E1-20: Comparison of Fast Fourier Transform and Maximum Entropy method in Sinhala speech recognition

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With the recent advancement of computer technology, communicating with the computer through human voice has become a reality. There has been tremendous progress made on speech recognition in English and other European languages and Chinese, Japanese and other Southeast Asian languages. However, very little progress has been made on speech recognition of Sinhala language. With the intention of developing a speech recognition system for Sinhala, we are engaged in analysing Sinhala speech using various techniques. In this paper we present results obtained with the Fourier Spectral method and Maximum Entropy method. Results of both single character analysis and single word analysis will be presented.

It is a known fact that Maximum Entropy method produces smooth power spectra with well defined peaks compared to Fourier spectra. In this study we have found some characters can be distinguished easily by Fourier power spectral method while others can be distinguished through Maximum Entropy method. However, more work on both methods has to be done before making the final characterization of Sinhala characters. In the study of Sinhala words, we have found that many characters inside the word can be distinctly identified from spectra from both methods. This was expected because Sinhala is a phonetic language. However, if we break single characters like

are different. However, in Sinhala words interference between consecutive words is found to be rare.