Behavioral Informatics from Multimodal Human Interaction Cues

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Abstract
The confluence of advances in sensing, communication and computing technologies is allowing capture and access to data of human interaction and its context, in diverse forms and modalities, in ways that were unimaginable even a few years ago. Importantly, these data afford the analysis and interpretation of multi-modal cues of verbal and non-verbal human behaviour. These signals carry crucial information about not only a person’s intent and identity but also underlying attitudes and emotions. Automatically capturing these cues, although vastly challenging, offers the promise of not just efficient data processing but in tools for discovery that enable hitherto unimagined insights. Recent computational approaches that have leveraged judicious use of both data and domain knowledge have shown promising advances in this regards, for example in deriving rich information about behaviour constructs. This talk will focus on some of the advances (and challenges) in gathering such data and creating algorithms for machine processing of such cues. It will highlight some of our ongoing efforts in Behavioural Signal Processing (BSP)—technology and algorithms for quantitatively and objectively understanding typical, atypical and distressed human behaviour—with a specific focus on communicative, affective and social behaviour. The talk will illustrate Behavioural Informatics applications of these techniques that contribute to quantifying higher-level, often subjectively described, human behaviour in a domain-sensitive fashion using examples from Autism, Couple therapy and Addiction counselling.

Speaker Biography
Shrikanth (Shri) Narayanan is Andrew J. Viterbi Professor of Engineering at the University of Southern California, where he is Professor of Electrical Engineering, and, jointly in Computer Science, Linguistics and Psychology. Prior to USC he was with AT&T Bell Labs and AT&T Research. His research focuses on human-centred information processing and communication technologies. He is a Fellow of the Acoustical Society of America, IEEE, and the American Association for the Advancement of Science (AAAS). Shri Narayanan is an Editor for the Computer, Speech and Language Journal and an Associate Editor for the IEEE Transactions on Affective Computing, the Journal of Acoustical Society of America and the APISPA Transactions on Signal and Information Processing having previously served an Associate Editor for the IEEE Transactions of Speech and Audio Processing (2000-2004), the IEEE Signal Processing Magazine (2005-2008) and the IEEE Transactions on Multimedia (2008-2012). He is a recipient of several honors including the IEEE Signal Processing Society Best Transactions Paper awards in 2005 and 2009 and serving as its Distinguished Lecturer for 2010-11. With his students, he has received a number of best paper awards including winning the Interspeech Challenges in 2009 (Emotion classification), 2011 (Speaker state classification), 2012 (Speaker trait classification) and in 2013 (Paralinguistics/Social Signals). He has published over 500 papers and has been granted 15 U.S. patents.