YOOMIN LEE

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EDUCATION

University of Southern California — Los Angeles, CA
Master of Science in Computer Science (Artificial Intelligence) — January 2025 — Present

State University of New York at Oswego — Oswego, NY
Exchange Student — August 2021 — December 2021

Hanyang University — Seoul, Korea
Bachelor of Science in Computer Science & Interior Architecture Design, Summa Cum Laude, GPA: 4.04/4.5 — March 2019 — August 2024
Undergraduate Leadership Scholarship, Hanyang Talent Excellence Award Scholarship

INTERNSHIPS

AIoT Group at Seoul National University | *Member* — Seoul, Korea | February 2024 — December 2024
- Contributed to the development of "Lens", a novel sensor control system optimizing image acquisition for neural networks under domain shift conditions.
- Designed evaluation protocols using real-world datasets (ImageNet-ES Natural), achieving significant performance gains in object recognition tasks.
- Led diverse parameter-based dataset collection under strict deadlines, ensuring data diversity for robust model testing.

Multimodal AI Lab at Hanyang University | *Undergraduate Researcher* — Seoul, Korea | August 2023 - January 2024
- Led research on fine-grained image classification using multimodal inputs such as geographic and language metadata.
- Modified and extended baseline Transformer-based CLIP architecture to integrate contextual information, improving classification accuracy.
- Presented project progress and state-of-the-art literature weekly, enhancing lab-wide collaboration on vision-language research.

COGA Robotics | *Intern Researcher* — Seoul, Korea | August 2022 — February 2023
- COGA Robotics, mainly produces software and hardware used for indoor driving robots. Worked at its advanced technology research center.
- Built sensor perception pipelines by integrating LiDAR and RGB-D cameras in ROS, enabling spatial awareness for indoor robots.
- Optimized Deep SORT tracker to run in real-time on Jetson Nano, improving tracking accuracy with minimal latency.
- Investigated and benchmarked recent SOTA models to propose deep learning-based enhancements for autonomous navigation.

AWARDS

SNU Ambient AI Competition (1st Prize) — Seoul National University — Seoul, Korea
Created on-device real-time blurring application. Team of 4 (link) — September 2024
DB GAPS Challenge (2nd Place) — DB Kim Jun Ki Cultural Foundation — Seoul, Korea
Used financial and market data to build automated investment strategy with team of 4. (link) — November 2020

SKILLS

- **Language:** C/C++, Python, Matlab, JAVA, PostgreSQL, LaTeX
- **Library:** PyTorch, TensorFlow, Numpy, OpenCV
- **Graphics:** Autodesk AutoCAD, Figma, Adobe Photoshop, Adobe Illustrator, Adobe InDesign
- **BIM & 3D Modeling and Rendering:** Autodesk Revit, SketchUp, Rhinoceros, Grasshopper, Lumion, Twinmotion, Enscape

SELECTED PROJECTS

OLAP vs. OLTP DBMS Analysis: DuckDB vs. PostgreSQL — *DuckDB, PostgreSQL, C++, System Internals* November 2024 — December 2024
- Compared DuckDB and PostgreSQL by analyzing scan operations, buffer management, and data file formats.
- Benchmarked sequential query performance and evaluated trade-offs for analytical use cases.
- Gained practical insights into DBMS selection for data analysis pipelines and gained hands-on experience with SQL and query optimization.

Fine-grained Classification with Additional Language Data — *Python, TensorFlow* — October 2023 — January 2024
- Tried to improve performance through a strategy of using Spatio-Temporal Prior (as a baseline) and utilizing functions of CLIP.
- To improve performance of baseline model using additional information, I reproduced and modified structure and code of several models.

Classifying Similar Furniture — *Python, TensorFlow* — March 2023 — June 2023
- Led a challenging project focused on classifying intricate furniture categories.
- Demonstrated end-to-end expertise by personally crafting image datasets for each class through my modeling and rendering skills, a testament to my comprehensive involvement from dataset creation to prediction model development.

Tracking: Person Following for Indoor Robots with Camera — *Python, ROS* — December 2022 — February 2023
- Implemented a motion-aware tracking system using LiDAR and RGB-D sensors in ROS. Integrated SORT algorithm for real-time trajectory inference.
- Integrated RGB-D cameras and LiDAR sensors in a ROS environment to enhance target detection and tracking accuracy.
- Conducted research on state-of-the-art person tracking methods and evaluated their effectiveness in dynamic indoor environments.

Zoning Generation Program for Ideal Floor Plan — *Processing* — September, 2022 — December, 2022
- Pioneering integration of algorithmic solutions to address design challenges within field of interior architecture.
- Infused interior architecture design expertise into program, marking a groundbreaking approach to assist floor planning process.

'Haenggarae' Social Value Platform Deployment — *Product Support* — August 2020 — November 2020
- Contributed to the adaptation and launch of "행가래(Haenggarae)", a blockchain-based mobile platform promoting sustainable behavior through SV point rewards for users at Hanyang University.
- Supported platform localization, QR/NFC-based behavior tracking for 10+ eco-conscious activities, and early user engagement strategies in collaboration with SK C&C.

RELATED COURSES

- **Core:** Probability & Statistics / System Programming / Data Structures / Database Systems / Algorithms and Problem Solving / Computer Architecture / Micro-Processor Applications / Object-Oriented Systems Design
- **Vision & AI:** Computer Graphics / Computer Vision / Deep Learning Methods and Applications / Data Science / Computer Science Capstone PBL / Creative Computing / Design Computing / VR AR Design / Laboratory Practice of Intelligence Computing 2

LEADERSHIP EXPERIENCE

HUHS (Hanyang University Hard & Software) Link — President(2022), Vice President(2021) — September 2019 — August 2024
Vietnam Volunteer Service, Together Hanyang — Team leader — January 2020
Student Council, College of Human Ecology — Policy Director — March 2019 — December 2019
Student Council, Department of Interior Architecture Design — Member — August 2019 — December 2019