

iCareNet Winter School 2013: HCI and Context

February 18 – 22, 2013, Seminar room, Hotel Sport, Klosters, Switzerland



TIME	MONDAY 18 TH February Status meeting; Topic HCI and Context	TUESDAY 19 TH February Topic Recognition	WEDNESDAY 20 TH February Doctoral Colloquium	THURSDAY 21 TH February Doctoral Colloquium	FRIDAY 22 TH February Workgroup meetings, conclusion
09:00 – 13:00	Free time	Free time	Free time	Free time	Workgroup meetings
13:00 – 15:00	<ul style="list-style-type: none"> • Welcome message & introduction. <i>Oliver Amft, TUE</i> • Fellow presentations. <i>(5 min per fellow)</i> 			<i>Doctoral Colloquium</i>	Chair: <i>Oliver Amft, TUE</i> <ul style="list-style-type: none"> • Workgroups presentations (20min each). • Event summary and feedback, closing.
15:00 – 15:30	BREAK (Refreshments)				Latest closing: 15:30
15:30 – 17:00	<i>Chair: Christian Weichel, ULANC</i> <ul style="list-style-type: none"> • Ubiquitous Computing is impacting the User Experience with the Real World. <i>Albrecht Schmidt, UST</i> 	<i>Chair: Oliver Amft, TUE</i> <ul style="list-style-type: none"> • Opportunistic activity recognition. <i>Ricardo Chavarriaga, EPFL</i> • Discussion. 	<i>Doctoral Colloquium</i>	<i>Doctoral Colloquium</i>	Departure.
17:00 – 17:30	BREAK				
17:30 – 19:30	<i>Chair: Frank Bolton, EP</i> <ul style="list-style-type: none"> • Crowdsourcing context-based preferences. <i>Eran Toch, TLV</i> • Affordance and design. <i>Jason Alexander, ULANC</i> 	<i>Chair: Oliver Amft</i> <ul style="list-style-type: none"> • Social behavior analysis from smartphone data. <i>Daniel Gatica-Perez, IDIAP & EPFL</i> • Discussion. 	<i>Doctoral Colloquium</i>	<i>Doctoral Colloquium</i>	
19:30 – 21:30	Dinner at Hotel Sport	Dinner at Hotel Sport	Dinner at Hotel Sport	Dinner at Hotel Sport	

Detailed program

MONDAY, 18TH FEBRUARY

iCareNet status and introductions

(Attendance of a senior staff member of each beneficiary is encouraged. Associated partners are cordially invited to participate.)

Topics addressed:

- Status of iCareNet, activities and further plans.
- Discussion on Scientific and Training Objectives and accomplishments.
- Introductory/update presentations for iCareNet fellows.

Lecture programme

Scope and Aims

The event aims to provide the starting iCareNet research fellows with a platform to meet and jointly learn about approaches and techniques for context-aware systems in healthcare, wellness, and assisted living applications. The second iCareNet winter school will specifically focus on:

- **Human-Computer Interaction:** iCareNet members are introduced to crowdsourcing and design methods and smartphone introductions
- **Activity Recognition:** introduce fellows to opportunistic activity recognition and analysis methods of collected data

In addition, the event gives iCareNet fellows a first opportunity to present their work to a panel of senior researcher in a doctoral colloquium and continue working on ongoing workgroups.

Objectives in Detail

Human-Computer interaction: Designing user interfaces and interaction with context-aware systems is challenging. The invisibility of devices, sensors and services can make it difficult for end-user to understand its functioning and purpose. But the understanding and analysis of user interaction with context-aware systems is essential to the function and success of their application. Hardware solutions for producing this context information and gathering user preferences are introduced.

Topics include:

- crowdsourcing as a method for user preferences
- context-aware configuration
- designing context-aware applications
- the use of mobile phones for context sensing and HCI experiments

Activity Recognition: Context sensing applications consisting of worn and ambient sensors are expected to be operational for long periods of time and are expected to adapt to changes in the environment and to the sensor configuration.

