the false positive rate. However, for the first stages in the staged classifier false positives are not considered to be a problem since the succeeding stages are expected to sort them out. Therefore Viola-Jones prescribes the acceptance of many false positives in the initial stages. Consequently the amount of false negatives in the final staged classifier is expected to be very small [4]. Viola-Jones also refer to the cascaded classifier as an attentional cascade.

3 SIFT Algorithm
The SIFT algorithm (Scale Invariant Feature Transform) proposed by Lowe [4] is an approach for extracting distinctive invariant features from images. It has been successfully applied to a variety of computer vision problems based on feature matching including object recognition, pose estimation, image retrieval and many others. However, in real-world applications there is still a need for improvement of the algorithm’s robustness with respect to the correct matching of SIFT features [5]. An improvement of the original SIFT algorithm providing more reliable feature matching for the purpose of object recognition is proposed. The main idea is to divide the features extracted from both the test and the model object image into several sub-collections before they are matched. The features are divided in several sub-collections considering the features arising from different octaves. The scale invariant feature transform (SIFT) algorithm, developed by Lowe is an algorithm for image features generation which are invariant to image translation, scaling, rotation and partially invariant to illumination changes and affine projection [6] [4]. Calculation of SIFT image features is performed through the four consecutive steps From the algorithm description given it is evident that in general, the SIFT-algorithm can be understood as a local image operator which takes an input image and transforms it into a collection of local features. To use the SIFT operator for object recognition purposes, it is applied on two object images.
BPN Face Recognition

A new method, face recognition based on back propagation neural network, is presented. The proposed method extracts feature from face image with differential projection and geometrical features into eigenvector which is classified by back propagation neural network. Besides our method, the principal component analysis (PCA)-based method, the linear discriminated analysis (LDA) based method and the Markov Random Fields (MRF)-based methods were also tested for comparisons [7]. The experimental results on ORL face database show that the proposed method achieves an average recognition accuracy of over 98% by using only 13 features. Moreover, the recognition accuracy is enhanced effectively, and the computational complexity and feature dimensions are reduced greatly [8]. Human beings have good recognition capabilities of faces and complex patterns and anything cannot affect this capability [9]. This ability is quite robust, in spite of great changes in the visual stimulus due to facial expression, masking conditions, aging, and mismanagements such as whiskers, changes in hairdo or spectacles. The main reason for this is the high degree of interconnectivity, acquisition skills, adaptive quality, and abstraction capabilities of the human nervous system. There is various highly correlated biological neurons in human brain which can outperform super computers in certain specific tasks. Even a small child can perfectly and completely identify a human face, but it is a difficult task for the computer. Therefore, the main objective is to design such systems which can compete with what a small child does and thus making computers as lively as humans can. Face image is a biometrics physical feature which is used to verify the identity of people. The main components involved in the face image space include mouth, nose and eyes. Back Propagation Neural Network (BPNN) is a multilayered and feed forward Neural Network. BPNN contains input layer, with one or many hidden layers that are being followed by the output layer. The layers contain identical computing neurons associated such that the input of every neuron in the next layer receives the signal from the output neuron in the previous layer. The input layer of the network serves as the signal receptor whereas the output layer passes the result out from the network Face detection required that firstly noise should be reduced from the image so that better and more accurate results can be achieved. So, S. Adebayo Daramola proposed a system with four stages: face detection, pre-processing, principle component analysis (PCA) and classification. Firstly, database with images in different poses was made, then image was normalized and noise was removed from the image. After that, the Eigen faces were calculated from the training set. Then Eigen values were calculated using the PCapproach and then largest Eigen values were found comparing training set images and Eigen faces.

IV RESULTS AND DISCUSSION

First we will convert all the input videos into frames after that merge all the frames into a video. After this we will apply Viola-Jones algorithm.
After applying BPN face recognition the videos will be separated according to our requirement. That means if we place any reference face in the database according with that face we will get that particular face as 1 video as shown in the figure above.

REFERENCES

IMPLEMENTATION OF MODULO $2^n - 2^k - 1$ ADDER FOR RESIDUE NUMBER SYSTEM

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ABSTRACT

Modular adder is one of the key components for the application of residue number system (RNS). Moduli set with the form of $2^n - 2^k - 1$ ($1 \leq k \leq n - 2$) can offer excellent balance among the RNS channels for multi-channels RNS processing. A novel algorithm and its VLSI implementation structure are proposed for modulo $2^n - 2^k - 1$ adder. Any existing parallel prefix structure can be used in the implemented structure. This can get flexible tradeoff between area and delay with the proposed modulo adder. Compared with same type of modular adder with traditional structures, the proposed modulo adder offers better performance in delay and area. In this paper the proposed modulo adder is used in the RC5 Cryptography algorithm to increase the Throughput.

I. INTRODUCTION

RESIDUE number system (RNS) is an ancient numerical representation system. It is recorded in one of Chinese arithmetical masterpieces, the Sun Tzu Suan Jing, in the 4th century and transferred to European known as Chinese Remainder Theorem (CRT) in the 12th century. RNS is a non-weighted numerical representation system and has carry-free property in multiplication and addition operations. In recent years, it has been received intensive study in the very large scale integration circuits (VLSI) design for digital signal processing (DSP) systems with high speed and low power consumption. Modular adder is one of the key modules for RNS-based DSP systems. For integers $A$ and $B$ with $n$-bit width, the modular addition can be performed by the following equation if and is less than the modulus

$$C^T = \langle A + T \rangle_{2^n} = \begin{cases} A + B & A + T \leq 2^n \\ (A + B + T)_{2^n} & A + T > 2^n \end{cases}$$

In the above equation $T=2^n - m$ which is referred as correction. In the general modular adder design, the two values $A+B$, and $A+B+T$, should be computed firstly. Then, one of them is selected as the final output.

