

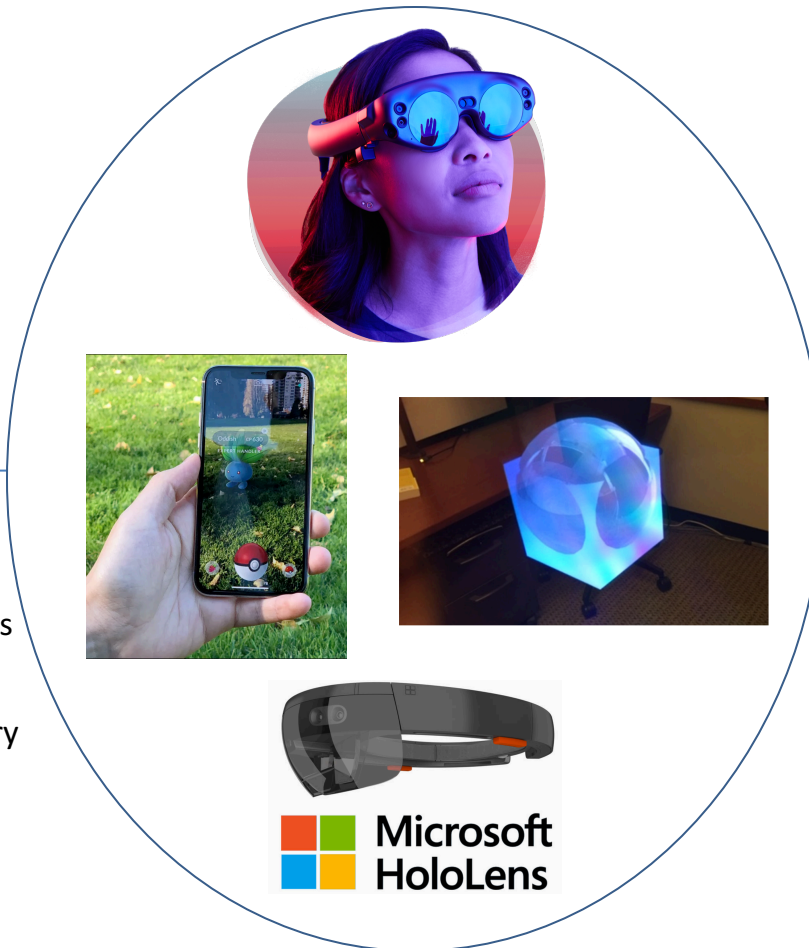
# CAREER: Towards Secure Augmented Reality Platforms

## Challenge:

Emerging augmented reality (AR) technologies raise new and serious computer security and privacy risks—risks that arise for AR input (due to the need for continuous sensing), AR output (buggy or malicious applications affecting a user's view of the physical world), and multi-user AR interactions.

## Solutions:

- **AR output:** AR output policy module to mitigate risks from buggy or malicious applications displaying virtual output, prototyped in Arya system.
- **Multi-user AR:** App-level library supporting sharing and access control for virtual AR content among multiple users, prototyped as ShareAR library for HoloLens applications.
- **Multi-app AR:** Design space exploration for AR platforms that allow multiple AR apps to simultaneously augmented the user's view of the world.



## Scientific Impact:

This project has had direct impacts on the field of computer security and privacy by advancing our understanding of the challenges and risks with emerging AR technologies, as well as potential solutions. These advances will lay a foundation for future AR technologies to balance exciting and useful new functionality with the security, privacy, and safety of end users.

## Broader Impact:

- Presentations and discussions with teams at relevant companies (Google, Meta, Facebook/Oculus, Niantic).
- Planned release of ARShare toolkit.
- Planned Industry-Academic Summit on Mixed Reality Security, Privacy, and Safety.
- Graduate and undergraduate research opportunities.