Topics include:

- Changes that are expected to the sensor configurations (environmental changes, failure / addition of sensors)
- Machine learning methods
- Robust and opportunistic activity recognition

Detailed program

MONDAY, 18TH FEBRUARY

	<p>Albrecht Schmidt Professor at the University of Stuttgart</p> <p>e-mail: albrecht.schmid@tvis.uni-stuttgart.de http://albrecht-schmidt.blogspot.com/</p>
Talk title	Ubiquitous Computing is impacting the User Experience with the Real World
Abstract	<p>Over the last 20 years ubiquitous computing has become reality. Phones, household appliances, TVs, and cars have essentially become computers. Many of them are networked and offer specific capabilities for human-computer interaction. Computing technologies become an integral part of our life and they shape more and more how we perceive the world and how we interact with each other. By creating ubiquitous computing technologies we essentially have the means to change the way people live and hence the stakes are high! Developing ubiquitous computing systems raises again many engineering challenges, that we regarded as solved for traditional computing systems. We have to fundamentally re-think all steps in the design and development process – from requirements engineering, to computer and system architecture, to concepts for iterative design, to implementation, and deployment. There are different technology trends that enable a new generation of computing systems. We will outline the key challenges in engineering novel interactive computing systems that create a positive user experience in the context of their real world usage.</p>
Bio	<p>Albrecht Schmidt is a professor for Human Computer Interaction at the University of Stuttgart. Previously he was a Professor at the University of Duisburg-Essen and had a joined position between the University of Bonn and the Fraunhofer Institute for Intelligent Analysis and Information Systems (IAIS). He studied computer science in Ulm and Manchester and received a PhD from the Lancaster University in the UK in 2003. His research interest is in human computer interaction beyond the desktop, including user interfaces for mobile devices and cars. Albrecht published well over 100 refereed archival publications and his work is widely cited. He is co-founder of the ACM conference on Tangible and Embedded Interaction (TEI) and initiated the conference on Automotive User Interfaces (auto-ui.org). He is an area editor of the IEEE Pervasive Computing Magazine and edits a column on invisible Computing in the IEEE Computer Magazine.</p>
Preparation material	

Detailed program

	<p>Eran Toch Faculty Member Industrial Engineering department Tel-Aviv University</p> <p>e-mail: erant@post.tau.ac.il http://www.eng.tau.ac.il/~eran/</p>
Talk title	Crowdsourcing context-based preferences for fun and profit.
Abstract	<p>Understanding context-based user preferences is essential to the function of context-aware applications, but collecting and analyzing user preferences is a difficult task in many situations. To address this problem, we present a crowdsourcing-based method for finding user preferences and applying context-aware configuration based on those preferences. We evaluate the method in several user studies relating to multiple problem domains: location-based privacy preferences, phone interruptibility in social contexts, and venue sharing preferences. Our results show that by employing simple methods for semantic analysis of locations and by profiling the user's preference inclination, our methods can accurately predict the privacy preferences for 80% of the user's contexts. By employing semi-automatic decision strategies, which ask the user to decide regarding the preference of a small number of the contexts, the accuracy rate raises to 90%.</p>
Bio	<p>Eran Toch is a Faculty Member at the Industrial Engineering department of Tel-Aviv University. His research takes place at the intersection of Human-Computer Interaction, privacy and machine learning.</p>
Preparation material	<p>Paper (available in iCareNet repository): ICN_paper_CrowdsourcingPrivacyPreferencesInContextAwareApplications_EranToch.pdf</p>

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Detailed program

 A portrait of Jason Alexander, a man with glasses wearing a grey jacket, speaking and gesturing with his hands.	<p>Jason Alexander School of computing and communications, Lancaster University</p> <p>e-mail: j.alexander@lancaster.ac.uk</p>
Talk title	Affordances and Design
Abstract	<p>We often encounter poorly designed products in our everyday lives, but it is sometimes difficult to identify their exact failings. This talk will introduce the ideas and psychology behind affordances and good product design with the aim of stimulating thought into the objects in the world around us. It will consider a range of universal design principles and consider how design techniques such as Raskin's Information Appliances can be used as a method for reducing the complexity associated with computing technology.</p>
Bio	<p>My primary interests are in the area of Human-Computer Interaction, with my current focus on developing hardware for the next generation of input and output techniques. I have a particular interest in new display technologies, especially physically deformable displays, where the display can self-mutate to better represent the visual information. I also have interests in haptic feedback, understanding everyday interactions, and electronic document navigation.</p>
Preparation material	---

