

ARTIFICIAL INTELLIGENCE – FOR SPEECH RECOGNITION

R.Sathya¹

¹Assistant Professor , Department of Computer Science ,
Sri Krishna Adithya College of Arts and Science, Kovaipudur , Coimbatore
sathyar@skacas.ac.in

M.Pavithra²

²Student , I B.Sc (Information Technology)
Sri Krishna Adithya College of Arts and Science, Kovaipudur , Coimbatore
16bit036pavithram@skacas.ac.in

G.Girubaa³

³Student , I B.Sc (Information Technology),
Sri Krishna Adithya College of Arts and Science, Kovaipudur , Coimbatore
16bit013girubaag@skacas.ac.in

Abstract - The intelligence of machines by which it works efficiently shall known as artificial intelligence. Speech recognition is the way of understanding voice through the computer and by any required task. It is commonly used in military, commercial and also for business purpose. The speech recognition processing is performed by software known as speech recognition engine, based on audio signals it enables communication among human and the computers. It is the science and engineer of making intelligent machines, exclusively with computer programs and the process of converting speech signals in to words.

Key words - Artificial intelligence, speech recognition, converting speech signals

I. INTRODUCTION

The term artificial intelligence was coined in the year 1956 by McCarthy, described the mental qualities to machines and artificial intelligence [1]. Thus, literally defined as “Making intelligent machines especially computer programs”, artificial intelligence is the intelligence of machines and branch of computer science that can create it. Intelligence is the computational parts to achieve the goals in the fastest ever blooming world. Degrees of peoples, animals and also machines are being the part of this. It is further known as the study of mental faculties through the computational part. Intelligent agent can make a maximize actions and its helps to success. Few definitions shall made available in books are as follows

1. The exciting new effort to make computers think and machines with minds in the full and literal sense, Haugeland,1985 [2]
2. The art of creating machines that perform function that require intelligence when performed by people, Kurzweil,1990 [3]
3. The study of mental faculties through the use of computational modals, Charnick and McDermott,1985 [4]
4. A field of study that seeks to explain and emulate intelligent behavior in terms of computational process, Nilsson,1990 [5]

II. INTELLIGENCE COUPLED WITH SPEECH

A. Intelligence

Intelligence is the computational part to achieve the goals. Intelligence is related to tasks such as creativity, pattern recognition, speech recognition, language processing , knowledge, induction ,deduction, communication, thinking and etc...

Goals of Artificial Intelligence are to make the System can act like a human, System can think like a human, System can act intelligent and System can think intelligent.

B. Speech Recognition

Speech Recognition is a process of speech signals into a sequence of words. In 1990's Speech recognition reached a practical level with a limited satisfaction. Artificial Intelligence involves in to a two important parts. First, it involves studying the thought process of human being and secondly, it involves the process of machines (Computer, Robots and etc...).

Speech recognition is the one of the main benefit. User can concentrate on manual and observation operations by using the voice input commands. Computer speech recognition is the quite convenient, but most of the users using mouse and keyboard for the most convenient.

C. *Speaker Independency*

The speech quality differs from one person to another person. It is difficult to build electronic systems that can everyone's voice. The system must be trained by particular person individually. Such a system is called speaker-independent system. Speaker independent system can be used by anyone, any voice and characteristic can vary from one to another. Most of the system is costly. It is consider on environment in which the speech system can be work .the grammar used by the speaker and its acceptance by the system , noise , noise type of the microphone are the qualities of a speech recognition.

D. *Features of the speaker*

The identity is related with the physiological and characteristic of the speaker. These characteristic exists in two forms such as vocal track and the voice source associated with dynamic features spanning of several segments. The most common short term spectral measurement is currently used and the spectral coefficient derived from the Linear Predictive Coding (LPC) and their regression coefficients. It provides more stable representation of repetition to another of a particular speaker utterance.

As the regression coefficients typically the first and second order coefficients are extracted at every frame period to represent the spectral dynamics. These coefficients are derivatives of the time function of the spectral coefficients and are called the delta and delta-delta-spectral coefficients respectively.

E. *Environmental issues*

Real applications demand has to perform speech recognition do not affect by environment. We need to be concerned on the various microphones which we are using in tracing and testing. Especially during development of processing, obstacles include additive noise from machinery, competing talkers, spectral shaping by microphones are the vocal tracts of individual speakers.

A number of algorithm for speech recognition have been proposed .they are,

- Spectral subtraction of DFT coefficients
- MMSE technique
- Spectral equalization
- Spectral subtraction

III. SPEECH RECOGNITION-FEATURES

A. *Input*

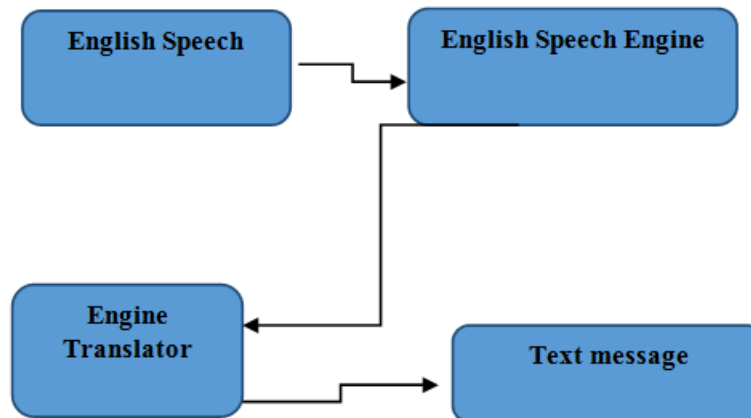
1. Through speech Engine or soft copy
2. Interactive Graphical User Interface
3. Format retention
4. Soft and standard translation

Speaker can communicate with the application through such input device (eg.Microphone).

B. *Pre-processing tools*

Spell checker with Phrase marker and Proper noun, date and other package specific identifier Input Format with Input Format : txt, .doc .rtf, User friendly selection of multiple output, Online thesaurus for selection of contextually appropriate synonym, Online word addition, grammar creation, Updating facility and Personal account creation and inbox Management.

C. Method of speech recognition:



D. Applications

User can concentrate on both observation and manual operations and control the machine by voice input commands. Another main application of the speech processing is the military operation. Voice control of the weapon is the example. Pilots can give the information to the computer through the microphones they do not have to use their hands. Voice recognition also used for making airline and hotel reservation. It can also used as system of security, efficacy and safety.

IV. CONCLUSION

Speech recognition helps physically challenged peoples as an aid of assisting its support for them. Physically challenged peoples can do their works without pushing the any buttons and without the help of any peoples. It will not much time consuming, user friendly and do the task in an effective way. This ASR technology also uses in the military weapon and research field. Till now officers dealing with criminals tend to use this technology. They are used this to catch and trap the criminals.

V. REFERENCES

- [1] McCarthy, J. (1979) Ascribing mental qualities to machines. In: Philosophical perspectives in artificial intelligence, ed. M. Ringle. Atlantic Highlands, N.J.: Humanities Press.
- [2] Haugeland, J. (ED). (1985), Artificial intelligence : The very Idea, Massachusetts Institute of Technology, Massachusetts : MIT Press.
- [3] Kurzweil, R. (1990). The age of Intelligent Machines, Massachusetts Institute of Technology, Massachusetts : MIT Press.
- [4] Charniak and Mc Dermoth, (1985). Introduction to Artificial Intelligence, USA: Addison – Wesley.
- [5] Nilson, N.J. (1998). Artificial Intelligence – A new synthesis. Morgan Koufmann.