

## **Acoustic characteristics of declarative sentence ending `da' in Korean**

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The paper investigates the acoustic realization of declarative sentence-ending /-ta/ in Korean using a large-scale acoustic corpus and a forced-alignment technique. In Korean, the utterance boundary is marked by an overt morphological ending, potentially obviating the needs for rich acoustic cues for the boundary, and we examine if Korean makes use of a full battery of acoustic cues that English uses, a language that lacks overt morphological marking of utterance boundary. The secondary goal of the study is to test the effectiveness of a Unicode-based forced-alignment system we developed for Korean.

The data used for this study was drawn from "A Speech Corpus of Reading-Style Standard Korean" (the National Institute of the Korean Language). We developed a baseline phone alignment system for Korean based on Unicode and the Hidden Markov Model (HMM). We extracted instances of utterance final /ta/ and non-final /ta/ from a subset of one male speakers' data and found that the utterance final /ta/ significantly differs from medial /ta/ in all acoustic properties examined, i.e, F0 (pitch), F1 & F2 (vowel quality), H1-H2 (voice quality), and Duration. Also, to test the reliability of our alignment system, the force-aligned output was manually corrected and the correlation between the acoustic measurements based on the two alignment outputs was examined and strong and significant correlations were found.

Our results support the view that the phonetic manifestation of the utterance boundary is conditioned directly by the prosodic structure, independent of the morphological properties of the language. Also, our Unicode-based HMM forced-alignment system was shown to produce acoustic measurements comparable to manually aligned data.