Human–AI–Robot Teaming (HART) Technical Group

The Human–AI–Robot Teaming (HART) Technical Group (TG) was established to serve Human Factors and Ergonomics (HFES) members and individuals who share an interest in studying the teamwork among humans, artificial intelligence (AI), and robots, including the design, development, implementation, and evaluation of the human–AI–robot team and team components. The HART TG promotes multidisciplinary collaborations by maximizing the value of the cutting-edge advancement of human factors, AI, and robotics to achieve effective teamwork in various application fields.

TECHNICAL FOCUS

The advancement of Artificial Intelligence makes it possible to envision a future in which a myriad of intelligent technologies (virtual or physically embodied) can not only conduct functional tasks (especially those are dirty, dull, dangerous, or difficult for humans to do), but also play human-like roles in a group (e.g., caregiver, assistant, tutor, teammate).

The HART TG focuses on topics that include three elements: (a) having humans in the loop, (b) including either AI or Robots, or both—AI roughly represents software and algorithms, while Robots represents physically embodied AI agents; (c) involving teaming—human-AI-robot interactions and collaborations aim to achieve a joint goal. Nevertheless, the HART TG will also consider related topics and paper submissions. Meanwhile, some work that has these three elements may also fit another TG with a particular focus, and it is up to the authors to choose which TG to submit to as their primary and secondary area for the HFES annual conference. Specific areas of interest include, but are not limited to the following:

- Human–AI teaming
- Human–Robot teaming
- Human–Autonomy teaming
- Human–Agent teaming
- Human–Machine teaming
- Application of human factors in AI and robotics development
- Explainable AI
- Ethics in human–AI–robot teaming
- Relationships between humans and AI-enabled technologies and environments

In the above areas, the HART TG is interested in understanding the nature of the human–AI–robot teaming context, team composition, task analyses and interaction taxonomy, interdependency analyses, interaction and communication modalities (e.g., speech, signals, and

text), teaming processes (e.g., coordination), team cognitive states (e.g., mental models, trust, workload, situation awareness, and cohesion), human psychological needs (e.g., emotional, social, and motivational) in teaming, team dynamics, human factors methods in AI/robot design and evaluation for teaming purposes, and best practices of interdisciplinary collaborations.

The HART TG strives to organize human factors and ergonomics (HF/E) researchers' efforts in the state-of-art of Human–AI–Robot Teaming research and applications, collectively address the critical theoretical and practical challenges, and provide interdisciplinary solutions that enhance human factors research with advanced technology testbeds and analytics techniques. The HART TG also aims to use the strength of HF/E community to help AI/robotics researchers to advance their research development.

MEMBERSHIP

The HART TG is a thriving community with diverse members from academia, government, industries, and military with members in any discipline (e.g., psychology, computer science, robotics, communication, mathematics, anthropology, design, etc.) that is related to HART research and applications.

BENEFITS OF MEMBERSHIP

Members of the HART TG will receive newsletters about the most updated academic events (e.g., conferences, webinars, symposiums, and workshops) inside HFES and in other related societies (e.g., HRI hosted by IEEE), government policies, job opportunities, and funding opportunities. Members can also post such information on the TG newsletters.

The HART TG acknowledges members' expertise and interdependency in the advancement of the community. Members may seek suggestions and advice from experts in various fields through the TG forum. Members may also seek support and resources to organize outreach events (e.g., panelists for discussion panels and workshops).

The HART TG business meeting at the HFES annual conference provides an excellent venue for members to engage in the discussion of the TG development and network with other members in person to have more in-depth conversations and explore potential collaborations.

Members of the HART TG contribute to the TG development through publishing and reviewing HFES conference proceedings. Members who volunteer to review may read the newest research findings and provide constructive feedback to improve colleagues' work. The review process also increases the reviewers' experiences in academic work.

ADDITIONAL READINGS

If you would like to learn more about HART TG, consult the following:

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