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► **To cite this version:**

Aurélie Clodic, Rachid Alami, Cordula Vesper, Elisabeth Pacherie, Bilge Mutlu, et al.. FJA@HRI15 - Toward a Framework for Joint Action. HRI 2015 Workshop "Towards a Framework for Joint Action", Mar 2015, Portland, United States. hal-01944239

HAL Id: hal-01944239

<https://laas.hal.science/hal-01944239v1>

Submitted on 4 Dec 2018

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FJA@HRI15 - Towards a Framework for Joint Action

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ABSTRACT

The HRI 2015 Workshop "Towards a Framework for Joint Action" is a full-day workshop held in conjunction with the 10th ACM/IEEE International Conference on Human-Robot Interaction, in Portland (USA) on March 2nd 2015. The first edition of the workshop took place at RO-MAN 2014.

This workshop aims at bringing together researchers from several disciplines to discuss the development of frameworks for analyzing and designing human-robot joint action. It is meant to provide the opportunity to researchers interested in joint action, roboticists but also philosophers and psychologists, to discuss in depth the topic and to contribute to the elaboration of a framework for human-robot joint action. To achieve this goal, we propose to the community to tackle a COMMON EXAMPLE (as it is sometimes done in robotics planning competition) with the goal to identify the capacities and skills needed for the successful performance of the joint action.

This should enable us to build upon each other's experience to further develop ongoing work. The proposed example is described on the workshop website: fja.sciencesconf.org

Categories and Subject Descriptors

I.2.9 [Robotics]: Commercial robots and applications, Manipulators; H.1.2 [User/Machine systems]: Human factors; J.4 [Social and behavioral sciences]: Psychology

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HRI'15 Extended Abstracts, Mar 2-5, 2015, Portland, OR, USA.
ACM 978-1-4503-3318-4/15/03.
<http://dx.doi.org/10.1145/2701973.2714398>

General Terms

Experimentation, Design, Human Factors.

Keywords

Human-Robot Interaction; Action Theory; Joint Action Theory; Teamwork

1. WEBSITE

fja.sciencesconf.org

2. OVERVIEW

For more than a decade, the field of human-robot interaction has generated many valuable contributions of interest to the robotics community at large. The field is vast, going all the way from perception (e.g., tactile or visual) to action (e.g., manipulation, navigation) and decision (e.g., interaction, human-aware planning). However, when it comes to the development of future robot assistants or robotic team-mates in mixed human-robot teams, there is a need for a deeper understanding of human-robot joint action that could provide a framework for the different contributions and studies.

It is interesting to observe, from a roboticist point of view, that research on human joint action is a topic of intense research in cognitive psychology and philosophy. This observation lead us to start a multi-disciplinary initiative, successfully launched during a first workshop at the RO-MAN 2014 conference (fja2014.sciencesconf.org) with more than 30 participants. With this second edition, we would like to continue to analyze the fundamental assumptions as well as detailed empirical findings from cognitive psychology and philosophy and connect them with various ongoing research activities in robotics, from the design of

control architectures to human-robot interaction.

More specifically, our goal is to bring various aspects of existing work together and examine how they can help us define the kind of integrative framework needed for the design of an autonomous robot that can engage in long-term interaction with a human partner. This framework should be able to serve two complementary purposes. On the one hand, it should help us define with precision what a robot needs to understand about the human it interacts with for the interaction to be successful and thus what capacities the robot should be equipped with to ensure it can build this understanding. On the other hand, the robot also needs to be understood by its human partner and this framework should help us clarify how this understanding operates and what is needed to enable the robot to behave appropriately and in a way that manifests what it is doing to the human partner.

The aim of this workshop series is to bring together researchers in robotics, psychologists and philosophers. This will create a unique opportunity for scientific exchange between these disciplines. In particular, psychologists and philosophers will be given the opportunity to present recent developments in joint action research, while roboticists will be able to discuss the challenges they face with regard to human-robot interaction and more precisely human-robot joint activity. We imagine and hope that this workshop series will create a context in which interested researchers can come together and discuss the development of an integrative framework for research on human-robot joint action like it has been the case for the first edition.

3. TOPICS

- joint goal / joint action description and modeling
- joint goal establishment and negotiation

- planning when the goal is a joint goal
- joint goal / joint action execution, monitoring, turn-taking and timing management
- agents world modeling and management (incl. theory of mind and shared knowledge)
- agents commitment
- communication means and modalities during joint goal achievement and for what purpose

4. ORGANIZERS

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5. ACKNOWLEDGMENTS

This workshop is partly supported by the European Commission under contract FP7-ICT-600877 (SPENCER) and ANR-Project ROBOERGOSUM (DECISION ANR-12- CORD-0030).