

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 *Transportation Research Part C: Emerging Technologies*.

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"
has been submitted to *IEEE Open Journal of Intelligent Transportation Systems*.

Under review

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, Yoosong 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, Suwon, 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 Attributes 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 has been submitted to IEEE Open Journal of Intelligent Transportation Systems.

Internship

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

Nov. 2023 - Jul. 2024

- 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

Sep. 2021 - Jul. 2022

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.(NeurIPS2)

Robot Project Experience

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

Apr. 2019 - Nov. 2020

- System control from information about user heading angle and position
- Registered South Korea patent

Republic of Korea Army

- Mandatory military service

Robot Project Experience

Robot Academic Club at Ajou University

Mar. 2018 - Mar. 2019

- 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