STATISTICAL TIME DIVISION MULTIPLEXING ARCHITECTURES AND DESIGN

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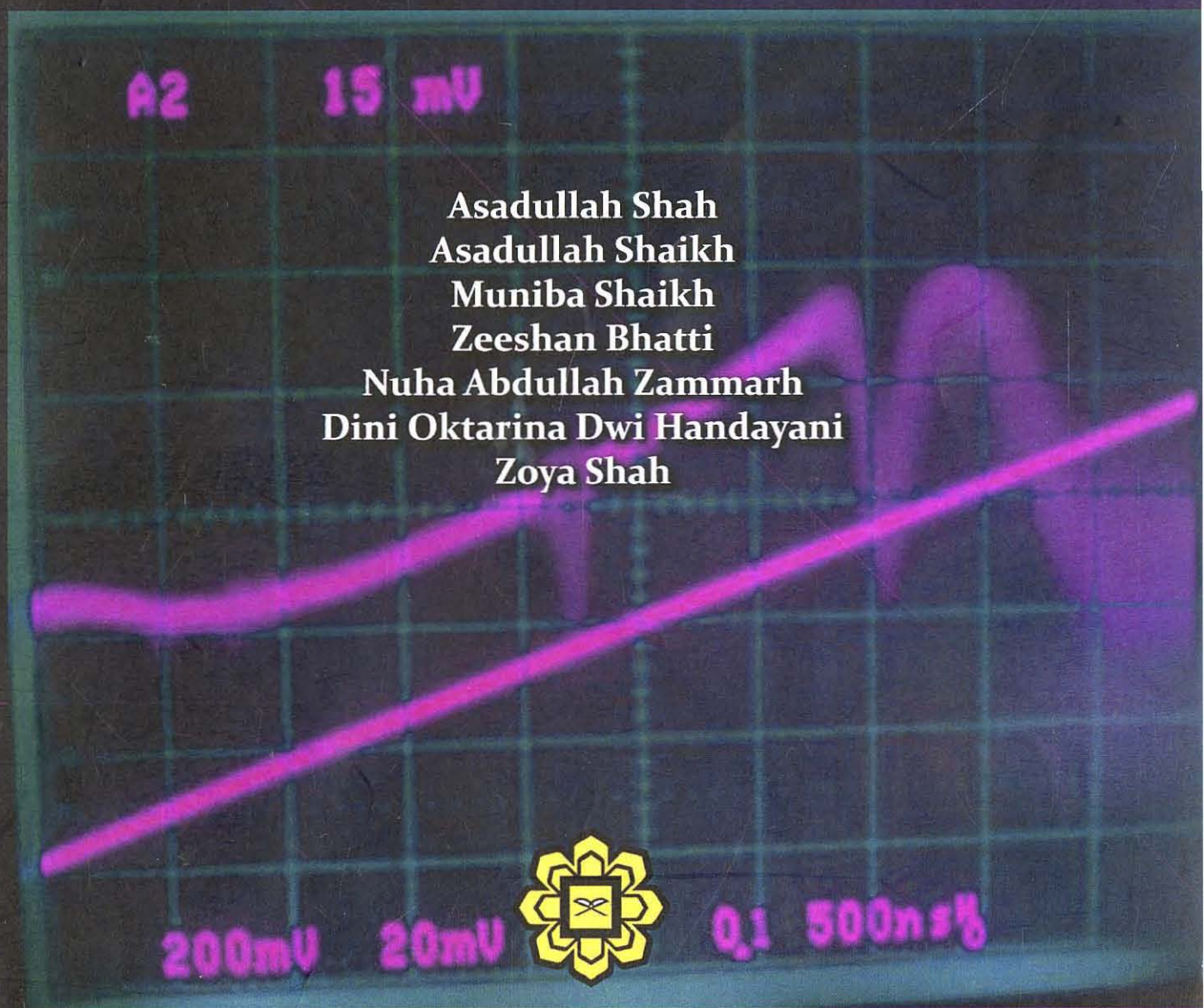

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23. LPC Envelope Difference Criterion and Multiplexing efficiency

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23.0 Abstract

Linear Predictive Coding (LPC) envelop difference is a technique that exploits envelop of each frame. This is a frequency domain measure in which for each active speech frame and its reconstructed frame is used to find out the differences in their envelops. This LPC difference measures can be utilised for the STDM design purpose. This chapter is dedicated for LPC envelop as a frame discarding criterion to maximize the bandwidth.

23.1 LPC analysis

The objective measures due to spectrum envelope distortion are computed by LPC analysis, which has already been used in speech recognition [50].

The LPC envelope distance measure is in frequency domain, the LPC envelopes of s(n) and reconstructed srec(n) are computed by LPC inverse filtering speech. Then the Fast Fourier Transform (FFT) of the LPC coefficients represent the LPC envelope. For each active speech frame and its reconstructed frame the LPC envelopes are obtained and the difference of these is the LPC envelope distance measures.

23.2 Modelling of LPC Envelope Difference or Distance

As is the case of other two criterions, this modeling facilitates the use of the model generated values of the LPC envelope distance.

- x and xx are generated between 1 and 8; both from different random number generators.
- xxx is obtained by x * xx.
- Similarly y and yy are generated between 1 to 8 and 1 to 9 respectively.
- yyy is obtained by multiplication of both y * yy.
- xxx < yyy is accepted otherwise it is rejected.
- Finally xxx >= 5 is divided by a factor of 3.0. The resultant is a value for this measure.

The pdf and cdf for this measures are shown in figure.