Workshop YOUR study design! Participatory critique and refinement of participants' studies

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Abstract—**HRI is an interdisciplinary field that requires researchers to be knowledgeable in broad areas ranging from social sciences to engineering. Study design is a multifaceted aspect of HRI that is hard to develop and perfect. Thus, the second edition of the "Workshop Your Study Design" workshop aims to improve the quality of future HRI studies by training researchers and boosting the accessibility of HRI as a field. Participants will have the opportunity to receive guidance and feedback on their study from an expert mentor.**

Researchers from all avenues of HRI will be invited to submit a 2-4 page paper on an HRI study they are currently designing, including a brief introduction and a complete methods section. Accepted submissions will be discussed in small groups led by mentors with relevant expertise. Prior to the workshop, papers will be shared within each group. Participants will be encouraged to read other submissions. During the workshop, attendees will work within their mentee-mentor groups to discuss each paper and provide feedback. There will also be a session where mentors lead mini discussions on topics important to study design, such as balancing qualitative and quantitative design, power analysis, and research ethics. The workshop will end with a session where all participants can share important lessons that they learned with fellow attendees.

Index Terms—**hypothesis evaluation, statistical analysis, qualitative, quantitative**

I. Introduction

After the success of last year's workshop [1], the second edition of the "Workshop Your Study Design" (WYSD) workshop aims to continue the tradition of enabling researchers to improve their methodological skills. If successful, this workshop will serve to improve the caliber of future HRI research and lead to higher-quality publications. This workshop will also serve as a platform for future collaboration, connecting junior and senior researchers, and stimulate cross-pollination between those from different backgrounds within HRI.

The first authors have been a part of the previous edition of this workshop and found this workshop to have positive

These authors contributed equally to this proposal.

Activity	Duration
Opening Remarks	0:15
Mentoring Session 1	1:00
Coffee Break	0:15
Mentoring Session 2	1:00
Mini Discussion Sessions	1:00
Workshop Takeaways and Concluding Discussions	0:30
Social Interaction	0:30
TOTAL DURATION	**4:30**

TABLE I
Tentative workshop schedule.

impacts on their research. Thus, we are very excited to take on the mantle from our predecessors and continue this endeavour to support future generations. We hope that this workshop can become a tradition at future HRI conferences.

II. Workshop Overview

The workshop will comprise mentoring sessions to brainstorm ideas to enhance participants' proposed methodology and discussion sessions to help train researchers in best study design practices.

Prior to the workshop, participants will be split into multiple groups centered around the mentors and their area of expertise. Each participant will be required to read the submission of fellow group members in order to facilitate fruitful group discussions. A tentative schedule for the workshop can be seen in Table II. The schedule will be adapted to account for mentor availability and participant time zones. We plan to conduct two sessions of the workshop.

A. Opening Remarks

The workshop will begin with a brief introduction to the workshop ideology and schedule. Mentors will then introduce themselves and their areas of expertise.

B. Mentoring Sessions

Participants will have the opportunity to work with two different mentors over the course of two separate mentoring

sessions. Each mentoring session will be led by a mentor and will have two participants. Within each session, each paper will be discussed for approximately 30 minutes. Discussions will be centered on various factors related to study design such as hypothesis formulation, questionnaire design, and appropriateness of analysis.

C. Mini Discussion Sessions

There will be short discussions on topics related to study design led by mentors. All participants will attend these sessions. Some potential topics include balancing between quantitative and qualitative research, the role of power analysis, etc.

D. Concluding Discussions

Every participant will have the opportunity to share what they learned during this session. We will use a collaborative workspace, such as Miro, to compile all the ideas and outcomes of the workshop.

E. Workshop Location

The workshop can be held in a hybrid manner or virtually. If held virtually, we will schedule two shorter workshops based on participant and mentor time zones.

F. Invited mentors (confirmed)

Brian Scassellati, Computer Science, Yale University: socially assistive robotics, cognitive systems, and the cognitive science of interaction, creative design to model human cognition, assistive technology studies in the home or clinic, and educational/tutoring systems projects.

Cindy Bethel, Computer Science and Engineering, Mississippi State: applications associated with robot therapeutic support, information gathering from children, and the use of robots for law enforcement, search and rescue, and military operations.

Elizabeth Phillips, Psychology, George Mason University: human interactions with robots, autonomous systems, and related technologies like augmented and virtual reality, design of robotic systems to be better partners, teammates, and companions for people in the near future, including what it means for robots to be considered human-like.

