Seoha Kim

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Summary

Research Interest Dynamic 3D Understanding/Reconstruction, Vision-Language Models, Multimodal Large Language Models, Scene Graphs

Current Focus Feed-forward dynamic 3D Gaussian splatting for egocentric videos

Education

University of Melbourne *2026.2 -*

PhD Student in Computing and Information Systems co-supervised by Prof. Taehyun Rhee and Prof. Kris Ehinger *Melbourne, Australia*

Yonsei University *2022.3 - 2024.8*

Master in Artificial Intelligence supervised by Prof. Youngjung Uh *Seoul, South Korea*

Yonsei University *2015.3 - 2021.2*

Bachelor in Business Administration and Cognitive Science, Double Major *Seoul, South Korea*

Selected Papers

Hand-4DGS: Feed-Forward 3D Gaussian Splatting for 4D Hand Reconstruction from Egocentric Videos *Under Review*

Seoha Kim*, Jeongmin Bae*, Youngjung Uh, Marc Pollefeys, Madhi Rad, Taein Kwon

- This paper proposes a shared network for egocentric hand reconstruction without per-scene optimization

Per-Gaussian Embedding based Deformation for Deformable 3D Gaussian Splatting *ECCV 2024*

Jeongmin Bae*, **Seoha Kim***, Youngsik Yun, Hahyun Lee, Gun Bang, Youngjung Uh

- This paper demonstrates that existing deformable 3D Gaussian Splatting models fail to reconstruct complex dynamic scenes and addresses this by replacing the input of the deformation function with learnable embeddings

Optimizing Dynamic NeRF and 3DGS with No Video Synchronization *ECCV 2024 Wild3D*

Seoha Kim*, Jeongmin Bae*, Youngsik Yun, Hahyun Lee, Gun Bang, Youngjung Uh

- This paper is an extension of 'Sync-NeRF' with the addition of 3D Gaussian Splatting based methods

Sync-NeRF: Generalizing Dynamic NeRFs to Unsynchronized Videos *AAAI 2024*

Seoha Kim*, Jeongmin Bae*, Youngsik Yun, Hahyun Lee, Gun Bang, Youngjung Uh

- This paper demonstrates the failure of existing models in dynamic scene reconstruction from *unsynchronized* multi-view videos and proposes a solution by introducing per-camera time offsets to model calibrated time-dependent representations

Co-author Papers

Efficient 4D Scaffold Gaussian Splatting with Dynamic-Aware Anchor Growing *AAAI 2026*

Woong Oh Cho, In Cho, **Seoha Kim**, Jeongmin Bae, Youngjung Uh, Seon Joo Kim

- This paper reveals temporal redundancy in existing 4D Gaussian Splatting and proposes a dynamic-aware anchor growing method for efficiency

Compensating Spatiotemporally Inconsistent Observations for Online Dynamic 3D Gaussian Splatting *SIGGRAPH 2025*

Youngsik Yun, Jeongmin Bae, Hyunseung Son, **Seoha Kim**, Hahyun Lee, Gun Bang, Youngjung Uh

- This paper identifies temporal inconsistency in online dynamic reconstruction and addresses them using a learnable spatio-temporal map

Rethinking Open-Vocabulary Segmentation of Radiance Fields in 3D Space *AAAI 2025*

Hyunjee Lee*, Youngsik Yun*, Jeongmin Bae, **Seoha Kim**, Youngjung Uh

- This paper aims to perform open-vocabulary semantic segmentation *in 3D space* and proposes an evaluation protocol that assesses 3D geometry and segmentation simultaneously

Research Collaboration

Meta Reality Labs & Microsoft Zurich *2024.9 -*

- Proposed feed-forward Gaussian Splatting for dynamic 3D hands reconstruction from egocentric videos. *Remote*

Electronics and Telecommunications Research Institute (ETRI) *2023.1 - 2024.6*

- Proposed novel dynamic Gaussian Splatting representation for high-quality view synthesis in dynamic scenes. *Seoul, South Korea*
- Developed method for training dynamic NeRFs on unsynchronized multi-view videos

LG Display *2022.2 - 2022.12*

- Developed knowledge distillation method for panel defect classification using patch-level feature similarity. *Seoul, South Korea*

Work Experience

Post-Master' s Research Fellow, ETRI *2025.2 – 2025.12*

- Improving dynamic 3D hands and pose accuracy using multiple egocentric videos

Machine Learning Engineer, Plask *2021.3 – 2021.8*

- Improving the accuracy of 3D pose estimation from videos, reviewing and implementing State-of-the-Art papers

Data Scientist Intern, Hyundai Mobis *2019.9 – 2020.2*

- Improving the accuracy of defect classification on structured factory datasets: motor noise, CT pattern, and solder line

Scholarships

Melbourne Research Scholarship, University of Melbourne *2026.2 - 2029.8*

- Full PhD funding including tuition waiver and living stipend

Awards

1st place Minister's Award, AID Korea *2021*

- Animal Datathon Korea - Cow keypoint detection

Top 2% Silver Medal, Kaggle *2021*

- Cassava leaf disease classification - Image classification

5th place, Seoul National University Hospital *2021*

- Sleep AI Challenge - Sleep stages classification through polysomnography result images

Patents

KR 10-2024-0043684	Method and apparatus for dynamic Gaussian splatting using embedding-based deformation	*2024*
KR 10-2023-0105173	Method and apparatus for representing dynamic neural radiance fields from unsynchronized videos	*2023*
KR 10-2020-0022362	Apparatus of diagnosing noise quality of motor	*2020*