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Special Issue on Human Meets AI

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The collaboration between humans and artificial intelligence (AI) presents both immense opportunities and significant challenges. On the one hand, as AI systems get integrated into daily life and professional environments, they can enhance productivity, creativity, and decision making. On the other, ensuring how humans will interact with, use, and benefit from these technologies remains a central challenge. This special issue brings together three articles that analyze this central challenge.

The artificial intelligence (AI) systems that we use in daily life and industrial applications are changing the way we carry out tasks. This is leading to a transition from *humans using AI systems* to *humans working with AI systems as partners*. However, this transition requires a paradigm shift in how we understand, design, develop, and assess AI systems. Traditional computational approaches prioritize designing and developing AI systems with the aim of improving their capabilities rather than focusing on how humans and AI systems can work together. Thus, the human-centered aspects that need to go into the interaction between humans and AI systems are often overlooked. Similar to how human-to-human interactions benefit from social constructs such as empathy, respect, and trust, collaboration between human and AI systems should put these social constructs at their center. This requires new methodologies that enable human-AI collaborations by design. At the same time, we need new ways to assess the success of these systems. Typical metrics of accuracy or efficiency are well suited for evaluating individual AI systems but fall short of assessing human-AI collaborations. New methods that measure the effect of AI systems on humans, the extent that the AI systems complement

human partners, and how well they work together are necessary.

Ultimately, designing the next generation of human-AI collaboration systems calls for more than technical innovation, it requires rethinking how we define cooperation itself. By integrating ethical principles and social understanding into AI design, we can create systems that not only perform tasks efficiently but also respect the human values underlying those tasks.

IN THIS ISSUE

This special issue brings together three research articles on the broad theme of humans and AI working together. The first article,^{A1} “Epistemic Partner or Cognitive Crutch: A Conceptual Model of Cognitive Offloading in Human–Artificial Intelligence Collaboration,” by David Andrés García-Barrios, explores the multifaceted relationship between humans and AI in cognitive tasks. The foundational model is built on interdisciplinary research spanning cognitive science, philosophy of technology, and human–computer interaction. The article introduces a four-stage conceptual model of human-AI collaboration, addressing the cognitive offloading paradox where AI can both augment and impair human cognitive functions. The model analyzes effects ranging from cognitive atrophy due to overreliance on AI to hybrid epistemologies that co-create knowledge, further examining the tension between automation bias and human autonomy. The article suggests design and policy interventions to

APPENDIX: RELATED ARTICLES

- A1. D. A. García-Barrios, "Epistemic partner or cognitive crutch: A conceptual model of cognitive offloading in human-artificial intelligence collaboration," *IEEE Internet Comput.*, vol. 29, no. 5, pp. 7–16, Sep./Oct. 2025, doi: [10.1109/MIC.2025.3626694](https://doi.org/10.1109/MIC.2025.3626694).
- A2. C. Arriaga et al., "Assessing latency in ASR systems: A methodological perspective for real-time use," *IEEE Internet Comput.*, vol. 29, no. 5, pp. 17–24, Sep./Oct. 2025, doi: [10.1109/MIC.2025.3614363](https://doi.org/10.1109/MIC.2025.3614363).
- A3. A. Mandal et al., "Governing framework for the responsible democratization of large-language models in banking," *IEEE Internet Comput.*, vol. 29, no. 5, pp. 25–34, Sep./Oct. 2025, doi: [10.1109/MIC.2025.3621976](https://doi.org/10.1109/MIC.2025.3621976).

promote ethical AI use and preserve human cognitive capacities.

The second article,^{A2} "Assessing Latency in ASR Systems: A Methodological Perspective for Real-Time Use," by Arriaga et al, focuses on the evaluation of latency issues in automatic speech recognition (ASR) systems, especially when used alongside human interpreters in real-time speech-to-text scenarios. Although ASR tools automate transcription, human interpreters play a crucial role by understanding and conveying subtleties that AI might miss, thus improving the overall accuracy and context-appropriateness of translations. In this study, the authors introduce a new metric of end-to-end delay that accounts for various delay sources within ASR systems. This metric includes delays from audio splitting, processing, and transmission, providing a more comprehensive measurement of latency viewed from the user's perspective. By offering a systematic methodology to evaluate ASR systems in real-time applications, this article assists developers in enhancing technology to better support human interpreters, making digital communication more accessible for all.

The final article,^{A3} "Governing Framework for the Responsible Democratization of Large-Language Models in Banking," by Mandal et al., proposes an AI governance framework that fosters a collaborative environment between human experts and large language model (LLM) capabilities in the banking sector. The

proposed framework is based on responsible AI pillars: privacy and data governance, ethical use and accountability, fairness, compliance, and technical robustness and safety, which are synthesized from literature and expert consultations. Importantly, as the framework is grounded in a specific application area, it offers granular and usage-specific guidelines that span multiple phases—from onboarding to deployment to monitoring—of the LLM lifecycle in the banking industry. Finally, the article also maps a compilation of benchmarks, datasets, and evaluation metrics to the pillars in the proposed framework, providing a valuable resource for researchers and practitioners.

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