

Shailesh

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Github

Shailesh

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EDUCATION

- Indian Institute of Technology, (IIT ISM) Dhanbad** Dhanbad, India
Bachelors of Technology in Electrical Engineering
Class of 2025
- Al Momin International School** Gaya, India
High School(12th); Percentage: 92.4%
Class of 2021

EXPERIENCE

- Undergraduate Research Internship** Remote
Under Prof. G.C. Nandi & Andrew Melnik
Aug 2024 - Present
 - Project:** Using state of the art foundation models(VLMs & LLMs) to solve robotic manipulation problems.
 - Working on precise manipulation in indoor environment relying on robot vision.
- ERC Lab, National Taiwan Normal University** [video] Taipei, Taiwan
Research Intern: Under Prof. Saeed Saeedvand & Prof. Jacky Baltes
May 2024 - Jul 2024
 - Project:** Collaborative control of upper & lower body of wheeled humanoid robot using multi-agent RL.
 - Description:**
 - Trained robust policy to maneuver and jump in Isaac Gym environment.
 - Trained collaborative policies for upper and lower body, using MAPPO, IPPO & Dual-A2C.
 - Policy could handle manipulation task by upper body while the lower body handle balancing & maneuver.
- Stochastic Robotics Lab, Indian Institute of Science (IISc, Bangalore)** Bangalore, India
Research Intern: Under Prof. Shishir Kolathaya NY
December 2023
 - Project:** Locomotion controller that can execute diverse gaits with variable footswing, posture, and speed.
 - Description:**
 - Trained a single policy that can execute four different gaits.
 - Robot trained on teacher-student curriculum learning.
 - Developed a ROS package for the same robot.
 - Transferred the RL policy into ROS(Gazebo) environment.
- TEXMiN (Technology Innovation Hub)** [video] Dhanbad, India
Project Assistant: Under Prof. Arun Dayal Udai
Feb 2023 - Apr 2024
 - Project:** Development of in-house Quadrupedal Robot for Mining Application.
 - Work on Quadrupedal Robot:**
 - Developed ROS based framework for a in-house developed Quadrupedal Robot.
 - Derived kinematics & dynamics for the robot.
 - V1: Locomotion controller using ZMP stabilization.
 - V2: Reinforcement Learning based control policy.
 - Hardware testing of locomotion controller.

SELECTED PROJECTS

- mini_GPT** [link] August 2024
Personal Project
 - A LLM coded from scratch that has the same model architecture as OpenAI's GPT 3.
 - Model was trained on Shakespeare Dataset
- Inter IIT Tech Meet 11.0** [video] Dec 2022 - Feb 2023
Drona Aviation Problem Statement
 - Project:** Hovering a pluto drone on a particular height using ArUco Tag. Using ArUco tag, get a pose estimation of the drone. Move the drone in rectangular motion (1 x 2 meter). Make the second drone follow the first drone.
 - Worked on accurate pose estimation of drones with ArUco Tag using a single monocular camera.
- Two-Wheeled Self Balancing Robot** [video] Mar 2023 - Dec 2023
Mentored by Prof. Arun Dayal Udai
 - Developed a custom cascaded PID based controller that incorporate acceleration value as well.
 - Simulated our robot in Gazebo(cascaded PID controller) and in Simulink(with LQR controller)
 - Designed and build a two wheeled robot in hardware from scratch.

SKILLS

- **Programming:** C++, Python, MATLAB, Linux, Git
- **Simulation/Visualization:** Isaac Gym, Gazebo, RViz, CoppeliaSim, Simulink
- **Frameworks/Libraries:** ROS/ROS2, RViz, PyTorch, OpenCV, SymPy, Matplotlib
- **Hardware:** Yaskawa Arm, Diablo Robot, Nvidia Orin, Depth Camera, 3D LIDAR, Dynamixel Actuators, RaspberryPi, Ordroid XU4

RELEVANT COURSEWORK

- **Robotics:** Reinforcement Learning, Self Driving Cars, Controls Bootcamp, Industrial Robotics & Automation
- **Mechatronics:** Embedded Systems, Engineering Mechanics, Analog and Digital Electronics
- **Software:** Machine Learning, Deep Learning, Data Structure & Algorithm

HONORS AND AWARDS

- 1st Position: (\$12,000) Robofest Gujarat 3.0 2023 (India's Biggest Robotics Competition)
- 1st Position: Vichesta(ROS simulation competition), Takshak 2022 (East India's Largest Robotics Fest)
- 3rd Position: Robowars(BattleBots) at Concetto 2022 (Annual Tech Fest of IIT Dhanbad)