

Search...

The Journal of the Acoustical Sc



Advanced Search | Citation Search



Sign In ∨



The Journal of the Acoustical **Society of America**

HOME BROWSE

COLLECTIONS ~

PUBLISH WITH US V

ABOUT ~

Volume 150, Issue **4_Supplement**

October 2021



< Previous Article

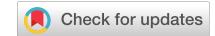
Next Article >

Meeting abstract. No PDF available.

OCTOBER 01 2021

Modeling speaker-specific vocal tract kinematics from gestural scores **FREE**

Yijing Lu; Justin Ly; Shrikanth Narayanan; Louis Goldstein; Asterios Toutios



J. Acoust. Soc. Am. 150, A188-A189 (2021) https://doi.org/10.1121/10.0008077

Split-Screen

Share ∨



The theory of Task Dynamics provides a method of predicting articulatory kinematics from a discrete phonologically-relevant representation ("gestural score"). However, because the implementations of that model (e.g., Nam et al., 2004) have generally used a simplified articulatory geometry (Mermelstein et al., 1981) whose forward model (from articulator to constriction coordinates) can be analytically derived, quantitative predictions of the model for individual human vocal tracts have not been possible. Recently, methods of deriving individual speaker forward models from real-time MRI data have been developed (Sorensen et al., 2019). This has further allowed development of task dynamic models for individual speakers, which make quantitative predictions. Thus far, however, these models (Alexander et al., 2019) could only synthesize limited types of utterances due to their inability to model temporally overlapping gestures. An updated implementation is presented, which can accommodate overlapping gestures and incorporates an optimization loop to improve the fit of modeled articulatory trajectories to the observed ones. Using an analysis-by-synthesis approach, the updated implementation can be utilized: (1) to refine the hypothesized speaker-general gestural parameters (target, stiffness) for individual speakers; (2) to test different degrees of temporal overlapping among multiple gestures such as a CCVC syllable. [Work supported by NSF, Grant 1908865.]

Topics

Organs, **Articulator**

© 2021 Acoustical Society of America.

View Metrics

Citing Articles Via

Google Scholar



Most Read

Most Cited

A survey of sound source localization with deep learning methods

Magnitude of extended high frequency hearing loss associated with auditory related tinnitus distress, when controlling for magnitude of hearing loss at standard frequencies

Vibrational and acoustic communication in fishes: The overlooked overlap between the underwater vibroscape and soundscape

Online ISSN 1520-8524 Print ISSN 0001-4966

Resources

For Researchers

For Librarians

For Advertisers

Our Publishing Partners

Explore

Journals

Physics Today

Conference Proceedings

Books

Special Topics

Publishers

pubs.aip.org

About

User Guide

Contact Us

Register

Help

Privacy Policy

Terms of Use

Connect with AIP Publishing

Facebook

LinkedIn

Twitter

YouTube

