



# Workshop YOUR Study Design 2023! Participatory Critique and Refinement of Participants’ Studies

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## ABSTRACT

A well-designed and evaluated study plays an essential role in highlighting the impact and contribution of a research idea. However, novice Human-Robot Interaction (HRI) researchers often lack the experience and know-how to devise an effective study. This workshop aims to provide a platform for those doing research in HRI, and related fields to obtain expert feedback on their study design before running a user study. The workshop invites a 2-4 page long contribution from participants outlining an upcoming user study focusing on the methods section and planned analyses. Participants will take part in two separate mentoring sessions led by different mentors. The workshop is interactive in nature and will also include mentor-led discussion sessions on topics relevant to study design such as hypothesis design and analysis, and human-centered study design.

## CCS CONCEPTS

• **Human-centered computing** → **Empirical studies in interaction design**; **User studies**; *Empirical studies in collaborative and social computing.*

## KEYWORDS

hypothesis evaluation, statistical analysis, qualitative, quantitative

## ACM Reference Format:

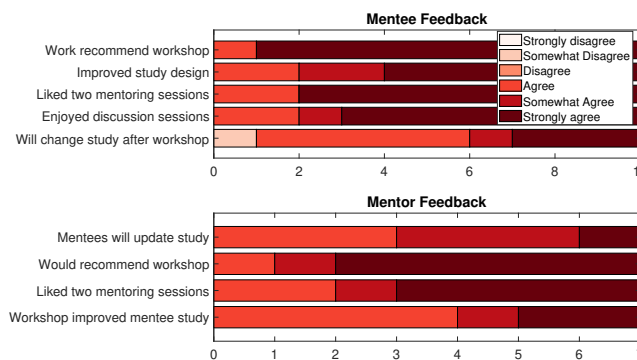
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## 1 INTRODUCTION

User studies form the very foundation of the field of Human-Robot Interaction (HRI). Though the HRI community is enriched by the diversity of researchers from engineering to the social sciences, not everyone can be an expert at study design. Thus, providing the right guidance at the opportune moment can not only enhance the quality of research but creates competent and well-trained young scientists in HRI. Our “Workshop Your Study Design (WYSD)” workshop aims to achieve this goal by providing a platform for novice HRI researchers to receive feedback on their user studies from mentors who are experts in their fields. This workshop has been successfully organized in HRI 2020 [1] and HRI 2021 [4] and has been overwhelmingly positively received as seen by the feedback we obtained from our attendees last year (see fig. 1). Our workshop is constantly evolving by taking participants’ feedback into consideration to give the best experience possible to not only our mentees, but also for our mentors. We hope to make this workshop a constant feature at the HRI conference.



**Figure 1: Feedback from WYSD 2022. Both mentors and mentees enjoyed participating in the workshop and believed that it had a positive impact on the mentees’ study design. The dual mentoring sessions and mini discussions were also very well received.**

| Activity                                      | Duration    |
|---|-------------|
| Opening Remarks                               | 0:15        |
| Ice Breaker Activity                          | 0:10        |
| Mini Discussion Sessions                      | 1:00        |
| Mentoring Session 1                           | 1:00        |
| Peer-to-Peer Reflection                       | 0:10        |
| Coffee Break                                  | 0:15        |
| Mentoring Session 2                           | 1:00        |
| Peer-to-Peer Reflection                       | 0:10        |
| Workshop Takeaways and Concluding Discussions | 0:30        |
| <b>TOTAL DURATION</b>                         | <b>4:30</b> |

**Table 1: Tentative workshop schedule.**

## 2 WORKSHOP OVERVIEW

This will be a half-day workshop where participants have the opportunity to improve a study design of their choice by receiving expert feedback and partaking in peer-to-peer discussions. The workshop will also comprise mentor-led discussion sessions on best practices related to study design topics.

We will invite submissions from researchers in fields related to HRI to submit a two to four page paper detailing the methods of a user study that they plan to conduct. This submission lays an emphasis on providing adequate information about a future study to help mentors provide actionable feedback.

### 2.1 Opening Remarks and Ice Breaker

The workshop will start with an introduction to the workshop format and the mentors. Since the workshop aims to encourage interaction amongst its participants, the opening remarks will be followed by an ice breaker activity to create an inviting atmosphere for future discussions.

