Supplemented Speech Recognition for Dysarthria S.K. Fager, D.R. Beukelman, T. Jakobs, and J.P. Hosom

The goal of this presentation is to describe the Supplemented Speech Recognition (SSR) prototype system and to examine the keystroke requirements and recognition accuracy while generating text for a range of dysarthria type and severity using different speech training strategies. This system utilizes multiple sources of information to disambiguate text (speech recognition based on dysarthric speech, user customization, alphabet supplementation, and language modeling). The system incorporates a variety of user customization training strategies in addition to a pre-developed lexicon based on dysarthric speech. The conditions for the experiment included the original core dictionary training, the core dictionary training plus the addition of untrained words (added through the developed lexicon), and a full-system retraining of all words. Results show that the original core dictionary training plus the untrained words (added through the lexicon) resulted in a substantial increase in speech recognition accuracy and a reduction in keystrokes for a range of dysarthria type and severity. These results indicate that some individuals with dysarthria may be able to functionally use the SSR with minimal speech training time required.