**1. The Robot Design Competition**

For the 32nd IEEE International Conference on Robot and Human Interactive Communication, RO-MAN 2023, we are inviting submissions to the Robot Design Competition. The competition has three primary goals:

1. To provide individuals or teams with a challenge to explore creative and hands-on approaches to HRI projects.
2. To engage researchers with diverse backgrounds working in technical, art/design, or social science disciplines.
3. To showcase design approaches and solutions that build on this year’s conference theme.

**2. The Design Challenge and Context**

Building upon this year’s conference theme of Designing a New Bridge for H-R-I, participating teams will develop ***interactive robotic objects*** that enhance any level of H (health, happiness, and hope), R (recovery and reconnection), and/or I (interface and interaction). We encourage participants to identify and focus on a particular interaction context, develop their own interactive robotic objects, and create scenarios that illustrate how their robots fit within the lives of the humans involved.

***Robots:*** We imagine participants transforming ordinary, everyday, or found objects into *interactive robotic objects*. You might use ready-made techniques, sourcing and hacking small existing products from your homes or labs, and actuating them using purchased or homemade hardware and software (such as open-source tools) to add movement, visual indicators, or sound. These features would allow the robot to express itself and/or communicate its use or purpose. Don’t feel limited by any of these suggestions: be creative! The competition focuses less on demonstrations of technical proficiency and more on the design of compelling interactions that inspire, surprise, and delight.

***Design:*** We recommend that participants consider the following design questions:

1. In what setting(s) will the robot exist? Choose a real world setting that is familiar to you. Possible settings include the home, office, city park, commuter train, car, and so on, as long as it fits within the H-R-I context.
2. Who are the stakeholders who live, work, travel, or relax in that setting?
3. What activities do people engage in within these settings? Activities might range from commuting to working, exercising, sightseeing, or having a meal.
4. How will the robot contribute to the activities that these people engage in, and what need(s) will it address or solve?

***Process:*** To distinguish this year’s Robot Design Competition, we encourage participants to focus their presentations on their design process. This may be the craft of developing the robotic artifact itself, the contextual research behind the design, or performative explorations that envision and test possible interactions. We encourage extensive and creative documentation of the ‘story’ behind each project.

***Competition:*** Teams will show their *interactive robotic objects*: 1) in a poster displayed for the duration of the conference, and 2) as a demonstration during the Robot Design Competition session at the conference. Winners will be announced at the end of the conference during the closing ceremony. A jury of RO-MAN community luminaries will select winners in 2 categories.

* Category A: Design process. Includes, for example: the choice of context, user needs exploration, sketches and prototypes, iterative explorations, and/or user testing and feedback.
* Category B: Final designs. Interactive robotic objects presented in the context of (a) their motivating interaction needs and user communities, and (b) how well they express a unique perspective on H-R-I.

**3. Important Dates**

* ***10 June 2023:*** Submission deadline of 12:00pm UTC.
* ***20 June 2023:*** Acceptance notifications.
* ***30 June 2023:*** Final versions due.
* ***28–31 August 2023:*** The RO-MAN 2023 conference. The preliminary date for the Robot Design Competition is 28 August 2023. Winners will be announced during the conference’s award ceremony.

**4. Competition Guidelines**

***Procedure:*** Teams should design, build and document their projects during the timeframe prior to the RO-MAN 2023 conference. We encourage teams to photograph and video record their design and development process, to include as learnings during final presentations.

***Participants:*** We invite students, researchers, educators, and industry practitioners from all stages of their university or professional careers, and from any disciplinary focus area. While not required, we encourage multidisciplinary, even international, team membership.

***Team Size:*** In case of participation in a team, we suggest no more than 5 members. If your team has reason to exceed this number, please check with the Chairs at [competition@ro-man2023.org](mailto:competition@ro-man2023.org) first.

***Registration:*** Registration for the competition itself is free, although at least 1 member of each team must register for, and attend, the RO-MAN 2023 conference.

***Submissions:*** There is no limit to the number of entries per university or organization. We encourage each participant to focus on a single team entry, although participants are permitted to join multiple teams.

***Jury and Judging:*** A jury composed of experts in design, robotics and/or interaction will assess each entry during a judging session held at the conference. The jury’s evaluations will determine the winners in the two categories of the competition.

