

# Younggun Kim

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## EDUCATION

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### University of Central Florida, Florida, U.S.

- Master of Science in Civil Engineering, Smart City Track
- Current GPA: 4.0/4.0

Aug. 2024 - Dec. 2025

### Ajou University, Suwon, South Korea

- Bachelor of Science in Mechanical Engineering
- Cumulative GPA: 4.28/4.5 (2/95)

Mar. 2018 - Feb. 2024

## PUBLICATIONS (\* mark indicates corresponding authors.)

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### 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 (ICCV)*.

[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 Zubayer 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 Zubayer 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 ACTIVITIES

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[1] **Reviewer**, *International Conference on Computer Vision workshop (ICCV)* Jul. 2025

## CONFERENCE PRESENTATION

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[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 17<sup>th</sup> Korean Robotics Society Annual Conference (KROS), 2022. **(Best Paper Award)** May. 2022

## PATENTS

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

Mar. 2023

## AWARDS AND SCHOLARSHIPS

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### 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

### 1<sup>st</sup> 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 1<sup>st</sup> 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

### 1<sup>st</sup> Place in College of Engineering Academic Club Competition

Sep. 2018

Ajou University, South Korea

## TECHNICAL SKILLS

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[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

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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)**

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### **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](mailto: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 (ICCV)*.**
- 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

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### 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 1<sup>st</sup> 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**