

Goal-directed speech in a spoken language system Alexander I. Rudnicky (School of Computer Science, Carnegie-Mellon University, Pittsburgh, PA 15213).

The advent of reliable speaker-independent continuous speech recognition systems has made it possible to design systems that use speech as a replacement for keyboard input. To understand the nature of a system that accepts spontaneous goal-directed speech (as opposed to the current standard of read speech), we implemented a spoken-language spreadsheet and studied users performing a series of tasks using this system. The system was instrumented to allow the collection of detailed timing information about the components of the interaction cycle. The (HMM-based) recognition system incorporates a lexicon of 273 words and a language of perplexity 51. Four users performed a series of 40 tasks (involving the entry of personal financial information) alternating voice and keyboard input. Users completed thirty tasks in one block of sessions, then returned a month later to complete the remainder. The utterances spoken into the system (over 7500) were stored for later analysis. The data collected provide a comprehensive picture of how users learn to use a spoken-language system and provide an understanding of the factors that govern performance in spoken-language systems.

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