THE ROLE OF ACOUSTIC FEATURES IN MARKING ACCENT AND DELIMITING SENTENCE BOUNDARIES IN SPOKEN POLISH

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ABSTRACT

In this article [1] we presented statistical models of acoustic phenomena observed within realizations of phonemes and the correlations of the acoustic properties with functional features, such as accents and sentence boundaries.

Selected features of Polish phonemes' realizations (the duration, energy and power of the phonemes, the fundamental frequency of voiced phones) were investigated in order to detect their relations with the phone location in a sentence. Two databases were used: the first one contained separately produced sentences and the second one - phrases extracted from larger, continuous stretches of natural speech.

As the markers of sentence endings, the tendencies of the pre-boundary lengthening of the phones and a decrease of their energy and pitch were identified and described with probabilistic models. Our models are consistent with the previous results obtained for Polish (i. e. [2]) and they are also similar to those obtained for other languages.

In the place of accented syllables, we have observed a significant increase of total energy and power, accompanied by a local increase of F0, but only slight lengthening of accented vowels was noticed. It would suggest that Polish accent has properties of both the dynamic accent and the pitch accent, which remains in consistency with some previous works but only partially concordant with others (like [3]).

The suggested evaluation methods allow assessing quantitatively the phenomena known from phonetic literature. The results of the investigation are applied in designing the automatic punctuation detection algorithms and for language modeling in automatic speech recognition systems.

REFERENCES

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