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(54) Title: **SYSTEM AND METHOD FOR GENERATING AND USING CONTEXT DEPENDENT SUB-SYLLABLE MODELS TO RECOGNIZE A TONAL LANGUAGE**

(57) Abstract

A speech recognition system for Mandarin Chinese comprises a pre-processor (32), HMM storage (34), speech identifier (36), and speech determinator (38). The speech identifier includes pseudo initials for representing glottal stops that precede syllables of lone finals. The HMM storage stores context dependent models of the initials, finals, and pseudo initials that make the syllables of Mandarin Chinese speech. The models may be dependent on associated initials or finals and on the tone of the syllable. The speech determinator joins the initials and finals and pseudo initials and finals according to the syllables of the speech identifier. The speech determinator then compares input signals of syllables to the joined models to determine the phonetic structure of the syllable and the tone of the syllable. The system also includes a smoother (42) for smoothing models to make recognitions more robust. The smoother comprises an LDM generator (46) and a detailed model modifier (48). The LDM generator generates less detailed models from the detailed models, and the detailed model modifier smoothes the models with the less detailed models. A method for recognizing Mandarin Chinese speech includes the steps of arranging context dependent, sub-syllable models; comparing an input signal to the arranged models; and selecting the arrangement of models that best matches the input signal to recognize the phonetic structure and tone of the input signal.

