

Research Statement

My long-term research goal is to design and evaluate interactive systems that advance human–AI collaboration by making intelligent technologies more transparent, usable, and trustworthy. I am motivated by the belief that the value of computation lies not only in algorithmic power but also in the ways humans can effectively harness it. While artificial intelligence systems are increasingly capable, their success depends on how well people can understand, adapt, and collaborate with them. My proposed research sits at the intersection of HCI, machine learning, and systems design, with the aim of building interactive tools that support human decision-making in complex domains.

During my graduate studies, I developed a strong foundation in computer systems, algorithms, and data-driven applications. I also cultivated skills in designing and testing user interfaces through coursework and independent projects. These experiences shaped my interest in exploring how people interact with algorithmic systems, particularly when the underlying models are opaque, uncertain, or evolving. Questions of interpretability, usability, and human trust are central to the next generation of AI-driven systems, and these questions demand a human-centered approach.

In my PhD, I intend to pursue three complementary directions:

1. **Designing interfaces for intelligibility and control:** I aim to investigate how visualizations, interaction techniques, and explanation mechanisms can help users develop accurate mental models of AI systems.
2. **Studying collaboration between humans and adaptive systems:** Through controlled experiments and real-world deployments, I want to understand how people integrate algorithmic suggestions into their workflows, and how system design affects performance, trust, and fairness.
3. **Developing methods for participatory system building:** I am particularly interested in co-design methods where users can meaningfully shape the behavior of AI models, enabling more transparent and inclusive systems.

My broader vision is to create interactive technologies that not only augment human capability but also empower diverse communities of users. By bridging rigorous technical work with human-centered design, I seek to contribute both new computational methods and empirical insights into how people and intelligent systems can productively work together. Ultimately, I want my research to inform the design of systems that are not only powerful but also accessible, reliable, and aligned with human values.