REVIEW PAPER
International Journal of Recent Trends in Engineering, Vol 2, No. 4, November 2009

Smart Guide for Location Projection

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Abstract— **It is well known that, the proposed Location Projection is reducing searching time and easy to reach destination place in quick time. In present advance technology, rapid advancements are being made in the fields of automation and signal processing. The developments was made in the digital signal processing are being applied in the field of automation, communication systems and biomedical engineering. A research goal is to investigate new signal processing technique and representation. Speech recognition can be used to automate many tasks that usually require hands on human interaction such as recognition simple spoken commands to perform something like pattern matching. Pattern matching, the main part of almost every modern instruction detection system, should provide high performance and ability of reconfiguration. It has a wide variety of applications including academics, corporative, government organization where the system will be useful for the new entries.**

Index Terms—**Speech Recognition, Formant frequency, Neural Networks, Pattern matching, Biomedical Signal processing.**

I. INTRODUCTION

Visual and audio information plays an important role in human communication and recognition. In their day-to-day life, people are used to information on tangible media stored in visible locations. Access to information in the computer relies on one's ability to generate a good query and the computer's capability to match the user's query to information stored in the database [11].

The recent pervious research works is mainly focused on an area of Vehicle navigation system focused the sonar and the wheel encoder information to produce a map[1], Future object tracking in indoor and outdoor environments interest to explore the issues of simultaneous scene interaction modeling[2], unusual activity recognition and important place identification, Trace elements analysis proposed a system that identifies the geographical origin of agricultural products, Visualization for the document space is an important issue for future information retrieval systems[11], Airborne moving map displays the projection of choice the orthographic projection[10].

The main proposal of the system for speech recognition is a strong need for verbal commands in a case of matched pattern display. But it is difficult job for computers and no perfect solution has been found until now. In history some methods have been found such as Hidden Markov Model (HMM), which shows us that no solution is perfect. Based on this, we decided to use known but fresh approach and implement voice recognition using neural networks [8].

Instruction detection system has to define more and more pattern to identify the diversification instruction. Pattern matching [5], the main part of almost every modern instruction detection system, should provide high performance and ability of reconfiguration. The matching signal indicates whether there is predefined pattern matched. We hope to propose an algorithm which display and audio enhanced better compare to exiting systems. Main goal of the proposed speech recognition system is that there is no need to recognize only speech signal but can also be used on many application where some kind of useful to publics.

II. SPEECH RECOGNITION SYSTEM

A. Speech Database

The database consists of speech samples recorded from normal speaker. The samples are recorded at a sampling frequency of 8KHz. For this analysis, speech samples of 35 male and 30 female speakers are considered.

B. Analysis

To begin with, we started with the analysis of CVC patterns. For analysis purpose, the features were extracted using Computerized Speech Laboratory (CSL) software, a speech and signal processing workstation. Using this software, various speech parameters such as ZCR, formants and short-term energy was analyzed [4]. Where the Formant frequency is one of the most important parameter for characterising speech [7].

C. Formant Targets

"Fig. 1," it can be seen that the formant frequencies for normal male and female samples. The formants of the reference speaker in the vowel region were set as the target formants.

D. Neural Networks

This distinguishes neural networks from traditional computing programs that simply follow instructions in a fixed sequential order [19]. A set of inputs (G1 to Gn) is applied to each node representing the inputs from outside world or, alternatively, they may be outputs from other nodes. Each input is multiplied by a weight (S1 to Sn) associated with the node input to which it is connected and the weighted inputs are then summed together. Supervised learning has been the mainstream of neural

model development. The training data consist of many pairs of input/output training patterns. Therefore, the learning will benefit from the assistance of the reference database.

