MINGYU KIM

CONTACT INFORMATION

Email: k0136000@mju.ac.kr
Website: https://kminsalgorithm.github.io

RESEARCH INTEREST

My master's research focused on enhancing dynamic obstacle avoidance performance in mobile robot navigation by leveraging deep learning models to process semantic information and generate human-like trajectories based on imitation learning.

My primary research interests are focused on:

- Learning-based path planning
- Imitation learning
- Representation learning

EDUCATIONAL QUALIFICATION

Myongji University — Yongin, Korea
M.S. in Information and Communication Engineering — Mar. 2024 - Current

Myongji University — Yongin, Korea
B.S. in Information and Communication Engineering — Mar. 2020 - Feb. 2024

PUBLICATIONS

International Journals

- **HADP: Hybrid A*-Diffusion Planner for Robust Navigation in Dynamic Obstacle Environments**
  M. Kim*, C. Heo*, J. Jung (*co-first authors)
  IEEE Access, (Under Review).
  read more

- **HiMSELF: A Hierarchical Misbehavior Classification with Sequence Embedding by Latent Features in Vehicular Ad-Hoc Networks**
  M. Kim, D. Yum, J. Jung
  IEEE Access, (Under Review).
  read more

- **Semantic Information Loss Function: A Novel Approach Addressing the Limitations of Pixel-Based Segmentation Loss in Medical Image Segmentation**
  C. Heo, **M. Kim**, J. Jung
  IEEE Access, (Under Review).

Domestic Journals

- **Effective Embedding Techniques for Misbehavior Classification in Vehicular Ad-Hoc Networks**
  M. Kim, J. Jung
  Journal of Korean Institute of Information Scientists and Engineers, (KIISE 2024).

Domestic Conferences

- **Label Similarity Analysis Based on LSTM in Vehicular Ad-hoc Networks**
  M. Kim, J. Jung
  Korea Software Congress, (KSC 2023) – **Best Paper Award**.
- **Reinforcement Learning-Based Navigation System Without Dependence on SLAM**
  M. Kim, J. Jung
  Korea Institute of Next Generation Computing, (KINGPC 2024).

PATENTS

- **Title: Method for producing dynamic obstacle avoidance path using conditional diffusion model**
  Status: Patent Application Filed
  Application No.: 10-2025-0053197
  Filing Date: Apr 23, 2025
  Applicants: Jaehee Jung, **Mingyu Kim**, Chanyeong Heo
- **Title: System for producing dynamic obstacle avoidance path using conditional diffusion model**
  Status: Patent Application Filed
  Application No.: 10-2025-0053198
  Filing Date: Apr 23, 2025
  Applicants: Jaehee Jung, **Mingyu Kim**, Chanyeong Heo

AWARDS

Encouragement Prize, Myongji University Software Competition 2022

Grand Prize, Myongji University Software Competition 2023

Best Paper Award, Korea Software Congress (KSC) 2023

Gold Prize in the Contribution Award, Myongji University 2024

Awarded the Research Scholarship for M.S. Studies by the National Research Foundation (NRF) 2024

SKILLS

Programming Language

- Python (PyTroch, Tensorflow, FastAPI), C (MCU programming), JavaScript (NestJS)

Machine Learning

- Imitation learning, Anomaly Detection

Robot Development and Implementation

- Learning-Based Path Planning

- Development of a Swerve-Drive Robot
- Development of an Omni-Wheel-Based Robot

Development Tools

- ROS, Gazebo, Fusion 360

RESEARCH PROJECTS

Development of a Cybersecurity Platform for V2X-based Remote-Assisted Mobility
AutoCrypt 2023 – Current

Semantic Autonomous Driving Systems Utilizing Diffusion Models for Enhanced Dynamic Obstacle Avoidance Performance
National Research Foundation of Korea (NRF) 2024 – Current

EXTRACURRICULAR ACTIVITIES:

Undergraduate Research Intern, DS LAB (Advisor: Jaehee Jung) 2022 – 2024

- Researched on improving misbehavior classification in V2X messages by analyzing relationships between misbehavior types.
- Researched on DRL-based navigation systems that operate without reliance on maps.

LikeLion, Myongji University 2023 – 2024

- Backend Operator & Instructor

AUTURBO 2024 – 2025

- Member, Outdoor Delivery Robot Team

PERSONAL INFORMATION:

Date of Birth	20-02-2001
Hobbies	3D Modeling Freelance work via Soomgo