**Abstract**

Speech Recognition is the ability of a computer to recognize general, naturally flowing utterances from a wide variety of users. In recent years, with the new generation of computing technology, speech technology becomes the next major innovation in man-machine interaction. Automatic Speech Recognition (ASR) system takes a human speech utterance as an input and returns a string of words as output. Research on speech recognition has led to variety of applications like hands free and eyes free applications, voice user interfaces, simple data entry, forensic applications, voice authentication, biometrics, robotics, air traffic controllers, preparation of medical reports, learning tools for handicapped, and reading tools for blind people. Even though research in speech recognition in English language attained certain maturity, speech interfaces in Indian languages still in the startup level. Tamil is one of the widely spoken Indian languages of the world with more than 77 million speakers. Speech interfaces in Indian languages will enable the people in various semiurban and rural parts of India to use telephones and Internet services. In the proposed work, isolated Tamil words speech recognition interface is designed using neural network algorithm. To design the system, a dataset of 10 Tamil words uttered by 20 speakers each word 5 times has been prepared. Linear predictive coding of order 8 is used for feature extraction. Back-propagation training is carried with the feature vectors extracted using LPC from the speech files in the dataset. Multilayer Perceptron algorithm in neural network is employed for recognition of the words using the trained model. An interface also designed to recognize the Tamil words uttered by the user. The average recognition rate of the system is 93.6% and for few words it gives 100% accuracy. The performance of the system is measured using word recognition rate and word error rate