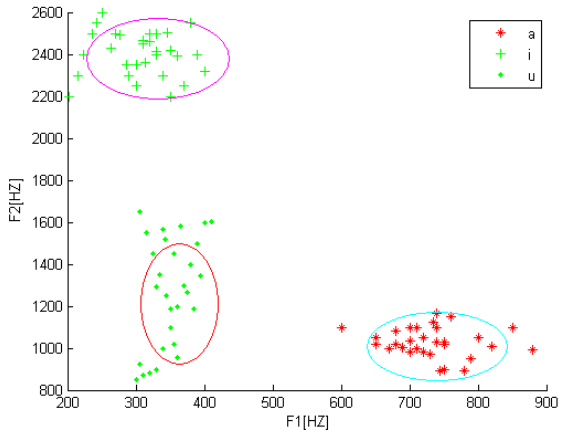

Figure 1. Scatter plot of F1 and F2 values for normal user. The circles indicate the regions of concentration of F1 and F2 values for /a/, /i/ and /u/ samples.

III. PATTERN MATCHING

Pattern matching problem is broadly defined as the task of finding multiple occurrences of targets P[0], P[1],..P[m-1] in the incoming content S of length i. The speech signal given as command signal is passed through the same feature extraction process and template making process and compared with the stored final template [5]. The minimum difference with the stored template of the particular word will result in generation of the code indicating that the particular word has been spoken. Selection of target based recognized word through the control signal. Location layout shows the overall projection area. Target identification and tracking based on to illustrates the use of two dimensional normalized cross-correlations for pattern matching and target tracking. Projection on visual and audio indicates the corresponding user speech signal.

IV. METHODOLOGY IMPLEMENTATION

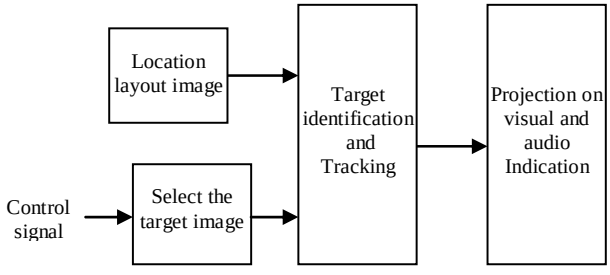

Figure 2. Block diagram of pattern matching

The speech signal is divided into frames of 20ms duration with 50% overlapping factor. The overlapping factor is to avoid the artefacts that arise during the transition from one frame to the other. A hamming window is applied to each of the frame. The speech signal is divided into voiced and unvoiced region depending on the threshold level each of the voiced frames is pre-emphasized with a first order pre- emphasis filter. The frames are LPC encoded, with an LPC order of 10. The spectrum is obtained from the LPC coefficients, whose peaks correspond to the formants. Neural networks are parallel computational models, comprising densely interconnected adaptive processing units. The function of the entire neural network is simply the computation of the outputs, which based on giving parameter and it will recognize the corresponding speech word with help of reference stored data. Pattern recognition does the matching based on giving input signal with help of pattern matching algorithm and image display on the screen and audio sound plays in speaker.

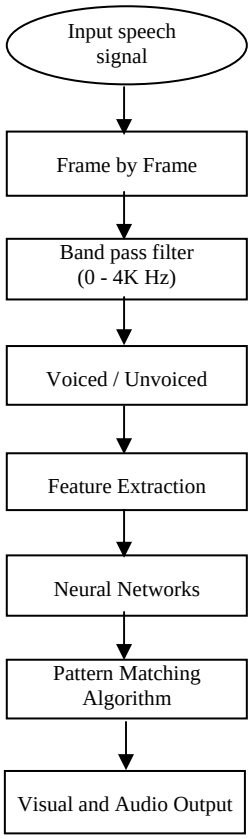

Figure 3. Flowchart of the methodology

V.EXPERMENTAL RESULTS

The most simple and useful way in many cases to improve the performance of a Speech Recognition system is the use of speaker adaptation to create speaker dependent models that reduce the mismatch due to the speaker variability. However distortions in the signal affected the speech recognition of the word matching. In order to overcome this limitation, Proposed Algorithms are widely used for this task and obtain good performance in many cases. Table.1 shows Test result for recognizing the tabulated words orders were executed

with different subjects both 25 male and 25 female at age of 20 to 30.