Detailed program

TUESDAY, 19TH FEBRUARY

	<p>Ricardo Chavarriaga Ecole Polytechnique Fédérale de Lausanne CNBI - Chair on Non-Invasive Brain-Machine Interface</p> <p>e-mail: ricardo.chavarriaga@epfl.ch http://people.epfl.ch/ricardo.chavarriaga</p>
Talk title	Opportunistic activity recognition: Unsupervised adaptation and reconfiguration.
Abstract	<p>There is a growing interest on using ambient and wearable sensors for human activity recognition, fostered by several application domains and wider availability of sensing technologies. As these systems are expected to be operational for long periods of time, they should dynamically adapt to changes in the environment as well as modifications of the sensor setup (e.g. due to sensor failure or addition of new sensors). Therefore, the classic approach of statically setting up a system for a specific recognition goal is no longer suitable. Here I discuss machine learning methods for robust, opportunistic activity recognition. These methods allow for the automatic online reconfiguration of the sensor setup, and dynamic adaptation to environmental changes</p>
Bio	<p>Ricardo Chavarriaga is a senior researcher at École Polytechnique Fédérale de Lausanne, Switzerland. His research focuses on robust brain-machine interfaces and multimodal human-machine interaction. Chavarriaga received a PhD in computational neuroscience from École Polytechnique Fédérale de Lausanne.</p>
Preparation material	---

Detailed program

	<p>Daniel Gatica-Perez head, social computing group IDIAP research institute and EPFL</p> <p>e-mail: gatica@idiap.ch http://www.idiap.ch/~gatica/</p>
Talk title	Social behavior analysis from smartphone data.
Abstract	<p>Smartphones, as the ultimate mobile device, can continuously sense human location, motion, proximity, and communication, and represent the most accurate current means of tracing real-life human activities. Given their ubiquity, smartphones are generating all this information at unprecedented scales. The understanding of personal and social behavior from mobile data at scale has emerged as a frontier domain in computing. Beyond applications related to new forms of information access, healthcare, and creative expression, many scientific questions regarding behavioral analysis are also being addressed as part of an emerging body of work dubbed by some as computational social science. The lecture has two objectives: I will present recent examples of topics in my research group on smartphone-based modeling of human behavior; and I will motivate the need for further work by discussing some of the lessons learned and the variety of problems that remain open. I will first present an overview of the Lausanne Data Collection Campaign, an initiative that generated real-life data from a population of about 200 smartphone users in Switzerland for over a year of time. I will then discuss methods for routine and group discovery, phone application mining, personality analysis, and mobility prediction, pointing to the most recent literature for further study.</p>
Bio	<p>I am a Senior Researcher at Idiap and EPFL, developing computational models to analyze social behavior from sensor data. My recent work has investigated methods to analyze small groups at work in multisensor spaces, populations of mobile phones users in urban environments, and on-line communities in social media. I have served as Associate Editor of the IEEE Transactions on Multimedia, Image and Vision Computing, Machine Vision and Applications, and the Journal of Ambient Intelligence and Smart Environments. I got my PhD from the University of Washington, Seattle, in 2001 as a Fulbright Fellow.</p>
Preparation material	Lecture slides (available in iCareNet repository)

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WEDNESDAY, 20TH FEBRUARY

Workgroups: In addition to the regular programme of lectures and discussion sessions, the winter school provides opportunities to continue work in workgroups, addressing specific topics relevant for context-aware HWA systems development. Fellows are invited to propose workgroup topics and supporting senior researchers of iCareNet.

Doctoral Colloquium: Fellows are given the opportunity to present their initial results and progress in their project to a panel of senior researchers who will provide feedback during a doctoral colloquium.

THURSDAY, 21ST FEBRUARY

Workgroup meetings

For workgroup meetings see programme of Feb 21.

FRIDAY, 22TH FEBRUARY

Workgroup meetings, summary

For workgroup meetings see programme of Feb 21.

The school event will close with a workgroup summary presentation and feedback session, in which participants can discuss the organisation and goals for future iCareNet school events.