

Development of Non-Intrusive Speech Evaluation Measure Using S-Transform and Light-Gbm

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Abstract : The evaluation of speech quality and intelligence is critical to the overall effectiveness of the Speech Enhancement Algorithms. Several intrusive and non-intrusive measures are employed to calculate these parameters. Non-Intrusive Evaluation is most challenging as, very often, the reference clean speech data is not available. In this paper, a novel non-intrusive speech evaluation measure is proposed using audio features derived from the Stockwell transform. These features are used with the Light Gradient Boosting Machine for the effective prediction of speech quality and intelligibility. The proposed model is analyzed using noisy and reverberant speech from four databases, and the results are compared with the standard Intrusive Evaluation Measures. It is observed from the comparative analysis that the proposed model is performing better than the standard Non-Intrusive models.

Keywords : non-Intrusive speech evaluation, S-transform, light GBM, speech quality, and intelligibility

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