Bridging Speech Science and Technology — Now and Into the Future

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Shrikanth (Shri) Narayanan
University of Southern California, Los Angeles, CA, United States of America

Abstract

Speech research is remarkable in so many ways – in its essential human-centeredness, the rich interconnections between the science and technology, and its wide-ranging impact that is both fundamental and applied. Crucial advances in speech science research catalyze and leverage technological advances across the machine intelligence ecosystem, from sensing and imaging to signal processing and machine learning. Likewise, creation of speech-centric societal applications benefits from an understanding of how humans produce, process and use speech in communication. In these complementary endeavors, two intertwined lines of inquiry endure: illuminating the rich information tapestry and inherent variability in speech and creating trustworthy speech technologies.

This talk will highlight some advances and possibilities in this multifaceted speech research realm. The first is capturing and modeling the human vocal instrument during speaking and how related technological and clinical applications leverage this technology. The second focuses on speech-based informatics tools to support research and clinical translation related to human health and wellbeing. Finally, the talk will highlight the critical goal of designing trustworthy speech and spoken language machine intelligence tools that are inclusive, equitable, robust, safe, and secure.

Biography

Shrikanth (Shri) Narayanan is University Professor and Niki & C. L. Max Nikias Chair in Engineering at the University of Southern California (USC), where he is Professor of Electrical & Computer Engineering, Computer Science, Linguistics, Psychology, Neuroscience, Pediatrics, and Otolaryngology - Head & Neck Surgery, Director of the Ming Hsieh Institute and Research Director of the Information Sciences Institute. Prior to USC, he was with AT&T Bell Labs and AT&T Research. His interdisciplinary research focuses on human-centered sensing/imaging, signal processing, and machine intelligence centered on human communication, interaction, emotions, and behavior. He is a Fellow the Acoustical Society of America, IEEE, ISCA, the American Association for the Advancement of Science, the Association for Psychological Science, the Association for the Advancement of Affective Computing, the American Institute for Medical and Biological Engineering, and the National Academy of Inventors. He is a Guggenheim Fellow and member of the European Academy of Sciences and Arts, and a recipient of many research and education awards. He has published widely and his inventions have led to technology commercialization including through startups he co-founded: Behavioral Signals Technologies focused on AI based conversational assistance and Lyssn focused on mental health care and quality assurance.