



The Journal of the Acoustical Society of
America

[HOME](#)[BROWSE](#)[MORE ▼](#)

[Home](#) > [The Journal of the Acoustical Society of America](#) > [Volume 143, Issue 3](#) > [10.1121/1.5036134](#)

[< PREV](#)[NEXT >](#)

Full

Published Online: 17 April 2018

Toward the automatic detection of manually labeled irregular pitch periods

The Journal of the Acoustical Society of America **143**, 1869 (2018);
<https://doi.org/10.1121/1.5036134>

Olivia Murton

Speech and Hearing BioSci. and Technol., Harvard Med. School, 1 Bowdoin St, #11,
Boston, MA 02114, omurton@g.harvard.edu

Jeunq-Yoon Choi

more...



Topics ▾

ABSTRACT

Irregular pitch periods (IPPs) occur in a wide variety of speech contexts and can support automatic speech recognition systems by signaling word boundaries, phrase endings, and certain prosodic contours. IPPs can also provide information about emotional content, dialect, and speaker identity. The ability to automatically detect IPPs is particularly useful because accurately identifying IPPs by hand is time-consuming and requires expertise. In this project, we use an algorithm developed for creaky voice analysis by Kane *et al.* (2013) incorporating features from Ishi *et al.* (2008) to automatically identify IPPs in recordings of speech from the American English Map Task database. Short-term power, intra-frame periodicity, inter-pulse similarity, subharmonic energy, and glottal pulse peakiness measures are input into an artificial neural network to generate frame-by-frame creak probabilities. To determine a perceptually relevant threshold probability, the creak probabilities are compared to IPPs hand-labeled by experienced

raters. Preliminary results yielded an area under the receiver operating characteristic curve of 0.82. Thresholds above 0.1 produced very high specificity, but even lower thresholds yielded fairly high sensitivity and specificity. These results indicate generally good agreement between hand-labeled IPPs and automatic detection, calling for future work investigating effects of linguistic and prosodic context.

Resources

[AUTHOR](#)

[LIBRARIAN](#)

[ADVERTISER](#)

General Information

[ABOUT](#)

[CONTACT](#)

[HELP](#)

[PRIVACY POLICY](#)

[TERMS OF USE](#)

FOLLOW AIP PUBLISHING:



Website © 2018 AIP Publishing LLC. Article copyright remains as specified within the article.

Scitation