BEOMSEOK KIM

"Pursue Relentless Improvement"

Master of Science in Engineering
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Education

- **M.S., Mechanical Engineering (Specialization: Autonomous Driving)** *Apr 2023 – Mar 2025*
  The University of Tokyo, Tokyo, Japan
  GPA: 3.7/4.0
  Academic Advisor: Prof. Kimihiko Nakano
- **B.S., Mechanical Engineering** *Mar 2016 – Feb 2022*
  Soongsil University, Seoul, Korea
  GPA: 4.0/4.5 (**Magna cum laude**)
  Academic Advisor: Prof. Hyeongjoon Ahn

Research Interest

As someone deeply passionate about establishing a pervasive **Shared Environment** where humans and various autonomous systems—including automated vehicles, robots and intelligent infrastructures—interact harmoniously, I have been interested in **Autonomous Driving (AD), Connected and Automated Vehicles (CAV) and Artificial Intelligence** to achieve this vision. My work has centered on **perception** and **decision-making**. Recently, I've been particularly interested in **End-to-End (E2E) driving**, putting a lot of effort into gaining expertise and hands-on experience in both the academic and industrial sectors.

Keywords: Autonomous Driving, Connected and Automated Vehicles, Artificial Intelligence

Research and Working Experience

- **Software Engineering Intern, TIER IV**, Tokyo, Japan *Dec 2024 – May 2025*

  End-to-End Driving
  - Survey and inference of state-of-the-art E2E driving models

- **Software Engineering Intern, BOSCH**, Tokyo, Japan *Apr 2023 – Mar 2024*

  Automated Valet Parking System
  - Enhanced Depth Estimation for Stereo Vision Using Disparity Maps from Diverse Floor Patterns
  - Path-Planning using A* and Artificial Potential Field
  - Preliminary Field Implementation in the Commercial Sector at Haneda Airport Parking Area, Tokyo

- **Graduate Researcher, The University of Tokyo**, Japan *Apr 2023 – Mar 2025*

Nakano Lab (Intelligent Transportation System Lab)

Perception and Decision-Making

- Salient Object Detection for Autonomous Driving: Identifying and Prioritizing Crucial Objects Using Salient Object Detection to Enhance Decision-Making
- End-to-End driving to Avoid Parked Vehicles on Two-Lane, Two-Way Roads
- Deep Learning-based Pedestrian Trajectory Prediction for Autonomous Tram

- **Internship Student, The University of Tokyo**, Japan *Apr 2022 – Mar 2023*
  Nakano Lab (Intelligent Transportation System Lab)

  Decision-Making for Autonomous Driving
  - Decision-Making to Avoid Parked Vehicles on Two-Lane, Two-Way Roads for Autonomous Bus

- **Undergraduate Researcher, Soongsil University**, Korea *Sep 2020 – Feb 2022*
  Intelligent Mechatronics System Lab

  Control Systems
  - Development of Affordable and User-Friendly Inverted Pendulum Control Kits for Undergraduate Students
  - Prediction of Performance Metrics for Precision Reducers by Measuring Noncontact Tooth Profiles and Analyzing Three-Dimensional Tooth Engagement

Other Professional Experience

- **Republic of Korea Army** (ROKA), Korea *Aug 2017 – Apr 2019*
  Sergeant, Auxiliary Police Officer, Suseo Police Station

- **Teaching Assistant, Soongsil University**, Korea *Mar 2021 – June 2021*
  Subject: **Mechatronics**
  Responsibilities: Assisted in grading, tutoring, and lecture preparation

- **Teaching Assistant, The University of Tokyo**, Japan *Apr 2024 – July 2024*
  Subject: **Mathematics 2B**
  Responsibilities: Assisted in grading and lecture preparation

Publication and Conference

[1] **Beom-Seok Kim**, Seung-Tae Jeong, and Hyeong-Joon Ahn. "The prediction of the angular transmission error of a harmonic drive by measuring noncontact tooth profile and considering three-dimensional tooth engagement." International Journal of Precision Engineering and Manufacturing 24.3 (2023): 371-378. https://doi.org/10.1007/s12541-022-00760-w

[2] **Beomseok Kim**, Nelson Changgraini, and Kimihiko Nakano. "Leveraging Saliency Prediction to Enhance Behavioral Decision-Making for Parked Vehicle Avoidance on Two-Lane Two-Way Roads." Transportation and Logistics Division Conference, Tokyo, Japan (2024)

Skills and Languages

- **Programming**: Python, C++, Matlab
- **AI / ML Tools:** PyTorch, TensorFlow, ONNX, TensorRT
- **Languages**: Korean (Native), English (Fluent), Japanese (Fluent)

Award and Honor

- Half Tuition Fee Scholarship for Academic Excellence *Fall Semester 2016*
- Half Tuition Fee Scholarship for Academic Excellence *Spring Semester 2020*
- A Bronze Prize in the Hyungnam Science Award in Soongsil University *Fall Semester 2020*
- Japanese Government (Monbukagakusho: MEXT) Scholarship Student *Apr 2022 – Mar 2025*

External Online Coursework

- Self-Driving Cars Specialization: Faculty of Applied Science and Engineering, University of Toronto
- Deep Learning Specialization: Prof. Andrew NG, Stanford University
- Machine Learning Specialization: Prof. Andrew NG, Stanford University

Reference

- **Prof. Kimihiko Nakano, Ph.D.**
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  Email: knakano@iis.u-tokyo.ac.jp
- **Prof. Hyeongjoon Ahn, Ph.D.**
  Department of Mechanical Engineering, Soongsil University
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