A new class of modulo $2^n - 2^k - 1$ adder based on carry correction and parallel prefix algorithm is proposed. The new modular adder can be divided into four units, the pre-processing unit, the prefix computation unit, the carry correction unit, and the sum computation unit. In the proposed scheme, the carry information of $A+B+T$ computed by prefix computation unit is modified twice to obtain the final carries required in the sum computation module. Meanwhile, any existing fast prefix structure of binary adders can be used in the proposed modular adder structure, which offers superior flexibility in design. In order to evaluate the performance of the proposed modular adder in this paper, the unit-gate model and Design Compiler (DC) of Synopsys Company are used to estimate its complexity and performance. The results show that the proposed modulo $2^n - 2^k - 1$ adder can get the best delay performance. Compared with the special modulo adder, our method offers similar delay performance but has the ability of design a class of modulo $2^n - 2^k - 1$ adder with different based on identical algorithm. Moreover, compared with ELMMA modular adder, the proposed modulo adder has better “area delay” performance at most cases and can achieve faster operation frequency.

II. PREFIX PARALLEL ADDITION

Parallel prefix operation is widely adopted in binary adder design. Each sum bit and carry bit can be calculated with the previous carries and inputs prefix based binary adders can be divided into three units, the pre-processing unit, the prefix computation unit, and the sum computation unit. In the pre
processing unit, prefix computation is calculated. In the sum computation unit, the carries from the prefix computation unit and the partial sum from the pre-processing unit are used together to compute the final sum bits.

III. PROPOSED MODULO $2^n-2^k-1$ ADDER

The proposed modulo adder is composed of four modules, pre-processing unit, carry generation unit, carry correction unit, and sum computation unit. In the figure, different shade represents different processing units. The proposed modulo adder can be divided into two general binary adders $A_1$ and $A_2$.

![Fig. 2. The proposed modulo $2^n-2^k-1$ adder structure](image)

with carry correction and sum computation module according to the characteristics of correction for modulus. We can get the carries used in the final stage through correcting the carries of, which can be computed by any existing prefix structure with proper pre-processing. At last, we can get the final modular addition result from real carries and partial sum information. The pre-processing unit is used to generate the carry generation and carry propagation bits. In carry generation unit, the carries of $A+B+T$ can be obtained with the carry generation and carry propagation bits from the pre-processing unit. The carry correction unit is used to get the real carries for each bit needed in the final sum computation stage. In order to reduce the area, we get the carries of $A+B$ by correcting the carries of $A+B+T$ in the carry correction unit.

A. PRE PROCESSING UNIT

The pre-processing unit is used to generate the carry generation and carry propagation bits $(g_i, p_i)$ of $A+B+T$. Obviously, the binary representation of $T$ is $000...00100...001$. In Fig, the computation of $A+B+T$ can be performed by $A_1$ and $A_2$, where $A_1$ and $A_2$ are used for lower $k$-bits and higher $n-k$-bits addition, respectively.

B. CARRY GENERATION UNIT

In carry generation unit, the carries $c_i$ ($i=1,2,..n$) of $A+B+T$ can be obtained with the carry generation and carry propagation bits from the pre-processing unit. Any existing prefix structure can be used to get the carries. It is worth pointing out that the carry-out bit of SCSA in the pre-processing unit, is not involved in the prefix computation. Instead, combined with the carry-out bit of the prefix tree is required to determine the carry-out bit of $A+B+T$ (denoted as $C_{out}$).

C. CARRY CORRECTION UNIT

The carry correction unit is used to get the real carries for each bit needed in the final sum computation stage. In order to reduce the area, we get the carries of $A+B$ by correcting the carries of $A+B+T$ in the carry correction unit.

Carry Correction for Adder $A_1$

Since the binary representation of $T$ is $000...00100...001$, can be regarded as the carry bits of $(A+B+T-1)+c_m$ and $c_m=1$.

Carry Correction for Adder $A_2$

The carry information of $A+B+T$ or $A+B+T-1$ is got after the correction for adder $A_1$. Then we can perform the second correction based on $C_{out}$ and let the carry bits of the second correction be real carries.

D. THE SUM COMPUTATION UNIT

Generally, the sum computation is as same as that in prefix based binary adder. However, real carries is the correction result when is taken into account. That is, if $cout=0$, real carries is the carry bit of $A+B$. Otherwise, it is the carry bit of $A+B+T$. Thus, the partial sum bits of $A+B$ and $A+B+T$ are both required in the final sum computation.

IV. CRYPTOGRAPHY

Cryptography is the science of using mathematics to encrypt and decrypt data. Cryptography enables you to store sensitive information or transmit it across insecure networks (like the Internet) so that it cannot be read by anyone except the intended recipient. While cryptography is the science of securing data, cryptanalysis is the science of analyzing and breaking secure communication. Classical cryptanalysis involves an interesting combination of analytical reasoning,
application of mathematical tools, pattern finding, patience, determination, and luck. Cryptanalysts are also called attackers. Cryptology embraces both cryptography and cryptanalysis. A cryptographic algorithm, or cipher, is a mathematical function used in the encryption and decryption process. A cryptographic algorithm works in combination with a key a word, number, or phrase to encrypt the plaintext. The same plaintext encrypts to different cipher text with different keys. The security of encrypted data is entirely dependent on two things: the strength of the cryptographic algorithm and the secrecy of the key. RC5 algorithm is a fast symmetric block cipher. The same secret cryptography key is used for encryption and decryption. The plain text and cipher text are of fixed length bit sequences. It is fast that implies that it is word-oriented.RC5 is adaptable to processors of different word lengths. It is iterative in structure, with a variable number of rounds. It have variable length Cryptography key

