

Preface

Domains where human behavior understanding is a crucial need (e.g., robotics, human-computer interaction, affective computing, and social signal processing) rely on advanced pattern recognition techniques to automatically interpret complex behavioral patterns generated when humans interact with machines or with other humans. This is a challenging problem where many issues are still open, including the joint modeling of behavioral cues taking place on different time scales, the inherent uncertainty of machine detectable evidences of human behavior, the mutual influence of people involved in interactions, the presence of long term dependencies in observations extracted from human behavior, and the important role of dynamics in human behavior understanding.

The Sixth Workshop on Human Behavior Understanding (HBU), organized as a satellite to the 2015 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UBICOMP 2015, Osaka), gathered researchers dealing with the problem of modeling human behavior under its multiple facets (expression of emotions, display of relational attitudes, performance of individual or joint actions, imitation, etc.). The HBU workshops, previously organized jointly with the International Conference on Pattern Recognition (ICPR 2010, Istanbul), the International Joint Conference on Ambient Intelligence (AMI 2011, Amsterdam), the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2012, Algarve), ACM Multimedia (ACM MM 2013, Barcelona), and the European Conference on Computer Vision (ECCV 2014, Zürich), have highlighted different aspects of this problem since their inception.

The 6th HBU workshop focused on behavior analysis for the elderly. A better life for the aging population requires facilitating technologies, digital assistance, smart and multimodal monitoring, and technologies for health assessment and intervention. While different aspects of mobile platforms and ubiquitous computing are tackled in several venues, the HBU workshop specifically solicited human behavior analysis solutions that clearly advance the field, and chart the future of behavior-sensing for the elderly, which brings its own issues and challenges.

The two keynote speakers of the workshop were Dr. Tanzeem Choudhury (Cornell University) and Jakob E. Bardram (IT University of Copenhagen). In the first keynote talk, entitled “Tracking Behavioral Symptoms of Mental Illness and Delivering Personalized Interventions Using Smartphones and Wearables,” Dr. Choudhury argued that continuous and unobtrusive sensing of behaviors has tremendous potential to support the lifelong management of mental illnesses by: (1) acting as an early warning system to detect changes in mental well-being, (2) delivering context-aware, personalized micro-interventions to patients when and where they need them, and (3) by significantly accelerating patient understanding of their illness. She discussed her group’s work on turning sensor-enabled mobile devices into well-being monitors and instruments for administering real-time/real-place interventions.

It is obvious that there is much to learn from behavior traits collected in a semi-automatic fashion from ordinary smartphones. These traces can be used for analysis, as well as prediction. In his keynote talk, entitled “What is the Role of Personal Health Technology in Mental Health for the Elderly?” Dr. Bardram shared his experiences in designing and evaluating personal health technology for mental disorders (like depression) with a focus on elderly users. Based on their results from smartphone-based behavior sampling and mood forecasting, he discussed how to design personal health technology for mental health, with a specific focus on the design space of the elderly population.

This proceedings volume contains the papers presented at the workshop and an overview contribution of the focus theme by the co-chairs. We have received 15 submissions. Each paper was peer-reviewed by at least two members of the Technical Program Committee, with three reviews per paper on the average. Eleven papers were accepted, revised for the proceedings in accordance with reviewer comments, and presented at the workshop. The papers have been organized into thematic sections on Interacting with the Elderly, Learning Behavior Patterns, and Mobile Solutions. Together with the invited talks, the focus theme was covered broadly and extensively by the workshop.

We would like to take the opportunity to thank our Program Committee members and reviewers for their rigorous feedback, our authors and our invited speakers for their contributions, and our media sponsor Noldus for the help in disseminating news about the workshop.

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Albert Ali Salah
Ben J.A. Kröse
Diane J. Cook

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Salah, A.A.; Kröse, B.J.A.; Cook, D.J. (Eds.)

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