Sai Navaneet

Daegu , South Korea | sainavaneet76@gmail.com | 010 5831 6619 | github.com/sainavaneet

sainavaneet/portfolio

About Me

Driven by curiosity and innovation, I am currently pursuing a Master's in Electronics and Electrical Engineering, specializing in NLP-based robotic control. My passion lies in blending machine learning with robotics to create intelligent systems that solve real-world challenges. I thrive on research, discovery, and turning complex ideas into practical solutions.

Education

Kyungpook National University, Masters in School of Electronics and Electrical Engineering — Mar 2024 – Present
Daegu, South Korea

- GPA: 4.07/4.3

Kyungpook National University, Bachelor of Science in School of Electronics Engineering (Double Degree) — Mar 2022 – Feb 2024
Daegu, South Korea

- GPA: 3.8/4.3

Christ University, Bachelor of Technology in Electronics and Communication Engineering — July 2019 – Dec 2021
Banglore, India

- GPA: 3.7/4

Experience

Research & Robotics Engineer, Airobotics – Daegu, South Korea — April 2025 – Present

- Working on autonomous car manufacturing systems using **Yaskawa** industrial robots.
- Developed and integrated object detection models to identify weld beads for quality assurance and robotic guidance.
- Collaborate on the automation of inspection processes within the vehicle assembly line.

Robotics Engineer, Dexweaver – Daegu, South Korea — July 2024 – Dec 2024

- Developed a vision-guided tissue processing system using **ViperX robotic arms** and the Action Chunking Transformer (ACT) algorithm.
- Implemented a leader-follower teleoperation setup for data collection and trained ACT for autonomous manipulation of deformable materials.
- Achieved an autonomous operation success rate of 85.7%, with performance comparable to human teleoperation (92.4%).
- Engineered multi-modal datasets (joint angles, gripper states, synchronized RGB feeds) and designed transformer-based policies for action prediction.

Researcher, Physical Intelligence Lab – Kyungpook National University, South korea — Feb 2024 – Present

- Working on **state-space models (e.g., Mamba)** to improve sequential modeling and trajectory prediction for robotic manipulation tasks.
- Implementing **transformer-based** architectures to enhance robotic decision-making and adaptability in dynamic environments.
- Leading development of **precision motion planning algorithms** for robotic manipulators using advanced control strategies.
- Contributing to the collaborative design and optimization of robotic systems for both academic research and industrial deployment.

Research Intern, Physical Intelligence Lab – Kyungpook National University, South Korea — Sep 2022 – Feb 2024

- Developed imitation learning algorithms for robotic arms to replicate human-like behaviors.
- Designed and tested iterative learning control (ILC) combined with model predictive control (MPC) for high-accuracy tasks.
- Applied reinforcement learning techniques to differential drive robots to improve navigation and obstacle avoidance.
- Enhanced aerial robotics by refining detection and tracking algorithms for UAVs.

Publications

QROOT: An Integrated Diffusion Transformer and Reinforcement Learning Approach for Quadrupedal Locomotion — Dec 2025

Sai Navaneet, Manisha Lingala, Sangmoon Lee, Ju H. Park

To appear at NeurIPS 2025

Vision-Guided Predictive Action Imitation Learning with Discrete Latent Encoding for Multitasking Robots — Jun 2025

Sai Navaneet, Manisha Lingala, Sangmoon Lee

Submitted to Engineering Applications of Artificial Intelligence (EAAI)

Discrete Latent Diffusion Motion Planning — Jun 2025

Sai Navaneet, Manisha Lingala, Sangmoon Lee, Ju H. Park

Published at The International Conference on Nonlinear Dynamics (NODYCON 2025)

Vision-Guided Imitation Learning Using Action Chunk Transformers — Oct 2024

Sai Navaneet, Manisha Lingala, Sangmoon Lee, Hongseok Yoo

Published at IEMEK Symposium on Embedded Technology 2024 (IEMEK 2024)

Hybrid Model Predictive and Iterative Learning Control for Enhanced Leader-Follower Robotic Tracking — May 2024

Sai Navaneet, Sangmoon Lee

Published at KNU-EERC 2024

Projects

Transformer Based Vision Guided Tissue Processing — github.com/Harvesting

- Developed an automation of tissue packing using ViperX robotic arms

Action Chunck Transfomer on Franka Robot — github.com/ActFranka

- Implemented Act on Franka robot to do vision guided imitaion learnign on pick and place tasks

QROOT: An Integrated Diffusion Transformer and Reinforcement Learning Approach for Quadrupedal Locomotion

- Introduced a control stack that combines diffusion transformer with a reinforcement learning-based stabilizer(PPO), enabling smooth and robust execution on real-world hardware

Vision-Guided Predictive Action Imitation Learning with Discrete Latent Encoding for Multitasking Robots — github.com/PAIL

- Introduced a control stack that combines diffusion transformer with a reinforcement learning-based stabilizer(PPO), enabling smooth and robust execution on real-world hardware

Technologies

Languages: Python, C++, HTML, CSS

Technologies: ROS, Gazebo , Mujuco , Isaac Sim , Pytorch ,LINUX(UBUNTU , ARCH , KALI , REDHAT)