<table>
<thead>
<tr>
<th>Modules</th>
<th>AND</th>
<th>OR</th>
<th>XOR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-Processing</td>
<td>2n-k-2</td>
<td>1</td>
<td>2n-k-1</td>
</tr>
<tr>
<td>Carry generation</td>
<td>(N_{p-n-k+1})</td>
<td>(N_{p+1})</td>
<td>0</td>
</tr>
<tr>
<td>Carry Correction</td>
<td>n-1</td>
<td>n-1</td>
<td>0</td>
</tr>
<tr>
<td>Sum Computation</td>
<td>0</td>
<td>0</td>
<td>n+1</td>
</tr>
<tr>
<td>Pre processing for carry connection</td>
<td>4n-3k-7</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Total unit gate</td>
<td>(N_{p+13n-5k-8})</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

V. MODULO ADDER IN RC5 CRYPTOGRAPHY ALGORITHM

The proposed Modulo adder is used as an application in RC5 Cryptography algorithm pipelining stages. A novel feature of RC5 is the heavy use of data dependent rotations. The encryption and decryption algorithms are exceptionally simple. RC5 has a variable word size, a variable number of rounds and a variable length secret key.

VI RESULTS

The proposed Modulo adder is implemented in Verilog programming language and simulated. It has been synthesized and implemented by Xilinx ISE 12.3 tools. The simulation results are shown in the fig no 4 and 5. The proposed modulo adder offers better performance in delay and area. The proposed modulo adder is used in the RC5 Cryptography algorithm to increase the Throughput with increase in the frequency through pipelining stages.
Fig 4. Simulation Result of Modulo $2^n-2^k-1$ addition

<table>
<thead>
<tr>
<th>TYPE</th>
<th>LE</th>
<th>FREQUENCY</th>
<th>POWER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Modulo $2^n-2^k-1$</td>
<td>83</td>
<td>326.26 MHZ</td>
<td>57.53 mw</td>
</tr>
</tbody>
</table>

Fig 5. Simulation Result of RC5 Cryptography Algorithm using Modulo $2^n-2^k-1$ adder

TABLE II MODULO ADDER ANALYSIS

<table>
<thead>
<tr>
<th>TYPE</th>
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<th>FREQUENCY</th>
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<tr>
<td>Modulo $2^n-2^k-1$</td>
<td>83</td>
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<td>57.53 mw</td>
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TABLE III FREQUENCY ANALYSIS OF MODULO ADDER USING RC5 ALGORITHM

<table>
<thead>
<tr>
<th>TYPE</th>
<th>Without Pipelining</th>
<th>With Pipelining</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fmax</td>
<td>671.14 MHZ</td>
<td>794.91 MHZ</td>
</tr>
</tbody>
</table>

CONCLUSION

A new class of modulo adder is implemented. The performance analysis show that the algorithm can construct a new class of general modular adder with better performance in delay or “area*delay”. The way using twice carry corrections improves the performance of area and timing in VLSI implementation and reduces the redundant units for parallel computation of $A+B+T$ and $A+B$ in the traditional modular adders. Any existing prefix tree can be used in this structure. That means fine tradeoff property between area and delay for the proposed scheme. The synthesis results also show that our scheme can be optimized to work at faster operation frequency. The modulus with the form of facilitates the construction of a new class of RNS with larger dynamic and more balanced complexity among each residue channel. The proposed Modulo adder is used in RC5 Cryptography Algorithm to increase the throughput through pipelining stages.

REFERENCES


ABSTRACT
Universal Asynchronous Receiver Transmitter (UART) permits full duplex serial communication link. It is also used for the exchange of data between processor and peripherals in the data communication. We should ensure that the data being transferred is Error free. This Paper focuses on the introduction of Built-in self test (BIST) with Status register to UART, to overcome the two problems of testability and data integrity. In this paper we presented the architecture of UART which indicates framing error, parity error, break error and overrun error during the reception of data using status register. The 8-bit UART with status register and BIST module is coded in VHDL and synthesized and simulated using Xilinx XST and ISim version 14.2 and realized on Virtex 4. The results indicate that the Maximum Net Delay can be reduced and also the Size (Number of slices) used can also be reduced which are the two advantages of using this technique.

I. INTRODUCTION
Universal Asynchronous Receiver Transmitter (UART) is mostly used for the exchange of data between computer and peripherals which is a serial communication protocol. The UART have a transmitter and a receiver through which the asynchronous serial data communication can be done. Asynchronous serial data communications has the advantages of long transmission distance, high reliability and less transmission line \[3\]. The transmitter converts the parallel data into serial data and includes some extra overhead bits with the help of shift register and in the receiver the serial data is again converted to parallel data and the extra overhead bits are removed. The distortion of the signal can be reduced by the serial communication and so makes the transfer of data between two systems at greater distance possible \[1\]. UART is usually connected between the processor and peripheral and for the processor the UART appears to be an 8-bit read/write parallel port. In this paper UART has three modules they are baud rate generator, transmitter and receiver. This design satisfies the system requirements of high integration, stabilization, low bit error rate and low cost. Variable data length from 5-8 bits per frame and configurable baud rate generator are also supported by this design \[9\]. Manufacturing processes are extremely complex and also the manufacturers should consider testability as an important criteria to check the reliability and functionality of the circuit designed. Built-In-Self-Test (BIST) is one of the widely used test technique. A BIST Universal Asynchronous Receive/Transmit (UART) can satisfy the testability requirements and also can generate the lowest cost with high performance implementation \[9\]. In this paper we focus on implementation of UART with status register with embedded BIST technique on Field Programmable Gate Array (FPGA). This paper is divided into 4 sections. Section 2 explains the proposed architecture of UART with BIST followed by section 3 which shows the simulation results followed by the conclusion in section 4.

