Younggun Kim

Phone: (+1) (407)-639-1046 • Email: younggun.kim@ucf.edu • Website: Profile, Github, Google Scholar, LinkedIn

RESEARCH INTEREST

1) Human Intention Understanding based on Computer Vision and Large Language Models
2) AI for Human-Centric Transportation and Mobility Systems
3) Multimodal Perception for Autonomous Driving

EDUCATION

University of Central Florida, Florida, U.S. **Aug. 2024 - Dec. 2025**
- Master of Science in Civil Engineering, Smart City Track
- Advisor: Dr. Mohamed Abdel-Aty
- Current GPA: **4.0/4.0**

Ajou University, Suwon, South Korea **Mar. 2018 - Feb. 2024**
- Bachelor of Science in Mechanical Engineering
- Cumulative GPA: **4.28/4.5 (2/95)**

PUBLICATIONS (* mark indicates corresponding authors.)

Accepted Publications

[1] **Younggun Kim**, Ahmed Abdelrahman*, and Mohamed Abdel-Aty, "VRU-Accident: A Vision-Language Benchmark for Video Question Answering and Dense Captioning for Accident Scene Understanding", *International Conference on Computer Vision Workshop (ICCVW)*, 2025. **Oct. 2025**

[2] **Younggun Kim*,** Mohamed Abdel-Aty, Keechoo Choi, Zubayer Islam, Dongdong Wang, and Shaoyan Zhai, "Pedestrian Crossing Direction Prediction at Intersections for Pedestrian Safety", *IEEE Open Journal of Intelligent Transportation Systems*, 2025. [Impact Factor: 5.3, JCR Quartiles: Q1] **May. 2025**

[3] **Younggun Kim** and Soomok Lee* "3D Adaptive Structural Convolution Network for Domain Invariant Point Cloud Recognition", *Asian Conference on Computer Vision (ACCV)*, 2024. **Dec. 2024**

Under Review & arXiv Preprint

[1] **Younggun Kim**, Swetha Sirnam, Fazil Kagdi, and Mubarak Shah, "Safe-LLaVA: A Privacy-Preserving Vision-Language Dataset and Benchmark for Biometric Safety", Under review at *Conference on Neural Information Processing Systems (NeurIPS)*.

[2] **Younggun Kim,** Beomsik Cho, Seonghoon Rhoo, and Soomok Lee* "Multi-view Structural Convolution Network for Domain-Invariant Point Cloud Recognition of Autonomous Vehicles" Under review at *Expert Systems with Applications*. [Impact Factor: 7.5, JCR Quartiles: Q1]

[3] Dai Quoc Tran*, Mohamed Abdel-Aty, **Younggun Kim**, Ahmed Abdelrahman, and Zybayer Islam, "Region-Level Vision-Language Model for Detecting Distraction Behaviors and Mobility Attributes of Vulnerable Road Users", Under review at *IEEE Transactions on Intelligent Transportation Systems*. [Impact Factor: 8.4, JCR Quartiles: Q1]

[4] Lei Han*, Mohamed Abdel-Aty, **Younggun Kim**, Yang-Jun Joo, and Zybayer Islam, "MMCAformer: Macro-Micro Cross-Attention Transformer for Traffic Speed Prediction with Microscopic Connected Vehicle Driving Behaviors", Under review at *Transportation Research Part C.* [Impact Factor: 7.9, JCR Quartiles: Q1]

[5] Dai Quoc Tran*, Mohamed Abdel-Aty, Qianqian Jin, **Younggun Kim**, and Zubayer Islam "Gated Kinematic–Visual Fusion for Right-Turn Pedestrian Conflict Risk Assessment", Under review at *Transportation Research Part C.* [Impact Factor: 7.9, JCR Quartiles: Q1]

PROFESSIONAL SERVICES

[1] **Reviewer**, *International Conference on Computer Vision Workshop (ICCVW)*, 2025.

