ICMI 2014 Workshop on Multimodal, Multi-Party, Real-World Human-Robot Interaction

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ABSTRACT
The Workshop on Multimodal, Multi-Party, Real-World Human-Robot Interaction will be held in Istanbul on 16 November 2014, co-located with the 16th International Conference on Multimodal Interaction (ICMI 2014). The workshop objective is to address the challenges that robots face when interacting with humans in real-world scenarios. The workshop brings together researchers from intention and activity recognition, person tracking, robust speech recognition and language processing, multimodal fusion, planning and decision making under uncertainty, and service robot design.

The programme consists of two invited talks, three long paper talks, and seven late-breaking abstracts. Information on the workshop and pointers to workshop papers and slides can be found at http://www.macs.hw.ac.uk/~mef3/icmi-2014-workshop-hri/.

Categories and Subject Descriptors
I.2.9 [Artificial Intelligence]: Robotics

Keywords
Multimodal, multi-party, real-world interaction

1. INTRODUCTION
The development of robots capable of interacting with humans has made tremendous progress in the last decade, leading to an expectation that in the near future, robots will be increasingly deployed in public spaces, for example as receptionists, shop assistants, waiters, or bartenders. In these scenarios, robots must necessarily deal with situations that require interactions that are short and dynamic, potentially with multiple persons at once.

To support this form of interaction, robots typically require specific skills, including robust video and audio processing, fast reasoning and decision making mechanisms, and natural and safe output path planning algorithms. This physically embodied, dynamic, real-world context is the most challenging possible domain for multimodal interaction: for example, the state of the physical environment may change at any time; the input sensors must deal with noisy and uncertain input; while the robot platform must combine interactive social behaviour with physical task-based action.

This workshop brings together researchers from a range of relevant disciplines to explore the challenges and solutions for multimodal human-robot interaction from different perspectives. This workshop is the third in a series of meetings organised around this theme. Previous events in this series include the ICSR 2013 workshop on Robots in public spaces: towards multi-party, short-term, dynamic human-robot interaction, and the ICSR 2011 tutorial on Joint action for social robotics: how to build a robot that works together with several humans; details on the whole workshop series are available through http://www.james-project.eu/.

2. SCOPE
Contributions to the workshop were sought in all areas relevant to the overall goal of the workshop, including—but not limited to—the following topics:

- intention recognition
- activity recognition
- person tracking
- speech recognition in noisy environments
- robust spoken language processing
- audiovisual signal processing
- planning and decision making under uncertainty
- knowledge representation and reasoning
- multimodal fusion
- multimodal interaction management
- cognitive robotics
- natural language generation
- design of service robots / interaction systems in public spaces
- evaluation of robots in real-world contexts

These topics cover a wide range of research communities including multimodal interaction, dialogue systems, human-robot interaction, robotics, automated planning, computer vision, and signal processing. Due to the interdisciplinary nature of the workshop topic, relevant contributions from other fields were also welcome.
3. TALKS AND PAPERS
Overall, the workshop programme consists of two invited talks, three long papers, and seven late-breaking abstracts.

3.1 Invited talks
Two invited talks have been included in the workshop programme:

- Daniel Gatica-Perez from Idiap Research Institute, Martigny, Switzerland
- Ryo Ishii from NTT Communication Science Laboratories, Kanagawa, Japan

3.2 Long Papers
Three six-page long papers have been accepted to the workshop:


3.3 Late-breaking abstracts
Seven two-page late-breaking abstracts have been accepted to the workshop:

- Suna Bensch and Thomas Hellström. Towards Proactive Robot Behavior Based on Incremental Language Analysis.
- Hitoshi Nishimura, Yuko Ozasa, Yasuo Arika and Mikio Nakano. Selection of an Object Requested by Speech Based on Generic Object Recognition.
- Andrés Trujillo-León and Fernando Vidal-Verdú. Self-calibration of Attendance Device to Adapt to Different Users and Environments.

In addition to the long papers and late-breaking abstracts—which will be published in the ACM Digital Library—additional late-breaking abstracts have been solicited from other workshop participants, which will be presented at the workshop and archived on the workshop website.

4. WORKSHOP FORMAT
The main objective of the workshop is to provide opportunities for participants to discuss their research and ideas related to the central theme of the workshop. As a result, the workshop included a mixture of invited talks and paper presentations (long and short), with ample time for questions and discussions. To break away from the typical format of other workshops, the late-breaking abstract papers will be presented as Pecha Kucha-style talks (see http://www.pechakucha.org/ for more details on this format).

5. PROGRAMME COMMITTEE
The organisers are grateful to the Programme Committee for their help with reviewing submissions to the workshop:

- Mary Ellen Foster (Heriot-Watt University, Edinburgh, UK)
- Andre Gaschler (fortiss GmbH, Munich, Germany)
- Manuel Giuliani (University of Salzburg, Austria)
- Robin Hill (University of Edinburgh, UK)
- Simon Keizer (Heriot-Watt University, Edinburgh, UK)
- Sebastian Loth (University of Bielefeld, Germany)
- Kira Mourão (University of Edinburgh, UK)
- Ronald Petrick (University of Edinburgh, UK)
- Markos Sigalas (Foundation for Research and Technology - Hellas, Heraklion, Crete, Greece)
- Zhuoran Wang (Heriot-Watt University, Edinburgh, UK)

6. WORKSHOP ORGANISERS
Mary Ellen Foster is a Research Fellow in the Interaction Lab of the School of Mathematical and Computer Sciences at Heriot-Watt University in Edinburgh, Scotland. She received her PhD in Informatics from the University of Edinburgh, and has previously worked in the Robotics and Embedded Systems Group at the Technical University of Munich and in the School of Informatics at the University of Edinburgh. Her research interests include embodied communication, natural language generation, and multimodal dialogue systems; in particular, she is interested in designing, implementing, and evaluating practical artificial systems that support embodied interaction with human users.

Manuel Giuliani is a senior scientist at ICT&S center, University of Salzburg. He received a Master of Arts in computational linguistics from Ludwig-Maximilian-University Munich, a Master of Science in computer science from Technische Universität München, and a PhD in computer science from Technische Universität München. His research interests include social robotics, human–robot interaction, natural language processing, multimodal fusion, multimodal output generation, and robot architectures.

Ronald Petrick is a Research Fellow in the School of Informatics at the University of Edinburgh. He received a Master of Mathematics degree in computer science from the University of Waterloo, and a PhD in computer science from the University of Toronto. His research interests include automated planning with incomplete information and sensing, cognitive robotics, knowledge representation and reasoning, and applications of planning to natural language dialogue, social robotics, and human–robot interaction.