"Fig. 4,", the matched output is the result of location projection on the word for 'BIO' shown in the location projection window, the locations of the targets by highlighting them with rectangular regions of interest (ROIs) in the color of red. These ROIs are present only when the targets are detected in the overall location layout. Audio output 'BIO' corresponding equivalent stored data was played from loud. The same procedure was followed to remaining words such that 'MECH', 'NANO', 'CIVIL', 'SCHOOL', 'LAB'.

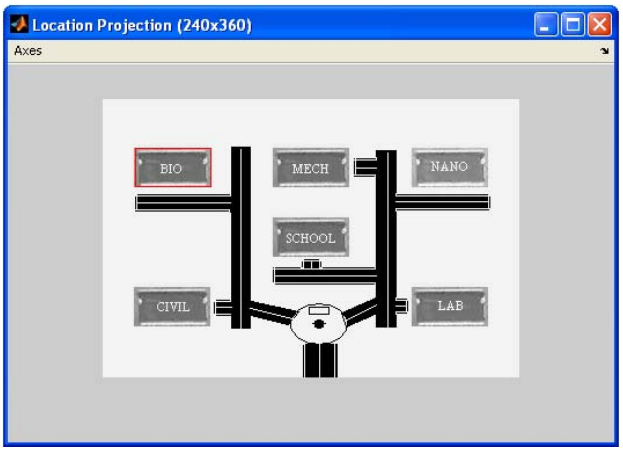

Figure 4. Shows the location projection for 'BIO'

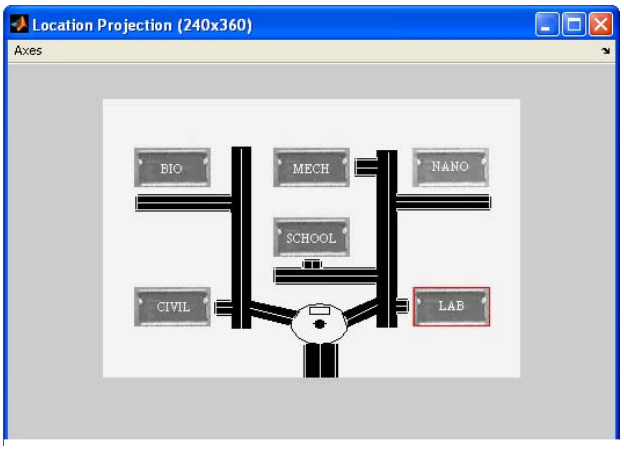

TABLE I.
AVERAGE PERCENTAGE FOR RESULTS OF
LOCATION PROJECTION AND AUDIO PRODUCTION

Word	Number of samples	Error (%)	Recognition Quality (%)
BIO	50	0	100
MECH	50	0	100
NANO	50	0	100
CIVIL	50	0	100
SCHOOL	50	0	100
LAB	50	0	100

VI. CONCLUSION

An algorithm for Location projection and Answering System was discussed. The results of evaluation tests confirm that the desired image pattern is obtained through this method. Analysis of the results of the recognition of speech shows that the recognition of speech with neural nets is certainly possible. Also the quality of the recognition is adequate enough for use in normal environment. Pattern matching shows full percentage of matching which corresponding target location.

VII. FUTURE ENHANCEMENT

Further research is required for implementing the algorithm in hardware with help of Digital Signal Processor can make the system computer independent which can make the system portable and so the system can be used for public place (such has railway station, bus stand, hospital … etc), design a system for different speech disable person[20] can able access the system without feel any inconvenient and an impartment improvement system is also can work wirelessly between user and machine will provide the effective communication.

VIII. ACKNOWLEDGEMENT

The authors would like Dr. T. Lazar Mathew, Director, Sponsored Research and SBST, VIT University.

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