### 2.2 Mini Discussion Sessions

We will hold mini discussions on different important study design topics. These sessions will be led by mentors based on their expertise. WYSD 2022 showcased the following topics:

- Hypothesis design and analysis
- Human-centered study design
- Initial system evaluation
- In-the-wild study design

Mentors will be encouraged to share resources that are beneficial to the mentees to help them strengthen their study design skills beyond the workshop. An example of such a resource is the journal article entitled “A Primer for Conducting Experiments in Human-Robot Interaction” [3].

### 2.3 Mentoring Sessions

The mentoring sessions form the crux of the workshop. Each participant will be matched with two expert mentors. Participants’ submissions will be shared with the mentors prior to the workshop. Mentors will then provide detailed feedback regarding the submission during the mentoring sessions. Each mentoring session group will consist of one mentor and two mentees. Thus, two study

designs will be discussed in each mentoring session to encourage mentor-mentee interactions as well as peer-to-peer interactions.

### 2.4 Peer-to-Peer Reflection Sessions

Each mentoring session is followed by a short session where participants can discuss takeaways from the mentoring session. Mentees will be asked to note down at least two lessons learned during the previous mentoring session on post-it notes (we will provide an alternative virtual format for online participants, such as Mural<sup>1</sup>). Additionally, mentors will identify common mistakes made by students during study design. The outcomes of these sessions (lessons learned and common mistakes) will be compiled and sorted by the organizers on a white board for concluding discussions.

### 2.5 Concluding Discussions

This session gives participants an opportunity to reflect on the outcomes of the workshop as a whole. Each participant (both mentor and mentee) will be asked to highlight one post-it of a lesson learned or common mistake as a major takeaway. Outcomes of this discussion from a past edition of this workshop has been archived in a publication by Fraune et al. [2].

### 2.6 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. This format will be similar to the two previous editions that were held virtually due to COVID-19.

### 2.7 Invited mentors (confirmed)

The following six former mentors have confirmed their presence at this year’s workshop. We list their names and information below.

**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,

<sup>1</sup><https://www.mural.co/>

ethical, legal and social implications in new technologies, gender prejudice, sexual violence, objectification.

**Hee Rin Lee**, *Media & Information, Michigan State University*: robots for social good, health and social informatics, user experience (UX) design, user-centered design and evaluation, participatory design, collaborative design, data visualization.

**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.

### 3 TARGET AUDIENCE OR PREREQUISITES

Our target participants include researchers who are new to fields related HRI or are venturing into a new direction of research. Though the mentoring sessions are tailor-made for accepted mentees, the mini discussion sessions will be open to all conference attendees. Generally, researchers interested in learning more about good study design practices and improving a future study design are welcome to attend our workshop.

### 4 NUMBER OF EXPECTED PARTICIPANTS

Each mentor will provide feedback to two mentees in a single mentoring session. Thus, we can have up to 14 mentees. Overall, we will have a total of 21 participants, not including organizers.

### 5 APPROACH FOR RECRUITING PARTICIPANTS

We plan to leverage social media, robotics listservs such as robotics-worldwide and community slack groups. We will also reach out to other researchers within our network to recruit participants. The workshop will have a website similar to the one from past years <sup>2</sup>.

### 6 PLAN FOR DOCUMENTING THE WORKSHOP

We collected extensive feedback from the workshop attendees every year. Based on results from past workshops, we plan to write a paper describing lessons learned from organizing such a workshop. Our workshop evaluation data will comprise mentee (self-reported) skills and mentor and mentee feedback on workshop activities. We expect that this paper will be relevant to a broad audience, as it provides guidelines that can be used to develop scientific mentoring workshops in other conferences and events in the future. We also

plan to evaluate the differences between online and offline formats of this workshop.

## 7 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.

**Patricia Alves-Oliveira** (patricialvesoliveira@gmail.com) is a Senior UX Designer for the Astro robot at Amazon Lab126. Previously, she was a Postdoctoral Researcher in the Paul Allen School of Computer Science and Engineering at the University of Washington, Seattle. Patricia aims to design interactions with robots that empower human health and education. Patricia's interdisciplinary work unifies the fields of Robotics, Design, and Psychology.

**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.

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<sup>2</sup><https://sites.google.com/view/hri22-wysd/>