Exploiting articulatory features for pitch accent detection

发音特征在重音检测上的应用

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- Pitch accent brings not only prominence to supra-segmental features such as duration, pitch, and energy, but also exaggeration to articulatory variation from the perspective of speech production. However, the current research has not considered articulatory information into pitch accent detection yet.
- The difficulty of utilizing articulatory information in speech processing is its measurement. Direct measurement of articulatory information during speech production is costly and uncomfortable for the subjective.
- The distinguished information from articulatory features should be used to promote the detection accuracy of pitch accent.
 Besides, a data-driven method should be considered in extracting articulatory features.

 In this work, the articulatory features are exploited and analyzed for pitch accent detection. The syllable-level articulatory features are extracted based on a hierarchical multi-layer perceptrons (MLPs).



Performance of articulatory features extracted using single or hierarchical MLP structure on two-way pitch accent detection	MLP structure —		Recognition accuracy (%)		
			Merged-AF	Merged-AF & PF	
	Single		78.79	79.95	
	Hierarchical		79.98	81.20	
Performance of different features for two- and four-way pitch accent detection	Task —		Recognition accuracy (%)		
		PF	Merged-AF	PF & Merged-AF	
	Two-way	79.16	79.98	81.20	
	Four-way	75.00	74.98	76.84	
	Articulatory attribute		e Feature dimensionality		
	Accented-vowel		21		
	Unaccented-vowel		17		
The articulatory features	Tense		10		
ranked by importance	Round			4	
for pitch accent detection	Mid		9		
	Low		4		
	Glottal		10		
	Dental		6		
	Velar		4		