Reimagining Human-AI Social Collaboration

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Abstract

AI increasingly mediates human social life—from daily communication and romantic partnerships to even "resurrecting" deceased loved ones. As AI's influence on shaping human relationships and generative AI's (GenAI) social capabilities grows, opportunities and challenges arise. In this work, we outline three roles AI could play in human-AI social collaboration and three levels of AI capabilities needed to perform various social roles effectively. We also discuss the measurement challenges and ethical risks involved. We aim to spark dialogue on designing sociotechnical systems that prioritize human social flourishing by examining AI's role in mediating, simulating, and reshaping human social interaction.

Introduction

AI increasingly mediates human social life—from daily communication and romantic partnerships to "resurrecting" deceased loved ones (Henrickson 2023). Behind these social interactions, AI plays an increasingly impactful role, from invisibly curating social connections (e.g., algorithmic matching) to directly acting as social entities (e.g., chatbots and virtual companions). As AI's role in shaping human relationships and generative AI's (GenAI) social capabilities grows, critical questions emerge: How can AI collaborate with humans to fulfill and even transcend social needs? And how might we design sustainable, adaptive systems that evolve alongside human social dynamics?

Key Questions & Challenges

Three dimensions of Human-AI social collaboration could be investigated:

- AI as Mediators: Tools that invisibly guide human interactions (e.g., message drafting (Hancock, Naaman, and Levy 2020), match-making (Kakar et al. 2024), content moderation (Kou and Gui 2020)).

- AI as Social Actors: AI entities (e.g., chatbots or digital companions) that interact with humans by assuming roles such as partners, friends, pets, and therapists (Xygkou et al. 2023).

- AI as Social Simulators: GenAI systems that mimic human behavior (e.g., simulate multiple humans to approximate populated social computing systems (Park et al. 2022) or replicate human subject studies (Aher, Arriaga, and Kalai 2023)).

Crucially, social interactions are developmental and context-dependent. Static AI systems may fail to adapt to evolving human needs, necessitating frameworks for longitudinal collaboration that prioritize adaptability and shared value creation (Bernstein et al. 2023).

To implement effective social collaboration with humans, AI could possess three levels of capabilities:

- Augmenting Human Intelligence: Enhancing human capabilities and freeing humans from certain social cognitive loads by automating routine tasks, such as scheduling and basic exchanges of social information.

- Social Replication: Replicating the nuances of human social behavior by understanding and adhering to social norms. Here, the extension of established metrics from social psychology (e.g., the Social Intelligence Scale (Silvera, Martinussen, and Dahl 2001), and Riggio's Social Skills Inventory (Riggio 2014)) might serve as benchmarks for evaluating AI's social maturity.

- Generating Unique Social Values: Leveraging AI's inherent advantages (such as endless patience and constant availability (Welge and Hassenzahl 2016)) to contribute unique social values. Just as it has transformed our understanding of physical health through data quantification, it may offer novel ways to quantify and enhance human social well-being (e.g., network vitality).

Moreover, the interaction design tensions between efficiency (e.g., algorithmic matching) and humanity (e.g., serendipity, vulnerability) should be highlighted, challenging designers to avoid reducing relationships to transactional exchanges.

Measuring Outcomes & Ethical Risks

Current metrics for AI-mediated social success (e.g., dating app matches and LinkedIn connections) often prioritize quantity over quality. We argue for outcome measures grounded in human-centric values (e.g., depth of intimacy and resilience of support networks). Simultaneously, embedding AI into social ecosystems introduces risks, including:

- Homogenization: Over-optimization for specific metrics, such as "engagement," might neglect broader social values, like diversity (Bernstein et al. 2023).
- Dependency: Over-reliance on AI to handle emotional or social tasks could atrophy human social skills, similar to what has happened in the educational context (Zhai, Wibowo, and Li 2024).
- Values Misalignment: AI trained on biased datasets may perpetuate harmful social norms (e.g., gender and racial bias (Srinivasan and Uchino 2021)).

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