

Presenters: Gurvinder S. Virk, A. Tapus, F. Bonsignorio, N. Mirnig, M. Tscheligi, S. Haddadin, M. Vincze, Han Boon Siew, H. Samani, N. Bellotto, A. Corradini, P. Barattini, N. Robertson, C. Morand, A. Rovetta, C. Woegerer, A. Pichler.

Human Robot Interaction (HRI) for Assistance and Industrial Robots. Scientific Knowledge, Standards and Regulatory Framework. How do I design for the real world?

Abstract— The proposed workshop deals with the issues related to available Standards and Scientific Knowledge to design Human Robot Interaction for real world Assistance, Service and Industrial Robots. It brings together scientists and experts for the possible definition of universal basic HRI elements and investigating if it is feasible to develop International Standards, including amongst others also testing procedures, aiming to have this area more informed by a strong input of the scientific community. The current status and evolution of ISO Robotics Standards as well European and Asian Regulatory Framework will be reviewed. The workshop foresees one full day of work. The morning is for presentations, while the afternoon will be interactive and cooperative with split sessions to collect the inputs of the participants and possibly position papers on some of the topics.

I. PRESENTERS AND PRESENTATIONS

Gurvinder Virk (confirmed)

Presentation : ISO/IEC safety standardization in close HRI in medical and non-medical applications
<http://www.hig.se/Ext/Sv/Organisation/Akademier/Akademi-n-for-teknik-och-miljo/Personalsidor/Gurvinder-Virk/Gurvinder-S.-Virk.html>

He is Chairman of : ISO TC 184/SC2/WG7-Personal care robot safety and IEC SC62A & ISO TC184/SC2 JWG9-Medical robots) and Professor of Robotics and the Built Environment University of Gävle, Sweden

A. Tapus (confirmed)

Presentation: Customizable Interaction: Lifelong Learning and Robot Behavior Adaptation

<http://www.ensta-paristech.fr/~tapus/eng/cv.html>
Associate Professor, (ENSTA - ParisTech), France.
She is a leading scientist in Assistive HRI

F. Bonsignorio (confirmed)

Presentation: Benchmarking sensory motor coordination in

^o P. Barattini is with Ridgeback s.a.s., Turin, Italy (phone: +39-0172-575087; e-mail: paolo.barattini@sharika.eu).

Gurvinder S. Virk is with U. of Gävle, Sweden and CLAWAR Association Ltd, UK; Convenor: ISO TC 184/SC2/WG7-Personal care robot safety and WG9- (Medical robots)

A. Tapus is with ENSTA, Paris (adriana.tapus@ensta-paristech.fr)

F. Bonsignorio is with U. Carlos III Madrid, Spain.

(fabio.bonsignorio@uc3m.es)

M. Vincze is with TU Vienna, Austria (m.vincze@acin.tuwien.ac.at)

N. Mirnig is with U. of Salzburg (nicole.mirnig@sbg.ac.at)

S. Haddadin is with DLR, Germany (sami.haddadin@dlr.de)

Han Boon Siew is with Institute for Infocomm Research, Singapore (bshan@i2r.a-star.edu.sg)

H. Samani is with National Taipei University, Taiwan (samanihooman@gmail.com)

N. Bellotto is with U. of Lincoln, UK (nbello@lincoln.ac.uk)

N. Robertson (n.m.robertson@hw.ac.uk) and C. Morand (c.morand@hw.ac.uk) are with , Heriot-Watt University Edinburgh, UK.

A. Rovetta is with Politecnico di Milan, Italy. (alberto.rovetta@polimi.it)

C. Woegerer and A. Pichler are with Profactor GmbH , Austria

human robot cooperation

http://roboticslab.uc3m.es/roboticslab/persona.php?id_pers=95

Prof. at the Carlos III U. of Madrid, He is co-chairs of IEEE-TC PEBRAS and coordinates EURON SIG GEMSpecial Interest Group on Good Experimental Methodology and Benchmarking in Robotics

Nicole Mirnig & Manfred Tscheligi (confirmed)

Presentation :How Robot Feedback can Enhance HRI

http://www.icts.sbg.ac.at/content.php?id=1629&m_id=1009&ch_id=1401&persid=2560

N. Mirnig is Researcher at the HCI & Usability Unit, U. of Salzburg focusing on the communication between humans and robots in social dialog situations and related feedbacks.

M. Tscheligi is professor for HCI & Usability at U. of Salzburg..member of different expert groups and program committees, editorial boards; he has been responsible for more than 200 national and inter-national projects.

S. Haddadin (confirmed)

Presentation : Safety, Human Physiology and HRI
<http://www.robotic.de/Sami.Haddadin>

Currently Scientific Coordinator for HRI at DLR, Germany. Focus:Safe Robots and Safety and dependability in robotics.

M. Vincze (confirmed)

Presentation : Semantic perception, testing & benchmark and the industrial and service robotic applications

<http://www.acin.tuwien.ac.at/institut/mvincze/>

He Professor at TU Vienna, Austria, a leading scientist in Semantic perception

P. Barattini (confirmed)

Presentation Vocal and Gesture commands: state of the art, ergonomics and the Design of HRI

CTO of Ridgeback sas, Italy. Has a wide range experience in Human machine Interfaces, EU FP7 LOCOBOT Project,

Hooman Samani (乎曼薩馬尼) (confirmed)

Presentation : bidirectional affective feedback signal in human - robot interaction

<http://www.hoomansamani.com/>

He is Ass. Professor National Taipei U. Taiwan, he has Academic and work experience in Philips and Posco, and in several other industrial projects.