II. PROPOSED UART ARCHITECTURE WITH BIST
The proposed architecture has a 8-bit UART with a status register which runs at a baud rate of 115.6kbps. The status register is used to monitor the correctness of each and every data byte received and to improve the testability of circuit by the introduction of BIST module. The hardware design of the 8-bit UART with Status register, integrated with BIST module is explained in further sections. The proposed model has two major modules viz. UART and Embedded BIST. UART again has three modules which are baud rate generator, transmitter and receiver. Baud rate generator works at 20 MHz and further reduced as required for the operations in transmitter and receiver. Baud rate generator works at 20 MHz and further reduced as required for the operations in transmitter and receiver to achieve baud rate of 9600 bps. BIST has a control register, pattern generator and a comparator \[9\], as shown in fig. 2.

![Fig. 2: UART with BIST architecture](image-url)
A. UART Transmitter

The transmitter accepts the parallel data when write [WR] signal is high and the data from the processor is loaded from the parallel input signals TXIN 0 – TXIN 7 into the transmitter FIFO which is of 16 bytes.

Fig. 3: UART Transmitter

when the FIFO is full it sends a signal FF to the processor indicating that the FIFO if full as seen below in Fig.4. The baud rate acts as the clock for the transmitter.

Fig. 4: Transmitter flowchart – Input to FIFO

When Transmitter Hold Register [THR] finds itself empty it sends an empty signal to the transmitter FIFO acknowledging it to send the data in the stream of bits which is already stored in the transmitter FIFO. Transmitter Shift Register [TSR] which is a 11 bit parallel in serial out shift register sends a signal to THR when it is empty acknowledging that it is ready to accept the data. The received data will be added with the start bit, stop bit, parity bit with the help of status register. The transformed data will be in the following frame format as shown in the figure Fig.5

Fig. 5: Frame Format

B. UART Receiver:

The receiver receives the serial data through RXIN port and the data is entered into the timing and sampling block where the clocks of both transmitter and receiver are synchronized and the 11 bit data will be sent into the serial in parallel out shift register [RSR] where the extra added bits will be removed and sent to the error logic block

Fig. 6: Transmitter flowchart – FIFO to TXOUT

Fig. 7: UART Receiver
Basically the RXIN will be high and when the signal becomes low the first four bits will be entered into the timing and sampling block. If the four bits received are same then it indicates the start bit and the same process repeats. In this way the whole frame will be stored in the receiver shift register by sending bits one by one. RSR is a 12 bit shift register into which the 11 bit frame format will be sent and in this RSR the start bit, stop bit, parity bit will be separated and will be sent to the logic blocks. The error logics are implemented in status register. These error logics handle 4 types of errors: Parity error (PE), Frame error (FE), Overrun error (OE), Break error (BE). These error logics set the corresponding flags high if there is any error. Parity error [PE] will be set if the parity bit generated by the transmitter and received by the receiver are not same. Frame error [FE] will be set when receiver fails to detect correct stop bit or when 4 samples do not match. Overrun error [OE] will be set when the RHR receiver the data even after the FIFO is full. If the RXIN pin is held low for long time than the frame time then there is a break in received data and break error [BE] occurs and BE bit is set.

Now if the FIFO is ready it sends a signal to RHR acknowledging it is ready to receive data and the data stored in RHR will be sent to the receiver FIFO and the data will be sent through the RXOUT port parallely to the peripheral. The whole process is explained in the flowchart shown below in fig. 9.

C. **BIST Pattern Generator**

Linear Feedback Shift register generates Pseudo-Random test pattern for BIST. In LFSR, Inputs is a linear function of two or more bits and it consists of D-Flipflops and XOR gates. The bits presented in selected positions in the shift register are combined in some sort of function and then the result is fed back into the register's input bit. The values of the selected bit are collected before the register is clocked and then the result of the feedback function is inserted into the shift register during the shift and then it will fill the position that is emptied as a result of the shift. $2^{n-1}$ will be the biggest possible state space for such an LFSR, except the zero state. 0 is not allowed in LFSR, 0 will be produced in spite of how many clock looping. Because each state can have only once succeeding state, before repeating a state an LFSR will pass through every non-zero state once with a maximal length tap sequence.

D. **BIST Operation**

UART is set as a loop for the BIST by which it can test both the transmitter and receiver in the UART as we can see in the fig.2. The Test pattern is generated by using Linear Feedback Shift Register [LFSR] method for the BIST. These test patterns will be entered into the transmitter FIFO one by one and will be stored there and when the shift register is ready the data will be sent to TSR where the frame format is done by adding start bit, stop bit and parity bits then it is transmitted serially through TXOUT which will be received by the receiver where the additional bits except the data bits are sent into the error logic block and the data bits will be parallel sent into the receiver FIFO and are sent into the BIST comparator. The BIST comparator compares both the TX FIFO and RX FIFO and if the data is same the control register of BIST will be set ‘1’ or else ‘0’.

III. **SIMULATION RESULTS**

The VHDL coding and simulation of the design are done in Xilinx tool ISim 14.2. The operating clock frequency used for simulation is 50 MHz. The baud rate set
is 9600bps. Data word length is 8-bits.

A. Simulation Results of Transmitter and receiver

The fig. 10 shows the transmission of data in UART. Data transmitted is “11111110”. This 8-bit data is sent to TSR and then start bit, stop bit and parity bit will be added and the frame is formed inside TSR and sent to TXOUT. When the reset is 1 and Write is 1 [we gave reset value vice versa], then the transmitter will start transmitting the data. The desired baud rate is 115.6Kbps and the bits are shifted out on TXOUT line at the an interval of 20MHz/115000=173 clock cycles. Similarly all the bits are sent. The transmission of data can be observed at TXOUT pin along with frame format. If read is ‘1’ the UART receiver will start receiving the data. The data received at RXIN will be sampled bit by bit and the sampled bit is saved into receive shift register [RSR]. In RSR the start bit, stop bit and the Parity bit will be discarded and it will sent to RHR if the RXFIFO is empty then the data will be written into RXFIFO and further received data will be stored in FIFO. In UART receiver serial data will be converted into parallel data. So the parallel data will be at RXFIFOOF [Output]. If there is any parity error, parity error logic will be ‘1’. If there is no parity error it will be ‘0’. Similarly if there is any overload or break error then its logic will be ‘1’ Otherwise ‘0’. If all the data is received then RX_STOP will be ‘1’.

