

TAEHAN KIM

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RESEARCH INTERESTS

Vision-Language-Action (VLA) Model, Diffusion & Flow Matching Model, Imitation Learning, Reinforcement Learning

EDUCATION

Yonsei University

B.S. in Mechanical Engineering

Seoul, Republic of Korea

Mar. 2014 - Aug. 2021

- Selected coursework: Mechanical System Control (A+), Engineering Numerical Analysis (A+), Linear Algebra And Its Application (A+), Probability And Statistics (A+), Algorithm Analysis (A+)
- 2-year absence to mandatory military service (2016 - 2017)

PUBLICATIONS

Preprint

- B.Jeon, Y.Choi, **T.Kim** “Shallow- π : Knowledge Distillation for Flow-based VLAs” [🔗](#) (arXiv 2026)
- Y.Kim, **T.Kim**, E.Park, C.Park, C.Breazeal, D.McDuff, H.Park “InvThink: Towards AI Safety via Inverse Reasoning” [🔗](#) (arXiv 2025)

Published

- Y.Kim, **T.Kim**, W.Kang, E.Park, J.Yoon, D.Lee, X.Liu, D.McDuff, H.Lee, C.Breazeal, H.Park “VocalAgent: Large Language Models for Vocal Health Diagnostics with Safety-Aware Evaluation” (**Oral**) [🔗](#) (Interspeech 2025)
- H.Ryu, J.Kim, H.An, J.Chang, J.Seo, **T.Kim**, Y.Kim, C.Hwang, J.Choi, R.Horowitz “Diffusion-EDFs: Bi-equivariant Denoising Generative Modeling on SE(3) for Visual Robotic Manipulation” (**Highlight** - 11.9% of accepted papers) [🔗](#) (CVPR 2024)

PATENTS

Patent Application

- **T.Kim**, J.Park, J.Yoon, R.Chung, C.Ha, H.Han, “ROBOT APPARATUS AND METHOD FOR CONTROLLING THEREOF” WIPO Patent App. No. PCT/KR2025/011352 (Filed: Jul. 30, 2025)
- J.Choi, S.Han, **T.Kim**, S.Choi, “ROBOT DEVICE AND CONTROL METHOD THEREOF” KR Patent App. No. P20250083793 (Filed: Jun. 24, 2025)
- C.Ha, J.Yoon, **T.Kim**, J.Park, R.Chung, “ROBOT AND CONTROL METHOD FOR THE SAME” KR Patent App. No. P20250014046 (Filed: Feb. 4, 2025)
- **T.Kim**, W.Choi, J.Park, H.Han, “ROBOT APPARATUS AND METHOD FOR CONTROLLING THEREOF” KR Patent App. No. P20240190236 (Filed: Dec. 18, 2024)
- R.Chung, J.Park, J.Yoon, **T.Kim**, C.Ha, H.Han, “ROBOT APPARATUS AND METHOD FOR CONTROLLING THEREOF” KR Patent App. No. P20240182965 (Filed: Dec. 10, 2024)
- **T.Kim**, S.Kim, Y.Kim, J.Kim, B.Moon, H.Lim, “ROBOT AND METHOD FOR CONTROLLING THE ROBOT” US Patent App. No. 18/901786 (Filed: Sep. 30, 2024)
- **T.Kim**, T.Kim, J.Kim, B.Moon, H.Lim, “ELECTRONIC DEVICE FOR SPEECH RECOGNITION AND METHODS THEREOF” KR Patent App. No. P20240000214 (Filed: Jan. 2, 2024)

WORK EXPERIENCE

Samsung Research

Full-Time, Robotics Research Engineer (Supervisor: Junghyun Kwon, Corporate EVP)

Seoul, Republic of Korea

Jul. 2022 - Present

- **VLA Model Development for Robot Manipulation and Humanoid Control**
 - Developed a reinforcement learning fine-tuning algorithm utilizing VLA models for assembly tasks with 2 mm tolerance.
 - Evaluated existing VLA models (π_0 , OpenVLA-oft) on various robots. (e.g. RB-Y1 [📺](#) - 1s appearance at 2:45)
 - Collaborated with leading academic labs, major industry partners, and startups.
- **End-to-End Robotic Policy for Bi-Manipulator**
 - Designed an imitation learning algorithm for high-precision assembly tasks with 2 mm tolerance.
 - Benchmarked behavior cloning models (ACT, Diffusion Policy, OCTO) across diverse manipulation tasks.
- **Sound Source Localization for Home Robot**
 - Developed a MobileNetV3-based sound source localization (SSL) model robust to 0 dB SNR conditions for home robots. (e.g. Samsung Ballie [📺](#) - SSL at 0:48)

Bear Robotics

Full-Time, Software Engineer Intern (Supervisor: Jeongki Yoo, Team Leader)

Seoul, Republic of Korea
Apr. 2022 - Jul. 2022

- **Development of Food Service Delivery Robot, "Servi"**

- Developed a graph-based Simultaneous Localization and Mapping (SLAM) algorithm to generate robust maps and reduced the computational burden.
- Evaluated visual SLAM algorithms (ORB-SLAM, UcoSLAM) on "Servi".

