Modeling Human Communication Dynamics

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Abstract Human face-to-face communication is a little like a dance, in that participants continuously adjust their behaviors based on verbal and nonverbal cues from the social context. Today’s computers and interactive devices are still lacking many of these human-like abilities to hold fluid and natural interactions. Leveraging recent advances in machine learning, audio-visual signal processing and computational linguistics, my research focuses on creating human-computer interaction (HCI) technologies able to analyze, recognize and predict human subtle communicative behaviors in a social context. I formalize this new research endeavor with a Human Communication Dynamics framework, addressing four key computational challenges: behavioral dynamic, multimodal dynamic, interpersonal dynamic and societal dynamic. Central to this research effort is the introduction of new probabilistic models able to learn the temporal and fine-grained latent dependencies across behaviors, modalities and interlocutors. In this talk, I will present some of our recent achievements modeling multiple aspects of human communication dynamics, motivated by applications in healthcare (depression, PTSD, suicide, autism), education (learning analytics), business (negotiation, interpersonal skills) and social multimedia (opinion mining, social influence).

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