

ICSR 2011 tutorial on evaluation in human-robot interaction - integrating system and user centered perspectives

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<http://www.cit-ec.de/ICSR2011-evaluation-tutorial>

1 Overview

An increasing number of researchers in human-robot interaction (HRI) conduct user studies and experiments in order to evaluate their systems and to generate findings about the users and the interaction. These studies are highly interdisciplinary endeavors since they include both technical and social aspects of interaction. At RO-MAN 2009 we organized a first tutorial (see <http://aiweb.techfak.uni-bielefeld.de/content/tutorial-roman09>) on evaluation in HRI in which we showed how we cope with the plentitude of data acquired in user studies in our daily work. The tutorial at ICSR 2011 will be based on the same assumptions but is going to focus on a new aspect that evolved within the last two years: *how can data from the user and the system be more strongly integrated with each other in the analysis?*

We will discuss how to acquire reliable data about the system itself and about the user. Connected to this issue, we will talk about the tools and approaches that we use for logging and synchronization of the data. Moreover, we will give a short introduction on qualitative and quantitative methods. Case studies will show how data were acquired and analyzed in user studies at Bielefeld University, with the aim to generate useful insights for system design and social science at the same time and in an integrated manner.

2 List of topics

- essentials of designing user studies and experiments
- introduction on how to acquire data in user studies
- preparation of data for analysis
- qualitative and quantitative analysis of data
- linking different types of data for analysis and visualization
- tools and devices for data acquisition and synchronization

3 Schedule

- 10.15 - 10.30 - opening
- 10.30 - 11.00 - overview: from idea to study design
- 11.00 - 11.30 - analysis pipeline: from logs to metrics
- 11.30 - 12.00 - behavior modeling: from metrics to system behavior
- 12.00 - 14.00 - *lunch*
- 14.00 - 14.20 - online analysis: evaluating tutoring situations
- 14.20 - 14.50 - qualitative analysis: linking logs with video data
- 14.50 - 15.30 - quantitative analysis: integrating logs and subjective data
- 15.30 - 15.45 - *tea break*
- 15.45 - 16.15 - devices for acquiring biophysiological data
- 16.15 - 16.45 - tools for video synchronization

4 Intended audience

The intended audience is researchers in HRI who face the challenge of effectively analyzing the data acquired in user studies about the system AND about the user in an integrated manner. We welcome an interdisciplinary audience (computer science, robotics, social sciences, etc.) and appreciate a lot of discussion about the topic.

5 Speakers

Sebastian Gieselmann is a PhD-student in the Research Institute for Cognition and Robotics (CoR-Lab) in the Hybrid Society Group at Bielefeld University since 2008. His main research question is related to social human-like robots and how humans perceive them. Especially the influence of subtle social background movements like breathing, blinking, and gaze on task performance and stress-level within HRI are topics of his current research.

Sascha S. Griffiths received an MA in English language and computational linguistics from Bielefeld University, Germany, in 2006 and afterwards wrote a PhD dissertation in Anthropology at the University of Kent, UK. Since 2009 he has been a research fellow at the Cluster of Excellence 'Cognitive Interaction Technology' (CITEC) in the Applied Informatics Group, Bielefeld University. His research is in human-machine interaction, computational natural language learning, and cognitive linguistics.

Katrin S. Lohan joined the Applied Informatics Group and the CoR-Lab at Bielefeld University, Germany, as a PhD student in May 2008. She is working in the EU-Project iTalk. Her field of research is understanding the learning mechanisms between parents and infants with an emphasis on contingency to spot teaching with a robot.

Manja Lohse is a postdoctoral researcher in the Applied Informatics Group and the CoR-Lab (Hybrid Society Group) at Bielefeld University, Germany. She received a degree in Applied Media Science from Technical University Ilmenau, Germany in 2006 and then joined the research group for Applied Informatics at Bielefeld University. Her research focuses on the social aspects of HRI, evaluation methods, and users' expectations toward robots.

Ingo Lütkebohle is a postdoctoral researcher in the Applied Informatics Group at Bielefeld University, and affiliated with the CoR-Lab and CITEC. His research area is software engineering for robotics, particularly speech-based interactive, social robots. Otherwise, he works on open source robotics software, and enjoys electronic music and rock climbing.

Karola Pitsch is a Diltthey Fellow (Volkswagenstiftung) and PostDoc researcher at Bielefeld University. She holds a PhD in Linguistics from Bielefeld University (2006), and joined - after working as PostDoc at King's College London - the Bielefeld Applied Informatics Group and the CoR-Lab in 2008. Her research focuses on multimodal aspects of social interaction in technologically mediated settings and uses Ethnomethodological Conversation Analysis in combination with other methods for the design and analysis of human-robot-interaction.

Nina Riether is a doctoral researcher in the CoR-Lab at Bielefeld University. She received her degree in Psychology from the University of Düsseldorf in 2010 and then joined the Applied Informatics group and CoR-Lab at Bielefeld University. Her background lies in biological, social, and general psychology. Her research interests include social and emotional aspects of HRI and HHI as well as quantitative evaluation methods for HRI.

Lars Schillingmann received the degree in computer science from Bielefeld University, Germany, in 2007. Subsequently, he joined the Applied Informatics Group at Bielefeld University, Germany and is associated to the CoR-Lab. Currently he is working in the EU-Project iTalk on the topic of acoustic packaging. His research interests include multimodal processing, learning, and feedback processes embedded in human-robot interaction.

Frederic Siepmann joined the CITEC in August 2008 where he is working in the Central Lab Facilities with Dr.-Ing. Sven Wachsmuth and is in charge for the research platform BIRON. He is a founding member of the RoboCup@HOME team ToBI (www.cit-ec.de/ToBI) and participated in the German Open and the World Cup from 2009 onwards as one of the team leaders of ToBI. His research interests are robot architectures for HRI, cognitive architectures, and computer vision.