北京大学前沿计算研究中心
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学术报告

Expanding the Interaction Bandwidth between Human and AI

Dr. Xiang Chen

Department of Electrical & Computer Engineering

UCLA

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主持人：孔雨晴 博士

Abstract:

The recent development of artificial intelligence (AI) promises a future of data-driven automation that can replace most of today's human efforts. However, currently most AI-enabled systems—often functioning as 'black boxes'—struggle to accommodate, learn from or communicate with humans. One fundamental problem is a limited interaction bandwidth between human and AI: currently, AI's development is bestowed upon the few experts; for users in non-computing domains, there is limited support for them to comprehend, customize or collaborate with AI. As we are on the cusp of defining the future of human-AI relationship, it is important to create new interaction channels to bridge AI and non-computing users. In this talk, I will discuss three research thrusts for expanding the interaction bandwidth between human and AI:

- **Human ← AI: making AI comprehensible to non-computing domain users.** Going beyond system-centered prior work that focused on generic explainable representations of AI (XAI), my research takes a user-centered approach: for example, CheXplain is a system co-designed via iterative studies with medical professionals, which enables referring physicians to explore and understand AI's diagnosis on chest X-ray images.
- **Human → AI: enabling non-computing domain users to customize AI.** Contrary to providing a single label and relying on AI to reverse-engineer the reasoning process, my research investigates techniques for users to express their domain knowledge in ways that are understandable and learnable to an AI: for example, Robiot employs computer vision to interpret a user's demonstration of a physical task, which is translated in a vocabulary that informs an AI to generate robotic mechanisms to automate such tasks.
- **Human ↔ AI: supporting collaboration between non-computing domain users and AI.** Building upon comprehensible and customizable AI, my research takes an integrated approach that creates an environment to support human-AI collaboration: for example, Forte allows a mechanical engineer to sketch a high-level functional and aesthetic design while an AI handles the low-level generation of structures that realizes such design.

Biography:

Xiang 'Anthony' Chen is an Assistant Professor in UCLA's Department of Electrical & Computer Engineering. Anthony's area of expertise is Human-Computer Interaction (HCI). He received his Ph.D. in the School of Computer Science at Carnegie Mellon University in 2017 and was a recipient of the NSF CISE CRII Award and the Adobe Ph.D. Fellowship. His research is at the intersection of sensing & interaction techniques, intelligent user interfaces, and computational design & fabrication. Anthony's work has won two best paper awards and one honorable mentioned in top-tier HCI conferences.

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