Woojin Ko

Personal Information

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Education

AUG '22 — -	**Cornell Tech / Cornell University** *Ph.D in Computer Science* Mixed Reality / Human Computer Interaction
AUG '17 — MAY '21	**University of California, Berkeley** *B.S. in Electrical Engineering and Computer Sciences* EECS Honors Program: Breadth - Human Computer Interaction
GPA:	Technical: 3.77/4.00, Overall: 3.74/4.00
RELEVANT COURSES:	Graduate: **(CS 294-137)** Virtual Reality and Immersive Computing, Upper Division: **(CS H196A)** Senior EECS Honors Thesis (HCI), **(CS 184)** Graphics and Imaging, **(CS 189)** Machine Learning, **(CS188)** Artificial Intelligence, **(CS 170)** Efficient Algorithms, **(CS 161)** Security, **(CS C100)** Data Science, **(CS 198)** Self-Driving Cars, **(ARCH 199)** Architecture Independent Study Research, **(PSYCH C162)** Human Happiness, **(PUBPOL C103)** Wealth and Poverty, **(GLOBAL 198)** Mental Health and Intergenerational Dialogue, **(POLISCI 179)** Political Colloquium, **(SOCIOL 198)** Social Change and the Pandemic, **(PSYCH 198)** Happiness Advantage

Publications

2020	**Spacefind: Optimization and Manipulation of Contextual Mutual Spaces for Multi-User Virtual and Augmented Reality Interaction** By Mohammad Keshavarzi, Allen Yang, **Woojin Ko**, Luisa Caldas *2020 IEEE Conference on Virtual Reality and 3D User Interfaces (Atlanta)* M. Keshavarzi, A. Y. Yang, W. Ko and L. Caldas, "Optimization and Manipulation of Contextual Mutual Spaces for Multi-User Virtual and Augmented Reality Interaction," 2020 IEEE Conference on Virtual Reality and 3D User Interfaces (VR), Atlanta, GA, USA, 2020, pp. 353-362, doi: 10.1109/VR46266.2020.00055.

Presentations

2019	**OpenARK Tutorial — Tackling AR Challenges via an Open-Source SDK** By Joseph Menke, **Woojin Ko**, Allen Yang *2019 International Symposium on Mixed and Augmented Reality (Beijing)* Joseph Menke, Woojin Ko, and Allen Y Yang. 2019. Tutorial: OpenARK — Tackling Augmented Reality Challenges via an Open-Source SDK. 2019 IEEE International Symposium on Mixed and Augmented Reality (ISMAR). Beijing, China.

Research Experience

JUN '19 — MAR '21	**Spacefind Project Co-Lead, Student Researcher** *XR Lab - College of Environmental Design - Luisa Caldas, Mohammad Keshavarzi, Josh Mao* Devised integrated modules for processing 3D indoor scenes, calculating the optimal mutual interaction space, and recommending feasible furniture movements to expand the interaction boundaries. Developed a Hololens application in Unity for multiple users to visualize the space layout projections in AR Designed a full-scale Hololens visualization experience with an intuitive UI, visual instructions for moving furniture, more aesthetic and user-friendly designs, and improved hologram stability.
APR '19 — JAN '21	**OpenARK Team Lead, Student Researcher** *FHL Vive Center for Enhanced Reality - Allen Yang, Shankar Sastry* Managed Berkeley's open-source AR SDK - maintaining industry-level performance and resolving issues relating to core assets such as hand tracking, 3D reconstruction, and SLAM. Created installers and CMake scripts for building dependencies and running OpenARK on Windows/Linux Leading spatial understanding and user interface project aiming to combine semantic segmentation and DeepSDF representation to allow users to delete, replace, or augment specific physical objects.
JAN '21 — PRESENT	**AR Video Query Project Co-Lead, Honors Research Thesis Author, Student Researcher** *Jacobs Institute for Design Innovation - Bjoern Hartmann, James Smith* Conducting thesis to help build a system that enables users to query iPhone videos temporally and spatially. Co-designing the spatial query interaction of painting points in a region, the temporal query interaction of scrubbing to specific time frames in multiple videos, and the results panel of visualizing query results.

> Extending our system's utility for crowdsourcing social activism and optimizing CV training data collection.

Relevant Experience

Aug '19 — Dec '19	**Electrical Muscle Stimulation VR - Capstone Project Tech Lead** *CS294-137 Virtual Reality and Immersive Computing* Devised an electrical muscle stimulation haptic feedback system to immerse users further in VR. Constructed a three-part system - hacking EMS device circuits, building an Arduino Unity-EMS bridge, and designing Oculus VR experiences (drums, tennis, shooting range) with the appropriate muscle stimulation
Jan '20 — Present	**Software Division Lead, Neurofit AR Project Manager** *Neurotech @ Berkeley* Directing the software division and overseeing EEG data projects including a self-care/health educational tool, music creation module, and human visual system reconstruction. Leading collaboration with Neurofit startup to utilize ARKit gaze detection for occulometric data to diagnose neurological conditions such as Alzheimer's and traumatic brain injury.
Feb '19 — Jan '21	**AR for VIPs Team Lead, Officer** *Extended Reality @ Berkeley* Developing a Hololens app providing audio assistance for visually impaired users to navigate surroundings. Mapping voice commands and hand gestures to our assistive audio functions for reading text aloud from street signs and sonifying nearby surroundings with attached audio beacons
Aug '20 — Dec '20	**Piano Palette AR Technical Lead** *Jacobs Institute Innovation Catalysts Spark Grant Winner* Designing a real-time piano AR visualization experience to elicit deeper connections with classical music.
Mar '19 — May '19	**Scene Generation and Texture Mapping of Indoor Scans - Capstone Project Tech Lead** *CS184/284 Computer Graphics and Imaging* Automated the generation of new 3D house scan data with customizable layouts and texture mappings.

Professional Experience

May '20 — Aug '20	**Software Development Engineer Intern** *Amazon, Inc.* Designed and implemented a Java backend API for calculating the cancellation date for Purchase Orders. Created a UI displaying the successful results of API calls on many POs covering complex policies and cases. Established the groundwork for significant improvements to internal tool predictions and vendor UX clarity.

Teaching

Oct '19 — Oct '20	**Hackathon Mentor** *CalHacks, Berkeley Hack Month* Provided assistance and guidance to hackers in need during CalHacks (world's largest collegiate hackathon). Coaching and advising various teams throughout the month of Berkeley Hack Month 2020.
Jan '19 — Dec '19	**Academic Intern** *(CS61B) Data Structures, (CS61A) Interpretation of Computer Programs* Simplifying and explaining programming fundamentals and data structure uses to students in lab sections.

References

Bjoern Hartmann bjoern@eecs.berkeley.edu	Assoc. Professor of Electrical Engineering and Computer Science, UC Berkeley Faculty Director of the Jacobs Institute for Design Innovation
Allen Yang yang@eecs.berkeley.edu	Principal Investigator in Electrical Engineering and Computer Science, UC Berkeley Executive Director of FHL Vive Center for Enhanced Reality
Luisa Caldas lcaldas@berkeley.edu	Professor of Architecture, UC Berkeley Founder and Director of the XR Lab - Virtual and Augmented Reality Lab

Other Interests and Activities

Chelsea fan, skateboarding, pickup soccer + basketball (intramural team captain), bedside reading (Norwegian Wood, Slaughterhouse Five, Snow Crash), TV (Bojack Horseman, Mr. Robot, Mr. Sunshine), concerts (FKJ, Brockhampton, Tame Impala), snacking, traveling, photography