COLLECTIVE ADAPTATION IN VERY LARGE SCALE

2nd International Workshop in conjunction with the 2015 ACM Joint Conference on Pervasive and Ubiquitous Computing (UbiComp 2015) and the 19th International Symposium on Wearable Computers (ISWC 2015) on Collective Adaptation in Very Large Scale: Ubicomp Towards a Superorganism of Wearables

The 2015 ACM International Joint Conference on Pervasive and Ubiquitous Computing (UbiComp 2015) is a premier interdisciplinary venue in which leading international researchers, designers, developers, and practitioners in the field present and discuss novel results in all aspects of ubiquitous and pervasive computing. This includes the design, development, and deployment of ubiquitous and pervasive computing technologies and the understanding of human experiences and social impacts that these technologies facilitate.

Ubicomp 2015 will be held in conjunction with the International Symposium on Wearable Computers (ISWC). ISWC is a conference dedicated to cutting-edge research in wearable technologies, and is the premier forum for wearable computing and issues related to on-body and worn mobile technologies. Every year, ISWC brings together researchers, product vendors, fashion designers, textile manufacturers, users, and related professionals to share information and advances in wearable computing.

Workshop

The 2nd workshop (after the UbiComp 2014 WS in Seattle) asks questions on the potential and opportunities of turning massively deployed wearables into a globe-spanning superorganism of socially interactive personal digital assistants. While individual wearables are of heterogeneous provenance and typically act autonomously, the workshop aims at understanding the trade-offs between the power of top-down (by design) adaptation means and bottom-up (by emergence) ones, also by studying how the two approaches co-exist in modern wearable ICT systems, and possibly contributing to smoothing the tension between the two approaches.

Understanding the "power of the masses" principle as far as participatory wearable ICT processes are involved. In particular, this implies understanding how and to what extent even very simple collective phenomena and algorithms - when involving billions of wearables - can express forms of intelligence much superior than that of more traditional AI techniques.

Understanding the issue of diversity and of diversity increase in complex systems and in service/data systems and how diversity of structure and behavior is currently accommodating and enabling ICT systems. What is new is how, in most such systems, the diversity comes from different classes, which is far from approximating the diversity of existing systems.

Laying down new foundations for the modelling of large-scale Human-ICT organisms and their adaptive behaviors, also including lessons from applied psychology, sociology, and social anthropology, other than from systemic biology, ecology and complexity science.

Identifying models and tools by which individual organs of the systems can influence and direct "by design" the emergent adaptive behavior of the whole system, or at least of substantial parts of it.

Further, the workshop attempts to address the following systems research concerns:

- Opportunistic information collection. Systems need to be able to function in complex, dynamic environments where they have to deal with unpredictable changes in available infrastructure and have to learn to cooperate with other systems and human beings in complex self-organized ensembles.
- Collaborative Reasoning and Emergent Effects. Reasoning methods and system models are needed that combine machine intelligence with theory to account for global emergent effects resulting from feedback loops between collaborative, interconnected devices and their users.
- Social Awareness. Whereas today's context-aware systems are able to make sense of the activity of single users and their immediate environment, future systems should be able to analyze, understand and predict complex social phenomena on a broad range of spatial and temporal scales. Examples of the derived information could be: shifts in collective opinions and social attitudes, changes in consumer behavior, the emergence of tensions in communities, demographics, migration, mobility patterns, or health trends.

The workshop will be held at Grand Front Osaka in Umeda, Osaka, Japan on Monday, September 7th. It will be co-located with UbiComp 2015 and ISWC 2015.

FULL PAPERS

Regular paper submissions must present original, highly innovative, prospective and forward-looking research in one or more of the themes given above. Full papers must break new ground, present new insights, deliver a significant research contribution and provide validated support for its results and conclusions. The workshop solicits (i) conceptual papers describing proposals for novel methodologies, theories and principles that might be used in design, develop and build, analyse and operate massive collectives of wearables, (ii) observational, epistemological and user study papers to deliver evidence for possible future scenarios, and emerging platforms and technologies as well as (ii) system-development papers proposing ingenious, novel HW/SW platforms.

Suggested topics include (but are not limited to):
- Novel complex adaptive system theories and operational principles.
- Novel design principles for building complex adaptive systems.
- Novel methods for evolutions and emergent complex adaptive system properties.
- Case studies / very large scale scenarios that can serve as reference case for future superorganisms of collectives.

Each paper must be submitted as a single PDF file in SIGCHI Extended Abstract format (not longer than six pages in length) using the OpenConf workshop paper submission system on the workshop webpage. Accepted papers will be included in the printed UbiComp 2015 adjunct proceedings. The best workshop contributions will be invited to be included in an upcoming Special Issue of the International Journal of Pervasive Computing and Communications (IJPCC). Submissions to this workshop must not be under review by any other conference or publication during the workshop review cycle, and must not be previously published or accepted for publication elsewhere.

LaTeX Template: https://github.com/sigchi/Document-Formats/tree/master/LaTeX

POSITION PAPERS

In addition to the submission of research papers, this workshop promotes the submission of position papers. Each paper must be submitted as a single DOC file using the template available on the workshop webpage (not longer than two pages in length) by email directed to ubicomp15@eecs.pervasive.jku.at. Papers are required to outline a description of the area of research, specific work (empirical or theoretical) on the workshop topic, and the innovative character of the research.

Reviewing Process for Full and Position Papers

The selection of workshop participants will be carried out by means of a peer review process. To guarantee fair decisions, experts from related research fields will serve as reviewers. Submissions need not to be anonymous, however reviews will be realized anonymously using the evaluation form provided by the submission system. Please refer to the paper submission link at the workshop website (http://www.pervasive.jku.at/ubicomp15/). Questions about position papers and late submissions should be directed to ubicomp15@eecs.pervasive.jku.at.

Papers will be reviewed by the Program Committee. All Details and News: http://www.pervasive.jku.at/ubicomp15/