

Call for Papers

IEEE Transactions on Human-Machine Systems Special Issue

“Human Interaction with Artificial Intelligence Systems: New human-centered perspectives and challenges”

In the last few years, Artificial Intelligence (AI) methods have been applied to many areas, from medicine to security, transportation, industry, smart homes and cities, business, social sciences and psychology. AI is now part of our daily lives. People interact continuously with AI: it is inside houses, computers, mobile phones and applications. AI can make predictions and give suggestions for movies, songs, or future purchases based on our previous choices. It affects society and economy. People are fascinated by AI, in the ways it could improve and facilitate human life (e.g., improving health care, discharging workers from heavy or dangerous jobs). People are also concerned with AI’s implementation risks, such as ethical, security and privacy issues. There are also concerns that AI machines may replace humans in many activities over the long run. Recently, AI researchers and practitioners have been facing these issues, but more research is needed to find technical and regulatory solutions applicable in the long run.

This special issue is aimed at investigating a broad range of issues deriving from Human Interaction with AI. We welcome interdisciplinary and multidisciplinary contributions to understand how AI can improve human life in different fields. Specifically, contributions in this SI should aim to improve the quality of the interaction between humans and AI systems and investigate new solutions to improve user trust in AI in a broad range of domains (medicine, psychology, education, security, transports, social networks, smart home devices, work, recommendations, etc.).

One of the main ways to build trust in AI is to make its outputs transparent and interpretable by humans (e.g., producing model-specific intrinsic explanations for transparent white box models, or post-hoc explanations for black-box models). Although the problems of transparency and explainability in AI have been recognized for a long time, they emerged as a research field only recently to explain the decisions of deep neural networks, which offer practical solutions to many contemporary problems. Explainable AI models are extremely important in all cases where AI systems are required to make decisions that can impact a person’s life or where AI systems are (or will likely be) an aid to human decision making, such as in healthcare applications, education, finance (e.g., deciding on mortgages), social science and many others.

Another issue that arises when AI systems are required to make decisions that can impact a person’s life is the possible presence of bias in a system’s output. As it is known in the social sciences, human decisions are inherently biased. This bias may translate to the data that is used to train AI systems, which may in turn become biased. Fairness in AI is an emerging research field that aims at training fair predictive models from possibly biased data. We welcome both theoretical contributions and novel applications of existing techniques to human interaction with AI systems.

Potential contributions may address, but are not limited to, the following topics:

- building trust between humans and AI systems
- enhancing usability and user experience of AI systems and devices
- estimating intentionality in interaction with AI systems and robots
- AI-enabled human-robot interaction
- growing long-term relationships with AI enabled systems
- improving interpretability and explainability of AI algorithms
- transparency on decision and suggestion making of AI systems towards users
- ethical issues in interacting with AI systems
- fairness and transparency of AI methods and applications
- novel applications of human-centered AI

Important Dates:

Manuscript initial submission:	February 28, 2021 March 13, 2021 (extended)
Notification of first round of reviews:	April 30, 2021
Revised manuscript submission:	June 30, 2021
Notification of final decision:	July 31, 2021
Final manuscript submission:	August 31, 2021
Expected publication:	September 30, 2021

Papers should be submitted through <http://mc.manuscriptcentral.com/thms> with a cover letter that contains the statement: “This manuscript is being submitted to the Special Issue on ‘Human Interaction with Artificial Intelligence Systems: new human-centered perspectives and challenges’.” For detailed submission information, please refer to “Information for Authors” at: <http://www.ieeesmc.org/publications/transactions-on-human-machine-systems/special-issues>.

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