B. Simulation Results of UART with BIST Operation

The fig. 11 shows the simulation result of data transmission of UART with BIST. The pseudo random pattern generated by LFSR will be transmitted from transmitter and it will be received in receiver FIFO.

C. Synthesis Report

The design implementation summary of the proposed architecture is

1. Utilization Summary

2. Timing Summary

3. RTL Schematic
CONCLUSION

The architecture of UART that support 8-bit data word length at 9600 bps baud rate for serial transmission of data with the addition of status register for detecting errors in data transfer and BIST which allows to test the circuit is done. Working of UART has been tested using Xilinx ISE simulator. with error checking status register, we can detect the different types of errors occurred during communication and hence correct them. For the testing of critical circuits which do not have direct connections to external pins, such as embedded memories which are internally used by the devices BIST is the solution. In the coming years even the most advanced tester may no longer be sufficient for the fastest chip in which BIST will the best solution. It has also become the substitute solution for the increasing costs of external electrical testing methods and increasing complexity. Even though it has few disadvantages like increased hardware and reduced access time it eradicates the need for high-end testers which reduces the overall production cost.

ACKNOWLEDGMENT

We would like to thank our guide G.Manoj Pillai , Assistant Professor, Karunya University for his valuable guidance and constant encouragement towards the work.

REFERENCES

ABSTRACT

In this paper the problems of a farm which consists of several greenhouses are proposed. To maintain the optimal conditions of the greenhouse parameters, different sensors and corresponding controlling devices are discussed. The communication between the greenhouses using Controller Area Network protocol (CAN) and ZIGBEE wireless technology is used for the communication between greenhouse environment and monitoring section.

I. INTRODUCTION

We live in a world where everything can be controlled and operated automatically, but there are still a few important sectors in our country where automation has not been adopted or not been put to a full-fledged use, perhaps because of several reasons one such reason is cost. One such field is that of agriculture. Agriculture has been one of the primary occupations of man since early civilizations and even today manual interventions in farming are inevitable. Greenhouses form an important part of the agriculture and horticulture sectors in our world as they can be used to grow plants under controlled climatic conditions for optimum products. Automatic control of a greenhouse done by monitoring and controlling of the climatic parameters which directly or indirectly govern the production of plant growth. Automation is the process control of industrial machinery and thereby replacing human operators. The system to be controlled is made up of several greenhouses distributed in a field. Each greenhouse is used for the production of several kinds of plants, which can vary according to the season and to the requests from the market. Each greenhouse is equipped with sensor which performs all the activities requested for the correct growth of plants. Sensors are mainly used for the measurement of temperature humidity, Soil pH and Light which represent the key parameters inside the greenhouse. In this project, greenhouse environment consists of two slave nodes and one master node, the communication between the master and slave nodes done by using CAN protocol. And communication between the master node and monitoring section through zigbee wireless technology. The sensor values are sensed by nodes using corresponding sensor, slave nodes sends sensor information to master node using CAN protocol. The master controller sends sensor value to monitoring section using zigbee wireless technology. Using Visual basic the sensor data updated in PC. If any abnormality occurs the nodes will automatically controls the environment condition by switch on the Cooler or exhaust fan or light or pump motor to maintain greenhouse environment.

II. DESCRIPTION AND WORKING

CAN node consists of a host microcontroller unit and CAN module (CAN controller and transceiver) unit, in this project we used PIC18F448 microcontroller, because of simple and easy programming and it has inbuilt CAN module, which will help in the reduction of hardware units.

**Transducers and Actuators**

A transducer is a device which measures a physical
quantity and converts it into a signal which can be read by an observer or by an instrument. This part of the system consists of various sensors, namely soil pH, humidity, temperature and light. These sensors sense various parameters-temperature, humidity, soil pH and light intensity and are then sent to the Microcontroller Unit. An array of actuators can be used in the system such as relays. They are used to turn on AC devices such as motors, coolers, pumps. These works as switches. Sensors and corresponding control devices used in this system are

1) Temperature Sensor

National Semiconductor’s LM35 IC has been used for sensing the temperature. It is an integrated circuit sensor that can be used to measure temperature with an electrical output proportional to the temperature. The temperature can be measured more accurately with it than using a thermistor. The sensor circuitry is sealed and not subject to oxidation, etc. In order to control the high temperature levels coolers are used in greenhouses.

2) Humidity Sensor

The humidity sensor HIH4000, manufactured by Honeywell is used for sensing the humidity. It delivers instrumentation quality RH (Relative Humidity) sensing performance in a low cost, solderable SIP (Single In-line Package). Relative humidity is a measure, in percentage, of the vapour in the air compared to the total amount of vapour that could be held in the air at a given temperature. In order to control high humidity conditions Exhaust fans are used.

3) Light Sensor

Light Dependent Resistor (LDR) also known as photoconductor or photocell, is a device which has a resistance which varies according to the amount of light falling on its surface. Since LDR is extremely sensitive in visible light range, it is well suited for the proposed application.

