

Woojin Cho

CV/AR Engineer

Skills

Programming	Python, C#, C++, Matlab, TensorFlow, PyTorch, Unity 3D
Applications	On-HMD projects, Multi-camera system, 3D Hand Tracking, Hand Interaction, 3D Model Fitting, Semantic Segmentation, Object Detection, Depth Inpainting, CNN, GAN, GCN, LSTM, Embedded System Integration, GPU Optimization, Dataset Acquisition

Education

2019-2025	Korea Advanced Institute of Science and Technology PhD Culture Technology Dissertation: "Temporally Enhanced Hand Tracking for Object-dependent Hand Interaction on Wearable AR" Committee: Woontack Woo
2017-2019	Korea Advanced Institute of Science and Technology MS Culture Technology Dissertation: "3D Object-grabbing Hand Tracking based on Prior Knowledge of Grasp" Advisor: Woontack Woo
2013-2017	Korea Advanced Institute of Science and Technology BS Mechanical Engineering

Research experience

2017-2025	Korea Advanced Institute of Science and Technology, Research Assistant , KAIST UVR Lab., Daejeon, KR <ul style="list-style-type: none">• Several projects on Augmented/Virtual Reality• Working with Computer Vision / Machine Learning; Real-time methods, Optimization, Tracking, Datasets, GAN, GCN, etc.• Experience with existing Head-mounted Displays and practical utilization
2019-2020	CMU Intensive Program in Artificial Intelligence , Carnegie Mellon University, Pittsburgh, US <ul style="list-style-type: none">• Short-term Project Managing• CMU lectures on Computer Vision / Artificial Intelligence

Research projects

2023-2024	2023 Artificial Intelligence Training Dataset Construction Project <ul style="list-style-type: none">• Lead a multi-company collaboration, managing all aspects to achieve shared objectives• Hand-Object Interaction, Optimization-based Dataset Generation
2024-	Real-time XR Interface Technology for Environmental Adaptation <ul style="list-style-type: none">• Developed the core tracking system foundational to Human-Object interactions• Meta Object, Human-Scene-Object Interaction
2019-2024	WISE AR UI/UX Platform Development for Smartglasses <ul style="list-style-type: none">• Developed a hand tracking system on AR HMD to enable responsive interaction• Applicable HMD projects, Smart AR Interface
2017-2020	Development of Hyper-realistic Remote Virtual Interaction Technology <ul style="list-style-type: none">• Contribute to a 3D tracking system for the project• Tele-presence, Human 3D Tracking

Publications

2019-2024	Journal publications <p>Cho, Woojin, et al. "Temporally enhanced graph convolutional network for hand tracking from an egocentric camera." <i>Virtual Reality</i> 28.3 (2024): 1-18.</p> <p>조우진, 박갑용, 우운택. "깊이 정보 재구성 및 물체의 사전 지식에 기반한 물체를 쥔 손의 자세 추적", <i>정보과학회논문지</i> 46.7 (2019):673-681</p>
2017-2024	Conference papers <p>Cho, Woojin, et al. "Dense Hand-Object (HO) GraspNet with Full Grasping Taxonomy and Dynamics." <i>European Conference on Computer Vision(ECCV)</i>. Cham: Springer Nature Switzerland, 2024.</p> <p>Song, Hail, Boram Yoon, Woojin Cho, Woontack Woo. "RC-SMPL: Real-time cumulative SMPL-based avatar body generation." <i>2023 IEEE International Symposium on Mixed and Augmented Reality (ISMAR)</i>. IEEE, 2023.</p> <p>Cho, Woojin, Gabyong Park, and Woontack Woo. "Bare-hand depth inpainting for 3d tracking of hand interacting with object." <i>2020 IEEE International Symposium on Mixed and Augmented Reality (ISMAR)</i>. IEEE, 2020.</p>

Cho, Woojin, Gabyong Park, and Woontack Woo. "Tracking an object-grabbing hand using occluded depth reconstruction." 2018 IEEE International Symposium on Mixed and Augmented Reality Adjunct (ISMAR-Adjunct). IEEE, 2018.

조우진, 박갑용, 우운택. "깊이 정보 복원을 이용한 입자 군집 최적화 기법 기반의 물체와 상호작용하는 손 자세 추적", 한국정보과학회, 2018

Jung, Whie, **Woojin Cho**, Hayun Kim, Woontack Woo. "Boosthand: Distance-free object manipulation system with switchable non-linear mapping for augmented reality classrooms." 2017 IEEE International Symposium on Mixed and Augmented Reality (ISMAR-Adjunct). IEEE, 2017.

Patents

2020 우운택, 조우진, 박갑용(2020), "물체와 상호작용하는 손의 추적을 위한 맨손 깊이 인페인팅 방법 및 시스템", 10-2020-0154704

Honors and awards

2018 **Best Paper Award, Korea Software Congress 2018**

References

Dr. Woontack Woo Ubiquitous Virtual Reality Lab, Graduate School of Culture Technology, KAIST
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