**5. Submissions and Presentations**

***Initial Submissions:*** Robot Design Competition participants should prepare an initial submission and email it to [competition@ro-man2023.org](mailto:competition@ro-man2023.org) by the deadline date of 10 June 2023. Creating and emailing an initial submission is how teams enter the competition, and indicate that they’re working on a project.

Each team’s initial submission should be a 2-4 page pictorial, following the call template open format (A4), that includes:

1. Project title and authors (names, affiliations, and email addresses).

2. An abstract of 150 words or fewer.

3. A brief description of the design context, the people involved, and the activities in which they, and the interactive robotic object, will engage. The description can be technical and/or behavioral, but should allow the Chairs to evaluate the proposed or ongoing project.

4. One or more rough or refined representative images of the interactive robotic object, which can include hand-drawn sketches, digital renderings, CAD models, and/or photographs.

***Final Submissions:*** Teams whose submissions are accepted should submit a final version of 2-4 page pictorial to the Robot Design Competition Chairs via email (competition@ro-man2023.org) by 30 June 2023, updated to reflect the team’s progress to that date. The final version should follow the call template open format (A4).

***Presentations:*** We expect that the Robot Design Competition session will coincide with the conference poster session, but we will announce details later. During the session, teams will present (show and tell) their *interactive everyday objects* to the competition jury and conference attendees as they pass by.

At the conference, each participant or team should present:

1. A poster (we’ll determine specifications shortly) that includes the project title, authors and affiliations, describes the design concept, shows the *interactive everyday object* within an interaction context, and includes other background that the team feels is relevant to communicate their efforts. We encourage teams to build upon the content included in their initial proposals and final designs.
2. Five or more images (renderings or photographs) that show the project in various stages of design development. The first should include the original, unmodified state of the purchased or found object, and the last should show its final, interactive form. The idea is to communicate the team’s design process, including (highlighting!) failures, learnings and successes along the way. While most conference venues emphasize completed works, we celebrate the design process itself.
3. Either (a) the *interactive everyday object* itself to demonstrate in person, or (b) a video that shows the project in context and in action, interacting with people. We strongly encourage teams to bring and show their *interactive everyday objects* in person, as the most informative and entertaining representation of their work. We understand that some projects may be too large or delicate to travel well, and ask teams in this situation to focus their videos on *demonstrating interactions*.

**6. Jury and Awards**

The RO-MAN community is very diverse, including researchers and practitioners from computer science, engineering, social science, art, and design. A goal of the competition is to recognize outstanding contributions from any of these disciplines. Therefore, there will be 2 awards, with winners in each category (A: Design process, and B: Final designs) receiving a $500 prize.

**7. Frequently Asked Questions**

***Interactive Everyday Objects***

*Q:* What are interactive everyday objects?

*A:* We want to encourage broad interpretation of what interactive everyday objects might be to each team. They could be custom-built objects or components, repurposed products or furnishings, hacked toys or appliances, or whatever teams have on-hand. We recommend letting the context, people, and interaction guide the design.

*Q:* Can participants use any hardware or software on their project?

*A:* Participants may use any physical platform for their interactive robotic objects, and should choose based on their chosen interaction context, the people involved, and the activities in which their objects will engage. To control their interactive robotic objects, teams may use any software platform, open or closed source, or even no software if that suits their design. We encourage participants to limit the size of their robotic artifact to make it easier to carry to the conference.

***Teams***

*Q:* How many teams will participate in the competition?

*A:* There is no limit on the number of teams who may enter an initial submission. The Chairs will screen submissions for fit with the competition’s call, and these finalists will present their projects during the conference.

*Q:* Can any participant be a member of more than one team?

*A:* Participants may join more than 1 team. If only a few participants from a lab or institution can attend the RO-MAN conference (for example, due to schedule or expense), it might be more convenient to form larger teams (up to the maximum of 5 members), so that more members can participate.

*Q:* Can teams be composed of researchers from different schools?

*A:* Yes. Just include the (different) school affiliations of your team members in the application materials.

***Eligibility***

*Q:* Can a participant/team withdraw after submitting a proposal?

*A:* Teams are able to withdraw. In this case, please notify the Robot Design Competition Chairs at [competition@ro-man2023.org](mailto:competition@ro-man2023.org) at least 2 weeks prior to the conference.

**8. Contact Us**

The RO-MAN 2023 Robot Design Competition Chairs are:

· Sonya S. Kwak, Korea Institute of Science & Technology, Seoul, Korea

· Maria Luce Lupetti, TU Delft, Netherlands

· David Sirkin, Stanford University, California, USA

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