4) Soil pH sensor

The pH sensor will check the acidity and alkalinity of soil. pH measuring unit consists of measuring and reference electrodes, pH sensor will give the value whenever there is a medium between electrodes. The pH of the soil can be controlled by using pump motor, by pumping water to the plants

CAN based communication

The CAN bus was originally designed to be used within road vehicles to solve cabling problems arising from the growing use of microprocessor-based components in vehicles. Owing to the low price of CAN bus and its ability to support real-time communication, CAN is nowadays widely used as an embedded control network to connect several control units, sensors, and actuators in a dispersed manipulate system. In the greenhouse application, CAN is used as a low speed determination for the addition of all the information present in the system. One of the reasons which justify the success of the CAN lies in the helpful precedence based bus negotiation mechanism it implements. Any letter contention on a CAN bus is deterministically determined on the basis of the precedence of the objects exchanged, which is fixed in the identifier field of the frame. Thus, the priority of a message is the priority of the object it contains, spoken by the identifier, which represents the significant part of the CAN frame. The arbitration mechanism present in CAN requires a short length of the bus in order to allow all nodes to sense the same bit. This way, the system can behave as a form of large AND gate, with each point able to check the output of the gate. The identifier with the lowests stastical value has the highest precedence, and a nondestructive bitwise arbitration mechanism provides the collision resolution. The priority of a CAN message is static and system wide common, and it is linked to a variable. This means that each edge can carry only a variable each time, so that different variables need different frames. For this cause, each frame has a small dimension, contains only a few data bytes, and is very handle for applications at the field level. The bit rate versus the bus length in a CAN network is shown in Fig2.1.

ZIGBEE Based communication

The need to deploy several mobile sensors in each greenhouse has pushed towards the use of WSNs. Among the different possibilities, we have chosen a Zigbee based network on the account of several useful features it offers, such as low cost, small dimensions, suitable range, and very small power requirements. The last feature is really very attractive for a WSN, as it guarantees a long battery life and reduces the maintenance requirements. Zigbee is based on a Carrier Sense Multiple Access with Collision Avoidance protocol and operates on three distinct bands. This almost used is the industrial, scientific and medical (ISM) 2.4GHz band, which the longest range (100 m open air) and offers 16 different communication channels with a 250-kb/s bit rate. In this project Zigbee is used to send the sensor values of the greenhouses to the monitoring section from the master node (green house) serially. The values can be displayed in the PC.
using visual basic. The Flowchart representation of the proposed model is shown below.

III. RESULTS

Hence we have successfully implemented the network for management of Greenhouse. The Sensor values are successfully transmitted to the PC. Whenever the threshold of the parameters exceeds the corresponding control devices on automatically.
IV. Conclusion and Future Work

The communication of greenhouses are successfully implemented and the automatic controlling of the parameters such as Temperature, Light, pH and Humidity are implemented. The parameters are maintained constantly. The automatic control of greenhouse is implemented and in future it is easy to implement automatic/manual control of green house, because of transmission and reception of Wireless sensor networks.

References


[10] www.microchip.com
Runways are very important for airplanes to get into the airport. In this, detection of runway is based upon extracting features because they are the most descriptive element of an airport. By this feature extraction, airport runways are predicted, the neural algorithm the key for all of the features. These features can provide information about characteristics of runways. Thus, neural algorithm can be used as detecting runways and identifying their characteristic. Thus, the possible runways are detected.

I. INTRODUCTION

Runways are important target for airplanes for many applications. There are number of concepts about detection of airport runway, some are based upon classification of textural properties[1] [4]. However others do not use such a process about neural algorithm. The detected runways are often used as runway hypothesis. Detection of runway can’t possible without involving these features[5] [6]. The fact is runways are similar to road colour which means in gray colour. So through these features can find amount of different colours in image by taking small amount of portion from an image. It is difficult to detect the runway without features. Combining all the features to the neural networks can pave the way for detecting runway. These features includes hidden characteristics of runways. So, this involved by neural networks which employed as lot of textural properties[14]. It is used to find discriminative features with corresponding weights, which represents the characteristics of runway that cannot be identified. In addition of neural networks doesn’t suffers from such dimensionality. In this, the following features are used : mean, standard deviation and intensity of the image; the features roped in this are Zernike moments[15], circular-mellin features[16], haralick features[17], fourier power spectrum[19]-[21], wavelet analysis[20]-[21], and gabor filters[20]-[23]. The method is dividing satellite images into non overlapping by N by N pixels. N is to be 32, which runway width in 1-m resolution images. These blocks are represented as f(x,y). where x and y are coordinates of the blocks.

II. FLOW CHART

III. FEATURES

Below, a brief information about the extracted features are listed. These features can be found in the references.

BASIC FEATRES:

Actually runways are in grey colour and looks more brighter. By finding mean, variance of the intensity, gradient of intensity and standard deviation can describe the level and variation.

ZERNIKE MOMENTS:

These are based upon the rotation invariant image moments. It must have upper bound and it’s order ranges from 0 to 4. It results in total of nine features and works according to the memory and computational time.

CIRCULAR MELLIN FEATURES:

These features also orientation and scale invariant. And it has two parameters like radial frequency and annular frequency. these are based upon the parameters of the frequency.
FOURIER POWER SPECTRUM:
It extracts periodic patterns. It defined as three categories - magnitude spectrum, power spectrum, log of spectrum. It can be examined in ring shaped regions. It provide information about continuous forms. Those ring shaped regions are divided into six equal regions. The power in each region were considered as features.

GABOR FILTERS:
It employed as six orientations and four scales. The mean and the variance of the image also be used. The images are gabor filtered images. These are rotation invariant. The feature is shifted in circular direction to the orientation. The gabor filter is used to find the edges of the images.

HARALICK FEATURES:
By finding the gray level co-occurrence matricies leads to find offset values. And the image should be vary in different dimensions which means at different angles. But considered angles are 0, 45, 90, and 135. At those angles the calculated offset values are (1,0), (1,-1), (0,-1), and (-1,-1). By finding these to give energy, contrast, homogeneity, and correlation.

WAVELET ANALYSIS:
These features are represented in both spatial and frequency domains. Here an image is divided into four equal parts represents low-low, low-high, high-low, high-high, which gives the results.

