**Abstract**

For more than three decades, a great amount of research was carried out on various aspects of speech signal processing and its applications. Highly successful application of speech processing is Automatic Speech Recognition (ASR). Early attempts to ASR consisted of making deterministic models of whole words in a small vocabulary and recognizing a given speech utterance as the word whose model comes closest to it. The introduction of Hidden Morkov Models (HMMs) in the early 1980 provided much more powerful tool for speech recognition. And the recognition can be done for continuous speech using large vocabulary, in a speaker independent manner. Today many products have been developed
that successfully utilize ASR for communication between human and machines. Performance of speech recognition applications deteriorates in the presence of reverberation and even low levels of ambient noise. Robustness to noise, reverberation and characteristics of the transducer is still an unsolved problem that makes the research in the area of speech recognition still very active. A detailed study on ASR carried out and presented in this paper that covers the basic model of speech recognition, applications, feature analysis, various models used in speech recognition and challenges.