Research Interests

Below is a brief list of my research interest, in alphabetical order. I aim to work at a intersection of one or more of these.

- **Algorithms:** discovery of new algorithms for improving accuracy of real-world tasks
- **Causal Inference:** Using counterfactuals and Jordan normal forms to capture equivalence graphs (causal structure) for different tasks, and capturing information propagation through these
- **Education:** explore ways to improve information retention through serious game design, and qualitatively studying specific ways that increase this impact
- **Graphs - Agent Based Models:** Using agent based models to capture population level interactions in a multi-agent system. I was involved in this work as it pertained to epidemiology for a course project, but I'm interested in also extending it for drone/robot swarms as a complex system
- **Graphs - Signal Processing:** Use of ideas from GSP for point cloud processing applications like denoising & streaming
- **Haptics:** how can we use haptics to better replicate real-world sensations in virtual environments? (HaRVI lab, in-preparation for a conference)
- **Interaction techniques in XR:** can we find ways to create better immersion and seamless transition between the physical and virtual worlds?
- **Synthetic Data:** how can we utilize game engines and simulations to generate/augment data for ML/CV apps, especially for edge inference on UAVs and autonomous vehicles (E2S2C lab, paper published at a workshop in ICCV'23)
- **Wearable & Sensor Fusion:** specifically as it pertains to healthcare, activity recognition, and accessibility in immersive apps
- **XR Systems:** can we build better, context aware systems that integrate, aggregate or present real-time data efficiently & with low latency?

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