FEATURES IN HSV:
HSV is nothing but hue saturation value. this method is based on converting the rgb image into hsv image. Conversion takes place because an hsv image has no boundaries like certain dimensions at certain angles. It is related to the dominant wavelength. Along with these the mean, variance, intensity of the image is required to extract from this feature.

NEURAL ALGORITHM:
Here we are using the concepts of feed forward neural networks. this is about the information will travel only in one direction. The information will travel from input to output through hidden node inside the algorithm. It consists of many layers like single and multiple layers. Each layer has connection from previous layer. The final layer produces output about this feature.

IV. EXPERIMENTAL RESULTS
The process starts from read image, from that image extract the features. And given to feed forward neural networks. By giving to neural networks can detect the airport runway.
Thus, detection of runway had done using extraction of features with feed forward neural networks. And feed forward neural networks has no limits.

REFERENCES


ABSTRACT
The aim of this study was to find out the effect of Continuous running Fartlek training and Interval training on Speed and Coordination among male soccer players. To achieve the purpose of the study 60 intercollegiate male football players were selected as subject at random from in around the Guntur district of Andhra Pradesh and their age ranged of the subject is between 18 to 23years. The subject was divided into four group namely experimental group A, experimental group B, experimental group C and Control group D. Experimental group A underwent to Continuous running training, experimental group B underwent to Fartlek training, experimental group C underwent to Interval training and group D act as a control group they did not participate in any of the training programme other than their regular activates. The data was collected from four groups’ pre and post of the experimental period. The raw data on speed and coordination was statistically analyzed by using Analysis of Covariance (ANCOVA). Scheffe’s post hoc test was applied to determine the significant differences between the paired adjusted means. In all the cases 0.05 level of significance was fixed. The result of the study showed that there was as significantly improvement was found in speed and Coordination among the experimental group when compared with control group.

I. INTRODUCTION
Aerobic Physical work out are done with oxygen. Use of oxygen in the body metabolic or energy generating process to perform the work by muscles is refereed as aerobics. Many types of exercise performed at moderate levels of intensity for extended periods of time are known as aerobic activity. Warming up exercise involving large muscles groups followed by at least 20 minutes and a cooling down exercise at moderate to intensity are also known as aerobic activity. Speed is the capacity of the individual performs successive movement of the same pattern a fastest rate. Coordination is performed pre-requisite and is primarily determined by mechanism involved in control and regulation of movement. It is dependent on the coordinative process of nervous system and functional capacity of sense organs. Coordination is the ability of the performer to integrate types of body movement into specific patterns. Fartlek training is said to be the forerunner of the interval training system. It involves alternating fas-and slow running over natural terrain. Interval training is a programme of repeated running with a set of resting full jogging after each repetition. Continuous training is when an athlete’s exercise in a steady aerobic way without any pauses or breaks in between.

II. IMPLEMENTATION PROPOSAL
The purpose of the study was to find out the effect of Continuous running, Fartlek and Interval training on speed and coordination of male football players. It was hypothesized that the effect of continuous running Fartlek training and Interval training on speed and coordination would be significantly improve when compared with the control group.

III. EXPERIMENTAL DESIGN & METHODOLOGY
To achieve the purpose of the presented study, sixty intercollegiate football men players were selected at random from in around the Guntur district of Andhra Pradesh their age ranged between 18 to 23 years. The selected subject was divided into four group namely experimental group A, experimental group B, experimental group C and Control.
group D. Experimental group A underwent to Continuous running, experimental group B underwent to Fartlek training, experimental group C underwent to Interval training and group D act as a control group they did not participate in any of the training programme other than their regular activates. Training was given for twelve weeks and alternative days in a week. The data was collected from four groups’ pre and post of the experimental period and raw data was statistically analyzed by using Analysis of Covariance (ANCOVA). Scheffe’s post hoc test was applied to determine the significant differences between the paired adjusted means. In all the cases 0.05 level of significance was fixed..

IV. DATA ANALYSIS & RESULTS

The adjusted post-test mean values on speed for Continuous running group (CRG), Fartlek training group (FTG), Interval training group (ITG) and control groups (CG) were 8.26, 8.25, 8.20 and 8.44 respectively. The obtained ‘F’ value of 225.79 for adjusted post test scores on speed, which was higher than the table value of 2.77 for significance with df 3 and 55 at 0.05 level of confidence.

Table - I : Analysis of Covariance of data on speed between pre and post test of Continuous running group, Fartlek training group, Interval training group and control group

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>CRG</th>
<th>FTG</th>
<th>ITG</th>
<th>CG</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test Mean</td>
<td>8.26</td>
<td>8.31</td>
<td>8.27</td>
<td>8.35</td>
<td>8.35</td>
<td>3</td>
<td>0.28</td>
<td>2.24</td>
</tr>
<tr>
<td>Mean</td>
<td>8.26</td>
<td>8.26</td>
<td>8.20</td>
<td>8.44</td>
<td>8.44</td>
<td>3</td>
<td>0.15</td>
<td>222.79*</td>
</tr>
</tbody>
</table>
*Significant at 0.05 level of confidence
(The table value required for significant at 0.05 level with df 3 and 56 & 3 and 55 are 2.77 and 2.77 respectively)

The result of the study showed that there was significant difference among Continuous running group (CRG), Fartlek training group (FTG), Interval training group (ITG) and control group (CG) on speed. Since the four groups were involved the Scheffe’s post hoc test was applied to find out the paired mean differences if any, and it is presented in table II.

