

Introduction to the Special Issue on Highlights of ACM Intelligent User Interface (IUI) 2017

FANG CHEN, University of Technology Sydney

CARLOS DUARTE, Universidade de Lisboa

WAI-TAT FU, University of Illinois at Urbana-Champaign

CCS Concepts: • **Human-centered computing** → **Human computer interaction (HCI)**;

Additional Key Words and Phrases: Human behavior, human personality, knowledge from Wikipedia, gesture recognition, human in the loop, environment-adaptive viewpoints

ACM Reference format:

Fang Chen, Carlos Duarte, and Wai-Tat Fu. 2019. Introduction to the Special Issue on Highlights of ACM Intelligent User Interface (IUI) 2017. *ACM Trans. Interact. Intell. Syst.* 9, 2–3, Article 7 (April 2019), 3 pages.

<https://doi.org/10.1145/3301292>

This special issue highlights 11 papers from the ACM Intelligent User Interface (IUI) 2017 international conference, which received 272 submissions and of which 63 of them were accepted by the program committee (acceptance rate: 23%). The 11 articles in this special issue of TiiS were selected by the program committee to be among the best papers accepted into the program of ACM IUI 2017. Each of these selected conference papers was extended, with at least 30% new materials in the new version, which allowed authors to elaborate on their excellent lines of research relevant to the ACM IUI community. The extended versions of the papers have gone through a new review process by at least three reviewers.

This special issue starts with two articles on analyzing and learning from multimodal signals to inform human behavior. In “[AttentiveVideo: A Multimodal Approach to Quantify Emotional Responses to Mobile Advertisements](#),” the authors propose AttentiveVideo, a scalable intelligent mobile interface with corresponding inference algorithms to monitor and quantify the effects of mobile video advertising in real time. This interface employs a combination of implicit photoplethysmography sensing and facial expression analysis to detect attention, engagement, and sentiment of viewers as they watch video advertisements on unmodified smartphones. In “[Wearables and Social Signal Processing for Better Public Presentations](#),” the authors studied

The reviewing of this article was managed by special issue associate editors Fang Chen, Carlos Duarte, and Wai-Tat Fu. Authors’ addresses: F. Chen, University of Technology Sydney, PO Box 123 Broadway, Sydney, NSW 2007, Australia; email: Fang.Chen@uts.edu.au; C. Duarte, Departamento de Informatica, Faculdade de Ciencias, Universidade de Lisboa, Lisboa, 1749-016, Portugal; email: caduarte@fc.ul.pt; W.-T. Fu, University of Illinois at Urbana-Champaign, Siebel Center 4226, Urbana, IL 61801, USA; email: wfu@illinois.edu.

Permission to make digital or hard copies of part or all of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for third-party components of this work must be honored. For all other uses, contact the owner/author(s).

© 2019 Copyright held by the owner/author(s).

2160-6455/2019/04-ART7

<https://doi.org/10.1145/3301292>

human behavior analysis in social interactions using a wearable framework to model nonverbal communication of an oral presenter. The goal was to build an automatic assessment system using dynamic Bayesian networks to assist presenters in an oral presentation scenario.

We have two articles that focus on intelligent analysis of human personality. In “[Trusting Virtual Agents: The Effect of Personality](#),” the authors study the question of trust in virtual agents using a working system of a virtual agent that takes on a particular personality and can also infer a user’s personality traits from the user’s conversation text. The authors designed two variants of the agent to represent different agent personalities, reflected by different conversational strategies. By analyzing the data collected from four field studies (involving 1,280 users in total), they investigate how the strategy influences user perception of the agent, and whether the user perception is also influenced by user personality. In “[Profiling Personality Traits With Games](#),” the authors design game mechanics to diagnose psychological features of players. Specifically, the article illustrates designing games and mechanics to diagnose players’ two personality traits: need for cognition and self-esteem.

The next set of articles focuses on leveraging knowledge from Wikipedia. In “[Toward Universal Spatialization Through Wikipedia-Based Semantic Enhancement](#),” the authors have introduced a visualization system named Cartograph that harnesses the knowledge within Wikipedia to create thematic maps of data. Cartograph extends previous systems that visualize nonspatial data using geographic approaches. Two user studies showed findings in exploring design choices and use of the system. In “[Interactive Quality Analytics for User-Generated Content](#),” the authors presented an interactive tool that combines automatic classification methods and human interaction for the quality assessment of Wikipedia articles. The tool allows experts to experiment with new quality metrics and share them with article authors to identify weaknesses of a particular article. A design study shows that experts can effectively create complex quality metrics in a visual analytics environment.

We also feature two articles on novel applications of gesture recognition. In “[A Comparison of Techniques for Sign Language Alphabet Recognition Using Arm-Band Wearables](#),” the authors examine the use of arm-band wearables for fingerspelling recognition. A novel algorithm called *Dynamic Feature Selection and Voting* (DyFAV) is proposed for this purpose that exploits the fact that fingerspelling has a finite corpus (26 alphabets for the American Sign Language). The comparisons with other traditional machine learning algorithms showed the effectiveness of the proposed approach. In “[Bi-Level Thresholding: Analyzing the Effect of Repeated Errors in Gesture Input](#),” the authors examine the use of bi-level thresholding in gesture recognition. Through a series of studies, including one with a real-world dataset of wrist and finger gestures, the authors show that bi-level thresholding helps increase a gesture recognizer recall rate while keeping the precision high.

In “[HILC: Domain-Independent PbD System Via Computer Vision and Follow-Up Questions](#),” the authors present a system (HILC) for creating GUI scripts based on user demonstrations in order to be able to later replay the actions that automatically operate over GUI controls of applications. In “[A Comparison of Adaptive View Techniques for Exploratory 3D Drone Tele-Operation](#),” the authors investigate the drone tele-operation challenges and present a novel user interface for tele-operation of drones. The proposed interface provides a user with environment-adaptive viewpoints that are automatically configured to improve safety and provide smooth operation. Finally, “[Modeling and Computational Characterization of Twitter Customer Service Conversations](#)” presents modeling and characterization of customer service conversations on Twitter. The authors perform dialog acts prediction in real time using a sequential SVM-HMM model and dialog act classification.

This special issue has highlighted the breadth and depth of the ACM IUI conference. We would like to especially acknowledge the hard work of our authors, as well as the program committee and special issue reviewers who carefully reviewed each paper and provided valuable feedback. We would also like to express our gratitude to Michelle Zhou, the Editor in Chief (EiC) of ACM TiiS, and Liang Gou and Anbang Xu, the Assistants to the EiC, for their help in this process.