CONFERENCE PRESENTATION

[1] **Younggun Kim** and Soomok Lee* "3D Adaptive Structural Convolution Network for Domain-Invariant Point Cloud Recognition", *the Asian Conference on Computer Vision (ACCV)*, 2024. **[BK21(Brain Korea) Distinguished Conference Paper List]** — **Dec. 2024**

[2] **Younggun Kim**, Yooseong Lee, Uikyum Kim*, "Design of capable of Grasping and Manipulating Various objects", Oral session presented at the *17th Korean Robotics Society Annual Conference (KROS)*, 2022. **[Best Paper Award]** — **May. 2022**

PATENTS

Intelligent cradle for a device (Patent No. 10-2506732, KR), First Inventor — **Mar. 2023**

AWARDS AND SCHOLARSHIPS

UCF Research Assistantship — **Aug. 2024 - Dec. 2025**
Fully funded by the University of Central Florida, covering tuition, insurance, and stipend.
Role on the project: Researcher

Dean's List: 4 times — **Jul. 2021 - Aug. 2023**
Ajou University, South Korea
Awarded to students ranked in the top 5% of the department based on semester GPA.

University Scholarship: 7 times — **Sep. 2021 - Sep. 2023**
Ajou University, South Korea

City Scholarship — **Jun. 2023**
Asan-si Future Scholarship Foundation, Asan-si, South Korea
Awarded to students who are expected to lead the 4th Industrial Revolution in the future

1st Place in the Patent Competition — **Jun. 2023**
Ajou University, South Korea

Encouragement prize in Academic Club Competition — **May. 2023**
Ajou University, South Korea

University Scholarship (1 out of 637) — **Apr. 2023**
Daewoo Scholarship Foundation, Ajou University, South Korea
Awarded to a student ranked 1st in the College of Engineering based on semester GPA.

Encouragement prize in Academic Club Competition — **Jun. 2022**
Ajou University, South Korea

Best Paper Award — **May. 2022**
Oral session, 17th Korean Robotics Society Annual Conference (KROS), South Korea

1st Place in College of Engineering Academic Club Competition — **Sep. 2018**
Ajou University, South Korea

TECHNICAL SKILLS

[1] Specialties: Deep Learning, Computer Vision, Large Language Models, Dataset and Benchmark Curation
[2] Languages: Python, C/C++, Matlab
[2] Framework: Pytorch, OpenCV, HF Transformers
[3] OS: Linux, Windows
[4] Analysis: Ansys workbench
[5] Manufacturing: 3D printing
[6] CAD: Solidworks

REFERENCE

Dr. Mohamed Abdel-Aty (Email: m.aty@ucf.edu)
- Board of Trustees Chair Professor and Pegasus Professor, University of Central Florida, FL, U.S.
- Citations: >38,500, H-index: 105
- Emeritus Editor, *Accident Analysis & Prevention*
- Member of the Editorial Advisory Board, *Transportation Research Part C*

Dr. Keechoo Choi (Email: keechoo@ajou.ac.kr)
- President, Ajou University, Suwon, South Korea
- Founding Editor-in-Chief, *International Journal of Sustainable Transportation*

Dr. Soomok Lee (Email: soomoklee@ajou.ac.kr)
- Associate Professor, Department of Mobility Engineering, Ajou University, Sowon, South Korea
- Vice Chair, Department of Mobility Engineering, Ajou University, Suwon, South Korea

RESEARCH EXPERIENCE (EMPLOYMENT)

Graduate Research Assistant
Aug. 2024 - Dec. 2025

Smart & Safe Transportation Laboratory, University of Central Florida, USA

(Advisor: Prof. Mohamed Abdel-Aty, Board of Trustees Chair Professor, Pegasus Professor, Email: m.aty@ucf.edu)

- VRU-Accident: A Vision-Language Benchmark for Video Question Answering and Dense Captioning for Accident Scene Understanding
- Proposal of a large-scale benchmark comprising 1K VRU-related crash videos, 6K VQA questions with 24K candidate options, and 1K dense scene-level captions.
- Proposal of a semi-automatic benchmark curation pipeline to effectively generate VQA and Caption.
- **Accepted at *International Conference on Computer Vision Workshop* (ICCVW).**

- Pedestrian Crossing Direction Prediction at Intersections for Pedestrian Safety.

