STATISTICAL TIME DIVISION MULTIPLEXING ARCHITECTURES AND DESIGN

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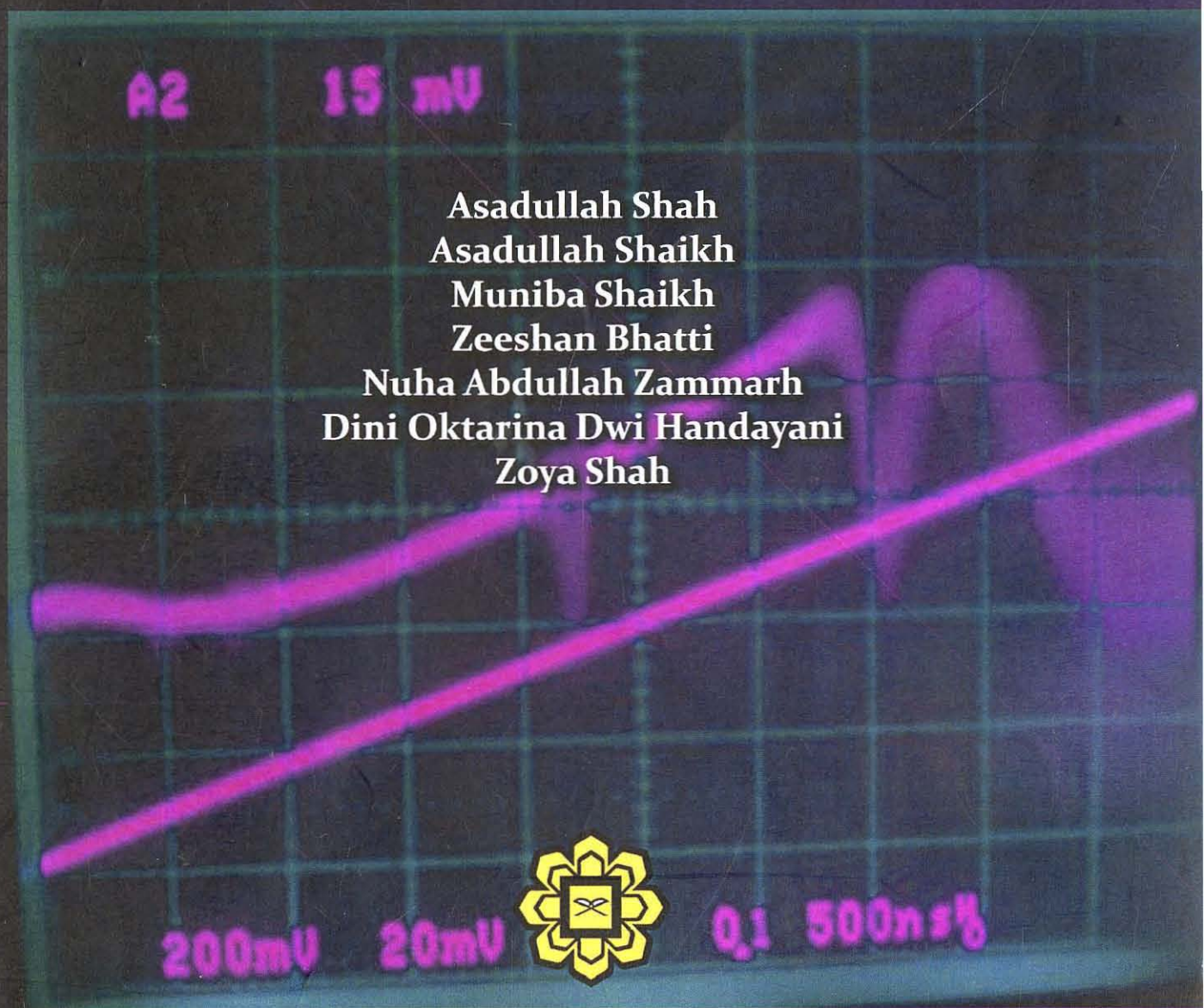

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26. Speech Frame Sensitivity Based on Mean Square Error Criterion

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26.0 Abstract

The mean square error is time domain measure used to assess the speech quality. This objective measure can be used for discarding extra packets, only those packets may be discarded obtain the lowest MSE among all active users. This chapter is detailing the way this MSE can be utilized in STDM designs.

26.1 Speech frame

It is believed that any reconstructed speech frame results in a smaller Mean Square Error difference, will be less distorting than to those of higher difference frames. The smaller difference can only be achieved for those frames which can be reconstructed better. Therefore, those frames could be (a) less annoying for perceptual speech if discarded, because their near optimum replacement can be achieved, (b) the higher percentage of frame loss can be allowed.

To further investigate this idea, Msqr-err based experiments are carried out in such a way that a threshold against Msqr-err was set as shown in figure 6.9. If any active speech frame and its duplicate (reconstructed) were below that threshold, a frame was assumed discarded and replaced by a substituted version. For various threshold settings the loss of frame received and effect on quality of these losses were observed.