Ewart de Visser, Warfighter Effectiveness, U.S. Air Force Academy: trust in robotics and automation, the neuroergonomics of HRI, and human-machine interface design for artificial intelligence systems, experimental design for HRI studies, applied robotics field research, neural methods and statistics.

Friederike Eyssel, Psychology, Bielefeld University: social cognition, social robotics, anthropomorphisation, technology acceptance, ethical, legal and social implications (ELSI) in new technologies, gender prejudice, sexual violence, objectification.

Guy Hoffman, Mechanical and Aerospace Engineering, Cornell: controlled HRI experiments in the lab, qualitative analysis of interviews and video observation, planning full-cycle studies, including qualitative, exploratory studies followed by controlled laboratory experiments.

Laurel Riek, Computer Science and Engineering, UC San Diego, Department of Emergency Medicine, Contextual Robotics Institute, and Design Lab: healthcare robotics, human robot teaming, HRI design, and health equity, research framing and method selection, how to support real world deployments of robots in homes, community centers, and hospitals, how to translate health interventions from clinic to home and clinician to robot, and how to engage in longitudinal research.

Selma Sabanovic, Informatics, Indiana University: design, use, and broader consequences of social robots in different organizational and cultural contexts with mixed methods, qualitative studies of HRI, including ethnography and interviews, user-centered and participatory design research in HRI, and HRI studies in naturalistic environments, including field studies and observations in homes, organizations, and other open-ended contexts.

Takanori Komatsu, Cognitive Science, Meiji University, Japan: analysis of cognitive and psychological aspects of users interacting with artifacts, laboratory experiments, and web-based investigations via crowdsourcing.

Tony Belpaeme, Internet Technology and Data Science, Ghent University, Cognitive Systems and Robotics, Plymouth University: social systems, cognitive robotics, and artificial intelligence.

III. TARGET AUDIENCE OR PREREQUISITES

All those who are working on research related to human-robot interaction and would like to receive feedback on a user study (either upcoming or previously conducted) are eligible for submitting a paper to this workshop. Our invitation is open to researchers from all areas of robotics, computer science, engineering, sociology, psychology, philosophy, and other disciplines.

IV. NUMBER OF EXPECTED PARTICIPANTS

We expect to have approximately 20 participants.

V. APPROACH FOR RECRUITING PARTICIPANTS

We will spread the message of our workshop via social media and robotics listservs such as robotics-worldwide. We will also reach out to fellow researchers. We have also created a website for the workshop [2].

VI. PLAN FOR DOCUMENTING THE WORKSHOP

We plan to document the workshop via a paper that includes a meta-analysis of current practices in HRI and a discussion of the outcomes of the workshop. We hope to leverage the lessons learnt during the breakout sessions and the mini discussions to write a follow-up paper to the existing discussions on study design guidelines [3], [4]. We expect that this paper will extend prior work by providing guidelines specific to the sub-fields of HRI such as child-robot interaction, trust in HRI etc.

VII. ORGANIZERS

Mayumi Mohan (maymohan@is.mpg.de) is a Ph.D. student at the Haptic Intelligence Department of the Max Planck Institute for Intelligent Systems. Her research focuses on social-physical exercise coach robots and teleoperation. She has experience in qualitative video analysis and quantitative system evaluation user studies.

Anouk Neerincx (a.neerincx@uu.nl) is a Ph.D. student at the Human-Centered Computing Group at Utrecht University. Her research focuses on social robots for child and family (physical and mental health) care. She has experience in qualitative and quantitative (real-world) user studies, as well as participatory design with end-users.

Cristina Zaga (c.zaga@utwente.nl) is an Assistant Professor at the Human-Centred Design Group (Design and Production Management Department) and a researcher at The DesignLab at the University of Twente. Her interests lie in interaction design and related methodologies for technological products and systems that aim at social good, especially physically embodied AI-driven systems (e.g., robots, IoTs). At the DesignLab, Dr. Zaga investigates methodologies, methods, tools, and techniques to connect science, technology, and society through responsible design.

Naomi T. Fitter (naomi.fitter@oregonstate.edu) is an Assistant Professor in the School of Mechanical, Industrial, and Manufacturing Engineering at Oregon State University. As a member of the Collaborative Robotics and Intelligent Systems (CoRIS) Institute, Dr. Fitter aims to equip robots with the ability to engage and empower people in interactions from playful high-fives to challenging physical therapy routines.

REFERENCES

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