

Seok-Young Kim

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Research Interests

Augmented Reality, 3D Scene Reconstruction/Generation, 3D Scene Understanding, 3D Future Prediction, HCI

Education

Korea Advanced Institute of Science and Technology (KAIST)	Mar. 2026 - Present
Ph.D. in Graduate School of Metaverse	Advisor: Woontack Woo
Korea Advanced Institute of Science and Technology (KAIST)	Mar. 2024 - Feb. 2026
M.S. in Graduate School of Metaverse	Advisor: Woontack Woo
Thesis: Object-level Interactive 3D Scene Generation from Physical-world Images in Mixed Reality	
Chonnam National University (CNU)	Mar. 2018 - Feb. 2024
B.S. in IoT Artificial Intelligence (<i>Summa Cum Laude</i>)	

Research Experience

Technical University of Munich (TUM)	Dec. 2024 - Feb. 2025
Visiting Researcher	
- Computer Vision Group at the CAMP Chair hosted by Dr. Benjamin Busam	
- Topic: 3D Scene Understanding & Generation from Scene Graph	

Publications

International Conferences and Journals

- [1] **Seok-Young Kim**, Jaewook Lee, Seokhwan Yang, Juyoung Lee, Jinseok Hong, Yoonseok Shin, Minju Baek, Jon E. Froehlich, Woontack Woo
RealityCraftAR: In-Situ Authoring of Real-World Objects in Augmented Reality
Under Review, 2027
- [2] **Seok-Young Kim**, Abdelrahman Elskhawy, Taewook Ha, Dooyoung Kim, Eunjae Shin, Benjamin Busam, Woontack Woo
DeWorldSG: Depth-Aware 3D Semantic Scene Graph Generation via World-Model Priors
European Conference on Computer Vision (ECCV), 2026
- [3] **Seok-Young Kim**, Dooyoung Kim, Taejun Son, Youngbin Kim, Woojin Cho, Woontack Woo
Mix3R: Zero-shot Interactive 3D Scene Reconstruction from a Single Image in Mixed Reality
IEEE Transactions on Visualization and Computer Graphics (TVCG), 2026
- [4] **Seok-Young Kim**, Dooyoung Kim, Woojin Cho, Hail Song, Suji Kang, Woontack Woo
SceneLinker: Compositional 3D Scene Generation via Semantic Scene Graph from RGB Sequences
IEEE Transactions on Visualization and Computer Graphics (TVCG), 2026
- [5] Suji Kang, **Seok-Young Kim**, Youngbin Kim, Taewook Ha, Dieter Schmalstieg, Shohei Mori, Woontack Woo
SnapPhysics: A Physics-Aware Scene Graph from a Single View for Interactive Mixed Reality Scenes
IEEE International Symposium on Mixed and Augmented Reality (ISMAR), 2026

International Demos, Workshops and Posters

- [1] Minbeom Kim, Jason Kim, Davin Win Kyi, **Seok-Young Kim**, Jaewook Lee, Jon E. Froehlich
TranslateAR: Towards Style-Preserving In-Situ Text Translation in Augmented Reality
ACM Symposium on User Interface Software and Technology (UIST 2026 Demo)
- [2] **Seok-Young Kim**, Dooyoung Kim, Taejun Son, Woontack Woo
RealityCrafter: User-guided Editable 3D Scene Generation from a Single Image in Mixed Reality
ACM Symposium on User Interface Software and Technology (UIST 2025 Adjunct)

[3] Jinseok Hong, Minju Baeck, **Seok-Young Kim**, Yoonseok Shin, Woontack Woo
 Collaborative Scene Mood Authoring with Voice-driven Multimodal Feedback Design in Virtual Reality
ACM SIGGRAPH Asia 2025, XR Demo

Domestic Conferences and Journals

[1] **Seok-Young Kim**, Jinseok Hong, Minju Baeck, Woontack Woo
 Scene Graph Diffusion Transformer for Controllable 3D Virtual Scene Generation
Korea Computer Congress (KCC) Conference, 2025 🏆 *Best Paper Award*

[2] Suji Kang, Seokhwan Yang, **Seok-Young Kim**, Woontack Woo
 Speech-to-3D: Personalized 3D Scene Rendering based on User Speech Recognition
Korea Computer Congress (KCC) Conference, 2025

[3] Seungwoon Shin, **Seok-Young Kim**, Woontack Woo
 Scene Graph-based Interactive 3D Scene Reconstruction from RGB Sequences
Korea Software Congress (KSC) Conference, 2024

[4] **Seok-Young Kim**, Chansoo Kim
 Improved Depth Completion with a Two-branch Backbone based on CNN-ViT integration module
Transactions of the Korean Society of Automotive Engineers, KCI, 2024

[5] **Seok-Young Kim**, Chansoo Kim
 TB-CompletionFormer: Improved Depth Completion based on Two-branch Backbone
Korean Society of Automotive Engineers (KSAE) Annual Fall Conference, 2023

[6] **Seok-Young Kim**, Yeonggyu Park, Taehyun Park, Yuri Seo, Seongjun Kim, Kichun Jo, Chansoo Kim
 Towards precise Depth Completion guided by dense Pointcloud based on LiDAR Accumulation
Korean Society of Automotive Engineers (KSAE) Annual Spring Conference, 2023

Teaching Experience

URP490: Undergraduate Research Participation Program	School of Computing, KAIST
- Student: Seungwoon Shin	Fall 2024
- Material: One KSC’24 paper	
Graduate Students Mentorship	
- Student: Suji Kang	Spring 2026
- Material: One ISMAR’26 paper	

Projects

Development of Technology to Reenact Industrial Spatial Knowledge from Incomplete Data	
UVR Lab, KAIST	Apr. 2026 - Present
Collaborative Interfaces for AR Content Authoring Among SpaceTop Users	
SpaceTop Research Center, KAIST	Dec. 2024 - Present
DT-XR: Development of Dynamic Digital Twin for Realistic Untact XR Collaboration	
UVR Lab, KAIST	Mar. 2024 - Feb. 2026

Awards and Honors

Best Paper Award	
Korea Computer Congress (KCC) Conference	2025
Grand Prize, Artificial Intelligence System Competition	
Chonnam National University	Nov. 2022
Silver Prize, International Electric Vehicle Expo Autonomous Driving Competition	
International e-Mobility Expo	Apr. 2022
Scholarship for Academic Excellence	
Chonnam National University	All semesters of 2021-2023