- A novel transformer-based framework to predict future human crossing direction from CCTV.
- Proposal for Geometric-Invariant Space Embedding System to ensure pedestrian size-invariance, intersection geometric-invariance, and CCTV location-invariance.
- **Accepted at *IEEE Open Journal of Intelligent Transportation Systems*.**

Undergraduate Research Assistant
Nov. 2023 - Jul. 2024

Machine Learning & Mobility Laboratory, Ajou University, South Korea

(Advisor: Prof. Soomok Lee, Email: soomoklee@ajou.ac.kr*)*

- Multi-view Structural Convolution Network for Domain Invariant Point Cloud Recognition of Autonomous Vehicles

- A new deep learning model, which is developed from ASCN, for domain-invariant PCD recognition
- 2D image-based domain generalization framework modification to adapt it to point clouds.
- Proposal for a synthetic point cloud dataset from MORIA simulator.
- **Under review at *Expert Systems with Applications*.**

- 3D Adaptive Structural Convolution Network for Domain-Invariant Point Cloud Recognition

- A novel deep learning network proposal for domain-invariant point cloud recognition
- Adaptive neighborhood sampling method proposal based on principal component analysis
- Experiments about intra-domain and cross-domain environments
- **Accepted at *Asian Conference on Computer Vision (ACCV).***

Undergraduate Research Assistant
Sep. 2021 - Jul. 2022

Interactive & Intelligent Robotics Laboratory, Ajou University, South Korea

(Advisor: Prof. Uikyum Kim, Email: ukim@ajou.ac.kr*)*

- Design of a soft gripper capable of Grasping and Manipulating Various Objects

  - Structure Analysis of the soft gripper through Finite Element Method
  - Manipulating force optimization using Ansys
  - **Accomplished Best Paper Award at *Korean Robotics Society (KROS)*.**

ADDITIONAL EXPERIENCE

Coursework Project (Advanced Computer Vision) **Jan. 2025 - May. 2025**

- Safe-LLaVA: Privacy-Preserving Vision-Language Dataset and Benchmark for Biometric Safety
  - Proposal for captioning and instruction fine-tuning dataset to protect biometric leakage from VLM.
  - Proposal for benchmark to thoroughly evaluate leakages of biometric information from VLMs.
  - **Under review at *Conference on Neural Information Processing Systems*. (*NeurIPS*)**

Robot Project Experience

Robot Academic Club in Ajou University **Mar. 2021 – Feb. 2024**

- President of the robot academic club from Mar.2021 to Feb.2022

- Intelligent cradle for a device

  - User heading angle and position recognition system design based on key point recognition
  - System control from information about user heading angle and position
  - **Registered South Korea patent as first inventor**

- Design of a robotic gripper based on underactuated mechanism to grasp the various objects

  - Kinematic model Analysis of robotic gripper to grasp various object
  - Gripper motion simulation using Matlab
  - Gripper's real-time state visualization via OpenGL
  - **Accomplished 1st Place in the Patent Competition**

- Teleoperated Robot Arm

  - Hardware and Software design for teleoperation system
  - **Accomplished Encouragement Prize in academic club competition**

- Biomimicry robot referring to Festo's Smart Bird
  - Robotic bird kinematics analysis and design using CAD tool and 3d printing
  - **Accomplished Encouragement Prize in academic club competition**

Republic of Korea Army **Apr. 2019 - Nov. 2020**

- Mandatory military service

Robot Project Experience **Mar. 2018 - Mar. 2019**

Robot Academic Club at Ajou University

- Design of Turtle Ship Using Conventional Power Sources
  - A turtle ship design using CAD tool and 3d printing
  - **Accomplished 1st place in College of Engineering academic club competition**