

Trustworthy Technology Toward Computing Human's States and Traits

Abstract:

Imagine humans as complex dynamical systems: systems that are characterized by multiple interacting layers of hidden states (e.g., internal processes involving functions of cognition, perception, production, emotion, and social interaction) generating multimodal measurable signals (speech and language, physiology, gestures, facial expressions, etc.). This abstraction of humans has sparked research effort in developing AI-based methods for deriving human-centered analytics. Moreover, the abstraction also has already positioned several cross-cutting interdisciplinary research fields, e.g., affective computing, social signal processing, and behavioral signal processing. The set of problems that human-centered computing faces is essentially that of identifying the hidden attributes, traits, and interactions patterns of the system which reflects in the various realizations of signal and data measured and collected, uncovering through novel signal processing and machine learning on large quantity of heterogenous data. In the AI era, as many of these technologies start to mature, the trustworthy components become not only critical but also regulated. In this work, we will share our recent steps toward realizing trustworthy technologies in the current paradigm of learning-based algorithms for computing human's internal states and traits.