N. Bellotto: (confirmed)

Presentation : , Multisensor Integration for HRI & Navigation

<http://robots.lincoln.ac.uk/users/nbellotto/>

He is Senior Lecturer at U. of Lincoln Robotics Group, UK

Han Boon Siew (confirmed)

Presentation : HRI science and Industry, the Asian perspective

He is at Institute for Infocomm Research, Singapore,

principle Investigator for Humanoids, Personal Robotic, Mobility Vehicle and Neuron Robotics Developments. In his past 6 years in robotic industry, he has built 4 service robotic
N. Robertson (confirmed)

Presentation : Gesture recognition, Human tracking/identification (H.Watt University, UK)

Ajung Moon: Roboethics and Assistance/service robots (U. of British Columbia) TBC

A.Rovetta (proposer)

http://robotica.mecc.polimi.it/cv/rovetta_en.php

Professor of Robotics, Politecnico of Milano, Italy.

Christian Woegerer & Andreas Pichler (confirmed)

Presentation : *HRI and the industrial European perspective, Expectations and requirements of Industrial clients*

C. Wögerer is at PROFACTOR GmbH Coordinator of the project LOCOBOT (www.locobot.eu), Andreas Pichler is the Technical Director and responsible for HRI Topics.

<http://www.profactor.at/>

Prof Soon-Geul Lee (TBC)

Convenor of ISO TC184/SC2/WG1: Robot vocabulary

Prof Seungbin Moon (TBC)

Convenor of ISO TC184/SC2/WG8: Service robots

Presentation: HRI robotics science and Industry, the Korean perspective and approach

Expert (TBD): HRI science and Industry, the US and Canada perspective

Expert (TBD): HRI science and Industry China

II. LIST OF TOPICS

- ⤴ Current status of ISO Robotics Standards development and future directions in relating to HRI
- ⤴ Safety, physical contacts, technical aspects and limitations, Regulations influencing HRI design
- ⤴ Vocal and gesture commands to robots, gestabulary. Review of scientific contribution to a basic set of Universal Gestures
- ⤴ Do we need a stronger input of the scientific community to Standards such as ISO?
- ⤴ Possible testing procedure for HRI (social communication, vocal and gestures etc)
- ⤴ Benchmarking and objectively & quantitatively evaluating performance of robots, including robot algorithms. Some controversial issues need to be discussed such as: measuring autonomy or information metrics of intelligent systems, or the concept itself of replicability or benchmarking of research results in robotics
- ⤴ Vocal and gesture commands in Service and Assistance Robots and in industrial environments.
- ⤴ Robot navigation, safety and Robotiquette
- ⤴ Affective robotics
- ⤴ Ergonomics of HRI (Physical, Intensity of signals, alarms, visual field etc)
- ⤴ Feedback signals from robot to human (non vocal , non gesture) such as LED lights etc

⤴ Are possible or needed design guidelines and testing procedures for an evidence based HRI?

⤴ European Regulatory Framework

⤴ ISO and Regulatory Framework Asian Perspective (Singapore, Taiwan, Korea, Japan, China)

III. MOTIVATION AND OBJECTIVES

The main motivation is to answer to the questions:

How can I design Human Robot Interaction for products out of the Lab?

What scientific ground we have to give rules or recommendations?

Shall the scientific community influence the Standardisation efforts?

Do we need design and testing Guidelines based on Research?

Will ISO adopt testing procedure for higher level features of social and assistive robots (communication, feedback, vocal and gestures, customization etc)?

Can we speak of Evidence Based Robotics (EBR) in relation to HRI, ergonomics, psychological issues?

Can ISO/other Standards have a negative impact on Research or close the road for output of the Lab to the real world?

How big is the gap between the vision of omniscient robots that adapt to any language or user and the contextual/technical constraints, or market vision, or technical standards and regulatory framework?

IV. PRIMARY/SECONDARY AUDIENCE

Primary Audience are: scientist, and the young researchers involved in creating solid ground for the implementation of HRI in robots with possible real-world application and aiming to products for the market or for the industry as well Industry developing robots (industrial and assistive including HRI aspects,

Secondary Audience are experts and organisations/Institutes supporting research and technology transfer for industry and those with closer relations to Standardisation and Regulatory Institutions, and to the Robotic Industry.

V. SCHEDULE OF OPEN CALL FOR SUBMISSIONS

The call for submission will be issued as soon as the workshop has been accepted by ICRA 2013. The call will be supported by the proactive effort of the participants through their network of contacts to Research, Technology transfer Institutions and Standardisation Committees and through mailing lists.

VI. NOVELTY WITH RESPECT TO PREVIOUS IROS OR ICRA WORKSHOPS/TUTORIALS

To our knowledge till now it was never held a workshop bringing together the two aspects of robotics, Research, Industry and ISO standards in the frame of the need of solid basis for HRI robots market production.