A Workshop/Tutorial proposal for the

29th IEEE International Conference on Robot and Human Interactive Communication (RO-MAN 2020)

Naples, Italy, August 31-September 4, 2020.

Title

Designerly HRI knoweldge

Format

Full day workshop

Main organiser

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Co-organisers

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Statement of objectives – intended audience

Design contributions has been steadily growing in Human-Robot Interaction (HRI) studies, as can be noted in several workshops[1][2][3]
Current **HRI design** contributions (i.e., design-oriented practices within the academic field of HRI), however, mostly adhere to the way the HRI research community produces knowledge: (i) introducing a (novel) robot platform and (ii) evaluating a robot platform empirically to contribute to a generalized understanding of the interaction between humans and robots through testing (both qualitative and quantitative methods

[1] Sirkin, David, Nik Martelaro, Hamish Tennent, Mishel Johns, Brian Mok, Wendy Ju, Guy Hoffman, Heather Knight, Bilge Mutlu, and Leila Takayama. 2016. Design skills for HRI. In 2016 11th ACM/IEEE International Conference on Human-Robot Interaction (HRI), pp. 581-582. IEEE. DOI: 10.1109/HRI.2016.7451866

[2] Lee, Hee Rin, EunJeong Cheon, Maartje de Graaf, Patrícia Alves-Oliveira, Cristina Zaga, and James Young. 2019. Robots for Social Good: Exploring Critical Design for HRI. In 2019 14th ACM/IEEE International Conference on Human-Robot Interaction (HRI), pp. 681-682. IEEE. DOI: 10.1109/HRI.2019.8673130

[3] Luria, Michal, John Zimmerman, and Jodi Forlizzi. 2019. Championing Research through design in HRI. CHI Conference on Human Factors in Computing Systems.

empirical methods). These approaches may fall better under the research practices of engineering and social sciences, where the technical investigations for designing robots corresponds with the former and the explorations regarding the attained effect corresponds with the latter. Clearly, these are very important elements of HRI knowledge. However, we argue, HRI still miss the opportunity to construct forms of intermediate-level knowledge which are "more abstracted than particular instances, without aspiring to be the scope of generalized theories"[4]. These include design methodologies, design guidelines, heuristics, patterns, concepts, experiential qualities, and annotated portfolios[5]. Although partial discussions about these forms of knowledge can already be found in the HRI field[6][7][8], comprehensive investigations are still lacking. The aim of this workshop, then, is to create a venue for discussing and understanding relevant forms of **intermediate-level knowledge** in HRI, learning from the existing debate in the design and HCI fields but extending it through the specific perspective of HRI studies. We argue that exploring the intermediate-level knowledge in relation to HRI, in fact, would start a conversation on what **HRI design epistemology** (i.e., the study of knowledge creation) is and could be, and how to evaluate and legitimate knowledge produced through HRI design practices.

List of speakers

Describe how you are going to organise the Workshop/Tutorial (i.e., abstract/full papers, oral/poster presentations, etc.)
The workshop will include:

- introduction to the theme of Intermediate-level Knowledge in HRI from the workshop organisers;
- inspiring talk from a HRI designer;
- pitches on HRI design practices from the participants (previously selected as abstracts);
- interactive session focused on the co-creation of an annotated portfolio of robotic artefacts.

Organisers bio

Maria Luce Lupetti is a postdoctoral design researcher at TU Delft, part of the AiTech research initiative, and working at the intersection of design, AI and robotics. She holds a PhD cum Laude in "Production, Management and Design" from Politecnico di Torino, Italy (2018). Her doctoral research, focused on human-robot interaction and play for children, was supported by the Italian telecommunication company TIM. Prior to this position, she was a Research Fellow at Amsterdam Metropolitan Solution Institute (2018-2019) and visiting scholar at X-Studio, Academy of Art and Design, Tsinghua University, Beijing, China (2016-2017).

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[4] Kristina Höök and Jonas Löwgren. 2012. Strong concepts: Intermediate-level knowledge in interaction design research. ACM Trans. Comput.-Hum. Interact. 19, 3, Article 23 (October 2012), 18 pages. DOI: https://doi.org/10.1145/2362364.2362371

[5] Ibidem

[6] Dautenhahn, Kerstin, Bernard Ogden, and Tom Quick. 2002. From embodied to socially embedded agents–implications for interaction-aware robots." Cognitive Systems Research 3, no. 3, 397-428.

[7] Yusuke Kato, Takayuki Kanda, and Hiroshi Ishiguro. 2015. May I help you?: Design of Human-like Polite Approaching Behavior. In Proceedings of the Tenth Annual ACM/IEEE International Conference on Human-Robot Interaction (HRI '15). ACM, New York, NY, USA, 35-42. DOI: https://doi.org/10.1145/2696454.2696463

[8] Yusuke Kato, Takayuki Kanda, and Hiroshi Ishiguro. 2015. May I help you?: Design of Human-like Polite Approaching Behavior. In Proceedings of the Tenth Annual ACM/IEEE International Conference on Human-Robot Interaction (HRI '15). ACM, New York, NY, USA, 35-42. DOI: https://doi.org/10.1145/2696454.2696463

Cristina Zaga is an assistant professor at the Human-Centred Design Group (Design and Production Management department) and at The DesignLab at the University of Twente. She researches methods on designing for embodied AI agency (i.e., robots and IOTs) and democratizing human-robot interaction design. At the DesignLab, she develops methods, tools, and techniques for trans-disciplinary responsible design for social good.

Nazlı Cila is a design researcher and teacher at the Faculty of Media and Creative Industries, the Digital Life Center research group of the Amsterdam University of Applied Sciences. She studied product design and obtained the PhD degree from Delft University of Technology, Department of Industrial Design working on the topic of how designers can create effective and aesthetic metaphors to communicate with users through products.

List of topics

HRI design; design knowledge; intermediate-level knowledge; robotic artefacts; annotated portfolio;