Mediated Social Interpersonal Communication

Evidence-based Understanding of Multimedia Solutions for Enriching Social Situational Awareness

by

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ABSTRACT

Social situational awareness, or the attentiveness to one's social surroundings including the people, their interactions and their behaviors is a complex sensory cognitive motor task that requires one to be engaged thoroughly in understanding their social interactions. These interactions are formed out of the very elements of human interpersonal communication including both verbal and non-verbal cues. While the verbal cues are instructive and delivered through speech or script, the non-verbal cues are mostly interpretive and requires the full attention of the participants to understand, comprehend and respond to them appropriately. Unfortunately certain situations are not conducive for a person to have complete access to their social surroundings, especially the non-verbal cues. For example, a person is who is blind or visually impaired may find that the non-verbal cues like smiling, head nod, etc. of their interaction partners are not accessible due to their sensory depravation. The same could be said of people who are remotely engaged in a conversation and physically separated to have a visual access to all the display of one's body and facial mannerisms. In this book, we describe novel multimedia technologies to aid situations where it is necessary to mediate social situational information between interacting participants.

As an important example of the proposed system, we use an evidence-based model for understanding the accessibility problem faced by people who are blind or visually impaired. From the derived model, we develop a sleuth of sensing and delivery technologies that use state-of-the-art computer vision algorithms in combination with novel haptic interfaces to develop a) *A Dyadic Interaction Assistant*, capable of helping individuals who are blind to access important head and face based non-verbal communicative cues during one-on-one dyadic interactions, and b) *A Group Interaction Assistant*, capable of provide situational awareness about the interaction partners and their dynamics to a user who is blind, while also providing important social feedback about their own body mannerisms. To goal is to increases the effective social situational data that one has access to with the conjuncture that a good awareness of one's social surroundings gives them the ability to understand and empathize with their interaction partners better. Extending the work from this

important social interaction assistive technology, we demonstrate the need for enriched social situational awareness is everyday professional situations including, a) enriched remote interactions between physically separated interaction partners, and b) enriched communication between medical professionals during critical care procedures towards enhanced patient safety.

In the concluding remarks, this book engages the readers into a science and technology policy debate on the potential effect of a new technology like the social interaction assistant on the society. Discussing along the policy lines, social disability is highlighted as an important area that require special attention from researchers and policy makers. Given that the proposed technology relies on wearable inconspicuous cameras, the discussion of privacy policies is extended to encompass such newly evolving interpersonal interaction recorders.

Appendix A

ALGORITHM FOR ESTIMATING RANK AVERAGE OF GROUPS