

## **SONVB: Sensing and Analyzing Organizational Nonverbal Behavior**

**Responsables : Marianne Schmid Mast (en collaboration avec Dr. Daniel Gatica-Perez, IDIAP, Dr. Jean-Marc Odohez, IDIAP, Prof. Tanzeem Choudhury, Dartmouth College, Etats-Unis)**

The understanding of organizational behavior has been a fundamental goal in social sciences in recent years. The development of theories and models to explain and improve key aspects of organizational life has an undeniable value given the increasing influence that people's jobs' scope and demands, their associated styles and rituals, and the resulting professional and personal relationships have on their lives. Face-to-face communication remains the primary form of social interaction in the workplace, and thus nonverbal communication plays a crucial role in organizational behavior. While spoken language constitutes a strong communication channel, a wealth of information is conveyed nonverbally in parallel to the spoken words, through tone of voice and prosody, and through proximity, body gestures and postures, gaze, and facial expressions. Nonverbal behavior (NVB) has different functions in social interactions. It not just serves to express emotions but also to signal attention, convey attitudes about friendliness or dominance, and reveal personality characteristics such as shyness or extraversion. Furthermore, the establishment and evolution of multiple organizational constructs at the level of individuals - including judgments of personality, status, and competence – and groups - the emergence of leadership, cohesion, and performance - are the often measurable outcomes of the myriad of micro-level face-to-face conversations with peers, superiors, and subordinates, where nonverbal communicative processes intervene through the (conscious or unconscious) display and interpretation of NVB.

This interdisciplinary research program proposes to significantly advance the state-of-the-art in perceptual computing, ubiquitous computing, and social psychology for the computational sensing and analysis of NVB of individuals and groups in organizational scenarios at large-scale. More specifically, we aim to address three key interrelated aspects of behavior in organizations, namely leadership, personality, and performance. These behavioral constructs are not only ubiquitous at work but also key in the formation and maintenance of relationships, and ultimately in the success of individuals and teams. This project takes a novel and broad view on the subject. Through a carefully designed collaborative structure and common research objectives, we will study the relations between short-term and long-term NVB and the emergence of leadership, the assessment of personality, and the prediction of job performance, as well as the interplay among these constructs, by analyzing

dyadic and small group interaction both in the laboratory and in real-life, using automatic methods and involving multiple sensors (cameras, microphones, and wearable devices). In social sciences we aim at advancing theories and empirical research on the interplay between first impressions, NVB, performance, and personality in job interviews and job execution; and between personality traits and exhibited NVB of emergent leaders in small groups over long-term interaction. In computer science, we aim to develop new computational methods for automatic extraction of NVB from face-to-face interaction from audio, video, and mobile sensors, and to design new computational models for recognition and discovery of social constructs from brief and long-term observations of nonverbal behavior, including leadership in small groups, personality traits in the workplace, and job performance. The proposed research program addresses a new interdisciplinary domain, which has been recognized as disruptive and capable of opening entirely new avenues for behavioral analysis research in psychology and perceptual and ubiquitous computing, and provides a timely opportunity to train young scientists on the interplay between the human and computational facets of social interaction analysis.