Deep Machine Lab

Part-Time, R&D Intern (Supervisor: Jeongmin Bae, Team Leader)

Seoul, Republic of Korea
Jul. 2020 - Jan. 2021

- **Development of Screen-based Human-Interactive AI Avatar**

- Engineered a real-time, on-device face and object detection system for a simulated emotional robot, significantly improving processing speed by leveraging the Google Coral Edge TPU accelerator.
- Designed a DialoGPT-based chatbot for the emotion-wellness domain to provide conversational support.

DOGU

Full-Time, Software Engineer Intern (Supervisor: Jiwook Kwon, CTO)

Seoul, Republic of Korea
Mar. 2020 - May. 2020

- **Development of "Robjet" Autonomous Mobile Robot**

- Designed a navigation algorithm for "Robjet" to enable automatic docking with its charging station.
- Developed a robotics simulation environment using ROS 1 and Gazebo.

RESEARCH EXPERIENCE

Machine Learning and Control System (MLCS) Lab, Yonsei University

Undergraduate Researcher (Advisor: Prof. Jongeun Choi)

Seoul, Republic of Korea
Jun. 2019 - Nov. 2020

- **Multi-Sensor Data Fusion for Robotic Arms **

- Developed a Multi-Modal Variational Autoencoder (MVAE) based sensor fusion algorithm, combining RGB-D images, joint states, and pressure data to enhance reinforcement learning of a robotic arm.

- **Mecanum Wheel-based Mobile Robot Navigation**

- Designed a robust, dynamic obstacle avoidance algorithm that combines Extended Kalman Filter (EKF), clustering, and Dynamic Window Approach (DWA) for effective path planning.

PROJECT EXPERIENCE

erAIsr: Unintended Object Removal in Video

Project Member

Republic of Korea
Mar. 2021 - Jul. 2021

- Implemented the ViNet neural network model to perform video inpainting for the removal of unintended objects.

ICRA 2019 Robomaster AI Challenge

Captain

Montreal, Canada
Dec. 2018 - May. 2019

- Awarded 3rd prize among 39 global university teams in the final competition.
- Achieved the S+ rank for the Technical Report, placing in the top 4 out of 68 universities worldwide.
- Served as the team captain for "Roboin," acting as the university's official representative.
- Optimized the Dynamic Window Approach (DWA) path planning algorithm, resulting in improved navigation efficiency.
- Implemented the YOLOv3 object detection algorithm for real-time environmental perception.
- Developed and trained DQN and DDPG algorithms to enable collaborative robot behavior in a simulation environment.

TEACHING/MENTORING EXPERIENCE

YCS1002-03 SW Programming

Teaching Assistant (TA), 2 semesters

Yonsei University, Republic of Korea
Mar. 2021 - Jun. 2021
Sep. 2020 - Dec. 2020

- Conducted coding sessions introducing Python programming and basic algorithms.
- Assisted students with homework and projects, and evaluated their assignments.

ACADEMIC SERVICE

Conference Reviewer

IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR)

2026

AWARDS AND SCHOLARSHIPS

Google Code Jam Round 2 Qualifier

Placed in the top 3,384 out of over 32,702 competitors worldwide 

2022

Merit-based Scholarship, 50% Tuition

Mar. 2020

ICRA 2019 Robomaster AI Challenge, 3rd Prize

May. 2019

SKILLS

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|------------------------------|--|
| AI frameworks | PyTorch, JAX, TensorFlow |
| Programming languages | Python, C++/C, CUDA, Rust, Java |
| Simulation tools | Nvidia IsaacSim, MuJoCo, Pybullet, CoppeliaSim, Gazebo |
| Robotics tools | ROS 1/2, MoveIt, OMPL, drake |
| Languages | Korean (Native), English (Fluent) |

EXTRACURRICULAR ACTIVITIES

Tobigs, Big Data and Machine Learning Study Club

Member

Jun. 2019 - Aug. 2020

Roboin, Robot Club, Yonsei Univ.

Vice President

Feb. 2018 - Feb. 2020

Prologue, Rock Band, Yonsei Univ.

Bass Guitar Player

Mar. 2014 - Mar. 2016