010-4335-2416 Daejeon, KR woojin.cho@kaist.ac.kr https://uvr-wjcho.github.io/

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

- 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

- Short-term Project Managing
- CMU lectures on Computer Vision / Artificial Intelligence

Research projects

2023-2024 **2023 Artificial Intelligence Training Dataset Construction Project**

- 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**

- 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**

- 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**

- Contribute to a 3D tracking system for the project
- Tele-presence, Human 3D Tracking

Publications

2019-2024 **Journal publications**

Cho, Woojin, et al. "Temporally enhanced graph convolutional network for hand tracking from an egocentric camera." Virtual Reality 28.3 (2024): 1-18.

조우진, 박갑용, 우운택. "깊이 정보 재구성 및 물체의 사전 지식에 기반한 물체를 쥔 손의 자세 추적", 정보과학회논문지 46.7 (2019):673-681

2017-2024 **Conference papers**

Cho, Woojin, et al. "Dense Hand-Object (HO) GraspNet with Full Grasping Taxonomy and Dynamics." European Conference on Computer Vision(ECCV). Cham: Springer Nature Switzerland, 2024.

Song, Hail, Boram Yoon, **Woojin Cho**, Woontack Woo. "RC-SMPL: Real-time cumulative SMPL-based avatar body generation." 2023 IEEE International Symposium on Mixed and Augmented Reality (ISMAR). IEEE, 2023.

Cho, Woojin, Gabyong Park, and Woontack Woo. "Bare-hand depth inpainting for 3d tracking of hand interacting with object." 2020 IEEE International Symposium on Mixed and Augmented Reality (ISMAR). IEEE, 2020.

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

2024 우운택, 조우진, 하태욱, 전익범, 전진우(2024), "적응적 시간 정보가 적용된 그래프 컨볼루션 네트워크를 이용한 자가 시점 카메라 기반 실시간 손 추적 기술", 10-2024-0164445

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
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Dr. Tae-Kyun Kim
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