Automatic Assignment of Geminate and Epenthetic Vowel for Amharic Text-to-Speech System

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Abstract : In the development of a text-to-speech synthesizer, automatic derivation of correct pronunciation from the grapheme form of a text is a central problem. Particularly deriving phonological features which are not shown in orthography is challenging. In the Amharic language, geminates and epenthetic vowels are very crucial for proper pronunciation, but neither is shown in orthography. In this paper, to proposed and integrated a morphological analyzer into an Amharic Text-to-Speech system, mainly to predict geminates and epenthetic vowel positions and prepared a duration modeling method. Amharic Text-to-Speech system (AmhTTS) is a parametric and rule-based system that adopts a cepstral method and uses a source filter model for speech production and a Log Magnitude Approximation (LMA) filter as the vocal tract filter. The naturalness of the system after employing the duration modeling was evaluated by sentence listening test, and we achieved an average Mean Opinion Score (MOS) 3.4 (68%), which is moderate. By modeling the duration of geminates and controlling the locations of epenthetic vowel, we are able to synthesize good quality speech. Our system is mainly suitable to be customized for other Ethiopian languages with limited resources.