Analysis of Linguistic Disfluencies in Bilingual Children's Discourse

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Abstract : Speech disfluencies are common in spontaneous speech. The primary purpose of this study was to distinguish linguistic disfluencies from stuttering disfluencies in bilingual Tamil–English (TE) speaking children. The secondary purpose was to determine whether their disfluencies are mediated by native language dominance and/or on an early onset of developmental stuttering at childhood. A detailed study was carried out to identify the prosodic and acoustic features that uniquely represent the disfluent regions of speech. This paper focuses on statistical modeling of repetitions, prolongations, pauses and interjections in the speech corpus encompassing bilingual spontaneous utterances from school going children – English and Tamil. Two classifiers including Hidden Markov Models (HMM) and the Multilayer Perceptron (MLP), which is a class of feed-forward artificial neural network, were compared in the classification of disfluencies. The results of the classifiers document the patterns of disfluency in spontaneous speech samples of school-aged children to distinguish between Children Who Stutter (CWS) and Children with Language Impairment CLI). The ability of the models in classifying the disfluencies was measured in terms of F-measure, Recall, and Precision.