DONGWOOK KIM

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Tech blog | donguk071 | DONGWOOK KIM

Interest

I am conducting research in 3D vision and AI agents, specializing in dataset distillation to enhance model training efficiency and scene reconstruction techniques such as Gaussian Splatting. Recently, I have been working on lightweight multimodal large language models (MLLMs) that incorporate point cloud understanding, as well as developing intelligent agent systems that integrate visual information with language-based reasoning.

Education

UNIST. *Ulsan, S.Korea*

Graduate School of Artificial Intelligence, AI core *Jan 2024 – Current*

- Total GPA 4.2/4.3
- Visual Information Processing Lab (Prof.Jae-Young Sim)

Qualcomm Institute, UC San Diego. *SanDiego, CA, US*

Qualcomm Institute AI Development Projects *Jul 2022 – Aug 2022*

- International Researcher

Kwangwoon Univ. *Seoul, S.Korea*

B.S in Information Convergence, Major in Data Science *Jan 2018 – 2024*

- Total GPA 3.98/4.5, Major GPA 4.16/4.5 (Credits taken: 116/133)
- Deep Imaging and Graphics Lab (Prof.Dongjoon Kim)

Publications

International

[Under Review] ICLR 2026 May 2026

Parameterization-Based Dataset Distillation of 3D Point Clouds through Learnable Shape Morphing (1st author)

Dong-Wook Kim, Jae-Young Yim and Jae-Young Sim

NeurIPS 2025 Nov 2025

Dataset Distillation of 3D Point Clouds via Distribution Matching (1st author, link)

Jae-Young Yim, Dong-Wook Kim and Jae-Young Sim

ICIP-W 2025 Sep 2025

Class-Aware Coreset Selection for 3D Point Clouds Classification (2nd author)

Jae-Young Yim, Dong-Wook Kim and Jae-Young Sim

Domestic

IPIU 2024 Jun 2024

Controllable Classification via Negative-Context-Aware Learning (2nd author, link)

Jae-Young Yim, Dong-Wook Kim and Jae-Young Sim

IEIE 2024 Jun 2024

Enhancing Quality of Gaussian Splatting in Few Shot Condition by Multi-Scale Augmen-

tatio (1st author, link)
Dong-Wook Kim, Jae-Young Yim and Jae-Young Sim

HCI Academy of Korea 2023 Feb 2023
Synthesized training data for a ship 3D surround view learning model based on user evaluations (1st author, link)
Dongwook Kim, Jonghun Kim, Taemin Jeong and Dongjoon Kim

Experience

Qualcomm Institute, UC San Diego *San Diego, CA, USA*
AI Development Project Intern *Jul. 2022 – Aug. 2022*

- Developed a user classification model using the KNIME framework.
- Conducted research on preventing abusive behavior by analyzing and classifying user characteristics on Instagram.

Kwangwoon University, Visual Informatics Lab *Seoul, South Korea*
Undergraduate Research Assistant *Jul. 2021 – Feb. 2024*

- Conducted research on implicit modeling (NeRF, LIIF) and GAN-based 3D graphics.
- Led multiple projects involving LiDAR super-resolution, depth estimation, and 3D scene reconstruction.

Projects

Generative AI for Multimodal Transportation Analytics (with MSIT) Nov. 2025

- Developing an explainable multimodal chatbot for traffic analysis integrating CCTV video, sensor data, and LLM-RAG pipeline
- Building robust vision models for adverse-weather traffic scenes and constructing synthetic datasets via Unreal Engine simulation
- Designing a multimodal traffic knowledge graph and spatio-temporal GNNs for traffic prediction and anomaly detection

Distortion-Free SVM Generation Project(with Avicus) Jun. 2023

- Built a real-time digital twin of a marine environment using Unreal Engine 5, generating synthetic data from virtual LiDAR and RGB sensors.
- Developed deep learning models for sensor data enhancement, including LiDAR super-resolution and image segmentation.
- Integrated a 3D geometry reconstruction pipeline using calibrated sensor data to achieve a distortion-free Surround View Monitoring (SVM) system.

VR : Anchorage Simulation with Unreal Engine 5 Dec. 2022

- Built boat navigation/docking simulator using Unreal Engine 5 (C++/Blueprints), Oculus SDK/OpenXR.
- Implemented hand–gesture steering via UE Motion Controller.

AR : Distortion-Free SVM Generation Project (with Avicus) Jun. 2022

- Real-time face capture & avatar rigging with MediaPipe Face Mesh, Three.js/WebGL, blendshape mapping(landmark)
- Optimized animation with inverse kinematics (IK) and temporal smoothing for stable expression control

ML/DL : Dementia Prediction Project Jul. 2022

- Predicted dementia risk using tabular data and wearable signal features via ensemble ML models
- Applied DL-based signal classification and feature engineering for multimodal health data

Computer Vision : OpenCV Camera Calibration & Panda3D XR Project Current

- Implementing camera calibration, pose estimation, and XR visualization using OpenCV & Panda3D
- Developing real-time calibration pipeline for stereo vision XR systems

Competition & Awards

2nd Prize, 2025 Samsung AI Challenge Oct. 2025

- Developed an AI co-researcher agent integrating MCP and RAG architectures.
- Implemented context management using ChromaDB for efficient information retrieval and dialogue grounding.

1st Prize, SKT FLY AI Competition Feb. 2024

- Developed a motion-synchronized meta character that reacts dynamically to conversation using rigging, retargeting, and TTS.
- Designed and trained an emotion classification network through conversational text data.

1st Prize (Minister's Award), AI Contest for Software-Centered Universities Oct. 2022

- Competed in an OCR task for signage image recognition.
- Enhanced model performance through advanced data augmentation and ensemble learning strategies.

3rd Prize, Student Creative Design Competition Jun. 2022

- Developed *Coverist*, an AI-based book cover generation service.
- Led the end-to-end development process, including AI modeling, web backend, and mobile deployment.

Technologies

Programming Languages: Python, C++, JavaScript, Unreal Blueprints

Deep Learning & Vision: TensorFlow, PyTorch, OpenCV

Simulation & Graphics: Unreal Engine, Three.js, Panda3D