

Utilizing Human Cognitive and Emotional Factors for User-Centered Computing

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ABSTRACT

Intelligent interactive systems should not ignore the individuality of the user. The “one-size-fits-all” approach, especially in user interaction, is not appropriate when user satisfaction and acceptability is a primary goal. Each user has unique human cognitive processing styles and abilities. In addition, emotions change over time, which possibly affect the user’s cognitive state and the overall interaction process. Unsurprisingly, the users’ ability to control their emotions is another essential factor in adapting user interfaces, applications and data delivery.

How can an interactive system adapt to human cognitive and emotional factors with the aim to deliver a personalized and more usable interface? Is there a user interface to an application or system that is equally effective to all types of users? How can we place the human in the center of every day’s interaction and task activity?

This keynote speech will present some approaches that our work at the DMAC Lab/SCRAT Group has addressed on how individual differences in human cognitive processing and emotional factors place the user in the center of every day interaction.

Author Keywords

Human Cognitive Factors, Human Emotions, Individual Differences, Adaptation, Personalization, Wearable Sensors

ACM Classification Keywords

H.1.2. User/Machine Systems: Human factors, Human information processing; **H.5.2.** User Interfaces: User-centered design

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IUI 2017, March 13–16, 2017, Limassol, Cyprus.

ACM ISBN 978-1-4503-4348-0/17/03.

<http://dx.doi.org/10.1145/3025171.3026366>

BIOGRAPHY



Professor George Samaras is the founder and director of the DMAC Lab (Data Management for Mobile and Adaptive Computing) and the SCRAT Group (Semantic and Cognitive Research Adaptivity Technologies Research) at the University of Cyprus. He received a Ph.D. and M.Sc. in Computer Science from Rensselaer Polytechnic Institute (RPI), and he obtained his B.Sc. degree in Mathematics at the University of Athens, Greece.

He was previously at IBM Research Triangle Park, USA and taught at the University of North Carolina at Chapel Hill (adjunct Assistant Professor, 1990-93). He served as the lead architect of IBM's distributed commit architecture (1990-94) and co-authored the final publication of the architecture (IBM Book, SC31-8134-00). He also served on IBM's internal international standards committees for issues related to distributed transaction processing (OSI/TP, XOPEN, OMG). His research interests span the areas of mobile and emerging wearable technologies, Human-Computer Interaction, User Modeling, Web Personalization Systems, Sensor Networks and Databases. He is on the Editorial Board of International Journals and has served as Guest Editor for a number of journals and program committees of top conferences and workshops on databases, mobile computing, user modeling and human interaction.

He has published more than 250 scientific articles and chapters and co-authored two books. He received several best paper awards, including the work on understanding the effect of human cognitive factors on CAPTCHA-related user interactions (SouthCHI 2013), the work on personalizing user authentication tasks based on human cognitive differences (best paper nomination, UMAP 2014), the work on personalizing eLearning environments based on cognitive characteristics (AH 2008) and on the work on utilizing mobile agents for Web database access (ICDE99). He also has patents on transaction processing technology.

He has a long-term participation in research projects funded from national and international organizations, including the European Union and the Cyprus Research Foundation (RPF). Of current interest are the projects on ambient assisting living (AAL) and the elderly domain relating to the areas of personalization, adaptation and human interaction.

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