Younggun Kim

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EDUCATION

University of Central Florida, Florida, U.S. **Aug. 2024 - Dec. 2025**
- Master of Science in Civil Engineering, Smart City Track
- 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*,** 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**

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

[3] **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]

[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, **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]

[6] 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: 4times **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: 7times **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, 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**
- Korea Robotics Society
- Title: Design of Robotic Gripper capable of Grasping and Manipulating Various Objects

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
[3] OS: Linux, Windows
[4] Framework: Pytorch, OpenCV, HF Transformers
[5] Analysis: Ansys workbench
[7] 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: >36500, 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 the Safety of Vulnerable Road Users
- 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.
- **Under review 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).***

- Design of a 4bar gripper capable of Grasping and Manipulating Various Objects

- Kinematic model design of robotic gripper for grasping and manipulating
- Prototype design through CAD tool and 3d printing
- Gripper motion simulation using Matlab

- A Method for Estimating the Contact Location of Unstructured Geometry from Intrinsic Force sensing

  - Unstructured geometry sample design for experiment
  - Accuracy evaluation from estimated contact location and reference data

- Robot Arm Control using Capacitor Sensor

  - Capacitor sensor and FT sensor calibration using deep learning
  - Franka Emika robot arm control

ADDITIONAL EXPERIENCE

Coursework Project

Jan. 2025 - May. 2025

- Safe-LLaVA: Privacy-Preserving Vision-Language Dataset and Benchmark for Biometric Safety
  - Cleaning the current LLaVA dataset to protect biometric information from VLM.
  - Proposal for a novel benchmark to evaluate leakages of biometric information from VLMs.
  - **Under review at *Conference on Neural Information Processing Systems*. (*NeurIPS*)**

Robot Project Experience

Mar. 2021 – Feb. 2024

Robot Academic Club in Ajou University

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

- 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 at Ajou University**

- Teleoperated Robot Arm

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

- 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 at Ajou University**

- 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**

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 at Ajou University**