YOUNGGUN KIM

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RESEARCH INTEREST

1) **Development of Deep Learning Algorithms for Advanced Transportation Applications**
   - Designing and optimizing deep learning models to enhance transportation efficiency and safety.
2) **Sensor Fusion for Intelligent Transportation Systems and Autonomous Driving**
   - Integrating multi-sensor data (LiDAR, Camera, Radar) for enhanced perception, localization, and decision-making in intelligent transportation and autonomous vehicle systems.
3) **Intention Recognition for Vulnerable Road Users (VRUs)**
   - Predicting VRUs' behavior patterns, trajectories, and crossing intentions for intelligent transportation systems and autonomous vehicles

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

PUBLICATIONS (* mark indicates corresponding authors.)

Dai Quoc Tran*, Mohamed Abdel-Aty, Qianqian Jin, **Younggun Kim**, and Zubayer Islam "Gated Kinematic–Visual Fusion for Right-Turn Pedestrian Conflict Risk Assessment", has been submitted to *IEEE Transactions on Intelligent Transportation Systems.* **Under review**

Younggun Kim, Swetha Sirnam, Fazil Kagdi, and Mubarak Shah, "Safe-LLaVA: A Privacy-Preserving Vision-Language Dataset and Benchmark for Biometric Safety", has been submitted to *Conference on Neural Information Processing Systems 2025(NeurIPS 2025).* **Under review**

Younggun Kim, Beomsik Cho, Seonghoon Rhoo, and Soomok Lee* "Multi-view Structural Convolution Network for Domain-Invariant Point Cloud Recognition of Autonomous Vehicles" has been submitted to *Expert Systems with Applications.* **Under review**

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", has been submitted to *IEEE Transactions on Intelligent Transportation Systems.* **Under review**

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. **Jun. 2025**

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**

CONFERENCE PRESENTATION

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**

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) **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 students 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

Computer Languages	Python (Deep Learning), C/C++, Matlab
Operating System	Linux, Window
CAD Software	Solidworks
Analysis	Ansys workbench
Embedded	Arduino, Raspberry pi
Manufacturing	3D printing, Laser cutting

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)

- Region-Level Vision-Language Model for Detecting Distraction Behaviors and Mobility Attr ibutes of Vulnerable Road Use.

- A specialized dataset capturing critical VRU behaviors and attributes.
- Region-level captioning framework to enhance attribute detection abilities in complex traffic scenes.
- This paper has been submitted to *IEEE Transactions on Intelligent Transportation Systems*.

- 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.
- **This paper was accepted at *IEEE Open Journal of Intelligent Transportation Systems*.**

Internship **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.
- This paper has been submitted to *IEEE 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
- **This paper was accepted at *Asian Conference on Computer Vision. (ACCV)***

Internship **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: A 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.
  - This paper has been submitted to *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

Apr. 2019 - Nov. 2020

Republic of Korea Army

- Mandatory military service

Mar. 2018 - Mar. 2019

Robot Project Experience

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