Table- II : Scheffe’s post hoc test for the differences between paired adjusted post test means of Speed

<table>
<thead>
<tr>
<th>CRG</th>
<th>FTG</th>
<th>ITG</th>
<th>CG</th>
<th>Mean Adjusted post test mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.26</td>
<td>8.25</td>
<td>-</td>
<td>-</td>
<td>8.25</td>
</tr>
<tr>
<td>8.26</td>
<td>-</td>
<td>8.20</td>
<td>-</td>
<td>8.20</td>
</tr>
<tr>
<td>8.26</td>
<td>-</td>
<td>-</td>
<td>8.44</td>
<td>8.44</td>
</tr>
<tr>
<td>-</td>
<td>8.25</td>
<td>8.20</td>
<td>-</td>
<td>8.20</td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>8.44</td>
<td>0.19*</td>
<td></td>
</tr>
<tr>
<td>-</td>
<td>-</td>
<td>8.20</td>
<td>0.24*</td>
<td></td>
</tr>
</tbody>
</table>
*Significant at 0.05 level of confidence

The table II Shows that the adjusted post test mean differences of Continuous running group (CRG) and Interval running group (IRG), Continuous running group (CRG) and control group (CG), Fartlek training group (FTG) and Interval training group (ITG), Fartlek training group (FTG) and Control group (CG) and Interval training group (ITG) and Control group (CG) were 0.06, 0.18, 0.05 and 0.24 respectively. They were greater than the confidence interval value 0.03 at 0.05 level, which indicate that there is a significant differences among the group of Continuous running group (CRG) and Interval training group (ITG), Continuous running group (CRG) and control group (CG), Fartlek training group (FTG) and Interval training group (ITG), Fartlek training group (FTG) and Control group (CG) and Interval training group (ITG) and Control group (CG). The Comparison of pre, post and adjusted post mean values of speed for Continuous running group (CRG), Fartlek training group (FTG), Interval training group (ITG) and control group (CG) on speed are graphically presented in figure 1.

Figure 1: Bar diagram showing the pre, post and adjusted post test mean values of Continuous running group(CRG), Fartlek training group (FTG), Interval training group (ITG) and control group (CG)on speed.

Table - III : Analysis of Covariance of data on Coordination between pre and post test of Continuous running group, Fartlek training group, Interval training group and control group

<table>
<thead>
<tr>
<th>Source of Variance</th>
<th>CRG</th>
<th>FTG</th>
<th>ITG</th>
<th>CG</th>
<th>Sum of Squares</th>
<th>df</th>
<th>Mean Square</th>
<th>F ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test Mean</td>
<td>15.62</td>
<td>15.60</td>
<td>15.66</td>
<td>15.46</td>
<td>15.66</td>
<td>3</td>
<td>3.98</td>
<td>138.50*</td>
</tr>
<tr>
<td>Mean</td>
<td>14.77</td>
<td>14.58</td>
<td>14.48</td>
<td>13.73</td>
<td>13.73</td>
<td>3</td>
<td>1.97</td>
<td>138.50*</td>
</tr>
</tbody>
</table>
*Significant at 0.05 level of confidence
(The table value required for significant at 0.05 level with df 3 and 56 & 3 and 55 are 2.77 and 2.77 respectively)

From the table III observed that the adjusted posttest mean values on coordination for Continuous running group (CRG), Fartlek training group (FTG), Interval training group (ITG) and control groups (CG) were 14.77, 14.58, 14.48 and 15.73 respectively. The obtained ‘F’ value of 138.50 for adjusted post test scores on coordination, which was higher than the table value of 2.77 for significance with df 3 and 55 at 0.05 level of confidence. The result of the study showed that there was significant difference among Continuous running group (CRG), Fartlek training group (FTG), Interval training group (ITG) and control group (CG) on coordination. Since
the four groups were involved the Scheffe’s post hoc test was applied to find out the paired mean differences if any, and it is presented in Table IV.

**Table IV:** Scheffe’s post hoc test for the differences between paired adjusted post test means of coordination

<table>
<thead>
<tr>
<th>Group</th>
<th>CRG</th>
<th>FTG</th>
<th>ITC</th>
<th>CG</th>
<th>Std</th>
</tr>
</thead>
<tbody>
<tr>
<td>14.77</td>
<td>14.18</td>
<td>-</td>
<td>15.35</td>
<td>-</td>
<td>0.19</td>
</tr>
<tr>
<td>14.77</td>
<td>-</td>
<td>14.48</td>
<td>15.35</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>14.77</td>
<td>-</td>
<td>-</td>
<td>15.35</td>
<td>0.86</td>
<td></td>
</tr>
<tr>
<td>14.77</td>
<td>-</td>
<td>-</td>
<td>15.35</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>14.77</td>
<td>-</td>
<td>-</td>
<td>15.35</td>
<td>1.15</td>
<td></td>
</tr>
<tr>
<td>14.77</td>
<td>-</td>
<td>-</td>
<td>15.35</td>
<td>1.25</td>
<td></td>
</tr>
</tbody>
</table>

*Significant at 0.05 level of confidence

The table IV Shows that the adjusted post test mean differences of Continuous training group (CRG) and Fartlek training group (FTG), Continuous running group (CRG) and Interval training group (ITG), Continuous running group (CRG) and Control group (CG), Fartlek training group (FTG) and Control group (CG) and Interval training group (ITG) and Control group (CG) were 0.19, 0.29, 0.96, 1.15 and 1.25 respectively. They were greater than the confidence interval value 0.19 at 0.05 level, which indicate that there is a significant differences among the group of Continuous running group (CRG) and Fartlek training group (FTG), Continuous running group (CRG) and Interval training group (ITG), Continuous running group (CRG) and Control group (CG), Fartlek training group (FTG) and Control group (CG) and Interval training group (ITG) and control group (CG). The Comparison of pre, post and adjusted post mean values of Coordination for Continuous running group (CRG), Fartlek training group (FTG), Interval training group (ITG) and control group (CG) on Coordination are graphically presented in figure 3.

**CONCLUSION**

Speed was significantly improved by the Continuous running group, Fartlek training group and Interval training group when compared with control group. Coordination was significantly improved by Interval running group when compared the Continuous running group and fartlek training group. Coordination was significantly improved by fartlek training group when compared with continuous running group.

**REFERENCES**