

Cory I. Ilo

Full-Stack HCI Researcher · ML · AR/VR · Privacy · Human-Centered AI

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RESEARCH SUMMARY

Technical, full-stack HCI researcher working at the nexus of machine learning, AR/VR, and privacy. Designs context-aware interfaces that appropriately preserve privacy while enabling utility — adaptive, attention-aware interaction techniques driven by real-time on-device sensing and ML — and can take a system from use case down to hardware specifications. Studies how autonomy, trust, and human–AI collaboration should be designed when an intelligent system shares control with the user, and establishes each contribution through rigorous, instrumented user studies (within/between-subjects and mixed-methods, up to N=206).

RESEARCH INTERESTS

Privacy-preserving sensing and the privacy–utility tradeoff in XR; context-aware and attention-aware adaptive interfaces; human-centered AI — mixed-initiative interaction, assistant autonomy, and the trust and reliability of AI-augmented systems; gaze/eye-tracking signal processing and inference; immersive/spatial analytics; empirical evaluation of interactive systems.

EDUCATION

Ph.D., Computer Science — Virginia Tech, Blacksburg, VA

Defended June 2026

Advisor: Prof. Doug A. Bowman (3D Interaction Group). Dissertation: gaze-driven, privacy-aware, and context-aware interaction in AR/VR.

B.S. & M.S., Computer Engineering — Rochester Institute of Technology

2010 – 2016

Rochester, NY. Magna Cum Laude. M.S. focus: gaze estimation and computer vision. Advisor: Prof. Andreas Savakis.

RESEARCH EXPERIENCE

Graduate Research Assistant — Virginia Tech, 3D Interaction Group

Sept 2019 – 2026

- Formulated a privacy–utility design space (avoidance / mitigation / protection) for context capture in pervasive AR, and showed an engineered gaze representation retains ~85% of task utility while cutting re-identification ~10× (N=206 identities) — representation, not abstraction, as the privacy lever.
- Designed gaze- and attention-driven AR/VR interaction techniques and the real-time on-device sensing and inference pipelines behind them; validated each in controlled user studies (up to N=206).
- Studied assistant autonomy in an XR privacy assistant (within-subjects, N=30): increasing autonomy reallocated user effort to a supervisory “auditor” role, improving detection accuracy with no measured cost to workload or trust — a human–AI collaboration / trust-calibration result.
- Designing (in progress) *SpatialSENSai* / *ContextLogger*, a portable Unity-layer context-capture architecture — proposed in the privacy-aware AR design-space paper — that fuses intrinsic and egocentric signals into a normalized, privacy-preserving real-time context stream so the privacy posture travels with the application across XR runtimes.

Graduate Camera-Hardware Research Intern — Apple

May – Sept 2022

- Designed and ran a perceptual user study linking camera-hardware design specifications to end-user experience on Apple Vision Pro, translating human-factors findings into actionable hardware recommendations.

Graduate AR/VR Research Intern (Remote) — Adobe

May – Aug 2021

- Lead developer and study designer for an interaction-design investigation of notification delivery in VR/AR, balancing message understandability against minimal user distraction.

SoC Design Engineer & CV Applied Research Scientist — Intel

Sept 2016 – Aug 2019

- Built a real-time ML pipeline that detected sensitive information and removed privacy identifiers in data streams; spawned multiple patent initiatives and a technical white paper presented at the 2019 Strata Data Conference.

PUBLICATIONS

Peer-Reviewed Conference & Workshop Papers

1. **C. Ilo**, S. DiVerdi, and D. A. Bowman. "Goldilocks Zoning: Evaluating a Gaze-Aware Approach to Task-Agnostic VR Notification Placement." Proc. 2024 ACM Symposium on Spatial User Interaction (SUI '24), Article 13, pp. 1–12.
2. D. A. Bowman, J. Gabbard, D. Auerbach, N. Roofigari-Esfahan, K. Britt, **C. I. Ilo**, and K. Adapa. "BuildAR: A Proof-of-Concept Prototype of Intelligent Augmented Reality in Construction." 2022 IEEE VRW, pp. 508–512.
3. L. Lisle, F. Lu, S. Davari, I. A. Tahmid, A. Giovannelli, **C. Ilo**, L. Pavanatto, L. Zhang, L. Schlueter, and D. A. Bowman. "Clean the Ocean: An Immersive VR Experience Proposing New Modifications to Go-Go and WiM Techniques." 2022 IEEE VRW, pp. 920–921.
4. **C. Ilo**, W. Zheng, and D. A. Bowman. "Virtual Loupes: An Augmented Reality Aid for Microsurgery." 2021 IEEE VRW, pp. 617–618.

Forthcoming, Under Review & Preprints

5. **C. I. Ilo** et al. "Privacy on Autopilot: Examining XR Assistant Autonomy and Its Influence on Privacy Awareness." IEEE ISMAR, 2026. Conditionally accepted. [confirm author list]
6. **C. I. Ilo** et al. "Hidden in Plain Gaze (InPlainGaze)." ACM VRST, 2026. Under review. [confirm author list]
7. **C. I. Ilo**, N. Alabanza, C. Connor, C. K. Ilo, and B. David-John. "Towards Privacy-Aware AR in a Pervasive (Unsafe) Future." 2026. Workshop paper. [confirm venue]
8. S. Davari, D. Stover, A. Giovannelli, **C. Ilo**, and D. A. Bowman. "Towards Intelligent Augmented Reality (iAR): A Taxonomy of Context, an Architecture, and an Empirical Study." arXiv:2411.02684, 2024.

TEACHING & MENTORING

- Graduate Research & Teaching Assistant, Virginia Tech (2019–2026) — instructional and lab support for computer-science / HCI coursework alongside dissertation research.
- Teaching Assistant, Rochester Institute of Technology (2012–2014) — Introduction to Digital Systems; Assembly Language Programming; Introduction to Computer Engineering; mentored underclassmen.
- Designed and delivered an internal training course at Intel for 30+ senior engineers on the pre-silicon validation pipeline for GPU IPs.

HONORS, AWARDS & FELLOWSHIPS

- National GEM Consortium Fellowship — Full Ph.D. Fellowship (2019–present) and M.S. Fellowship (2013–2016).
- 1st Place, IEEE VR 2022 3DUI Contest (1st of 17 teams); 2022 I/ITSEC RADM Fred Lewis Scholarship; Magna Cum Laude (RIT, 2016).

TECHNICAL SKILLS

Empirical Methods: Within/between-subjects & mixed-methods study design, success-metric & KPI definition, statistics (LMM / GLMM / CLMM, ANOVA, regression), eye-tracking & behavioral analytics.

Human-Centered AI & ML: Assistant autonomy & mixed-initiative interaction, gaze-based inference, computer vision (detection/segmentation/tracking), activity/task recognition, context modeling, supervised & unsupervised learning.

Interaction & Research Software: Gaze/attention-aware interaction, 3D UI design, adaptive & context-aware techniques, reusable SDK/research-software development (Unity, OpenXR, SteamVR, Varjo).

Languages & Frameworks: C++, Python, C#, Java, MATLAB; PyTorch, Keras, TensorFlow, scikit-learn; NumPy, SciPy, Pandas; OpenCV; Git; GenAI-assisted development (Claude Code, Cursor).