ROHIT BERNARD

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A Computer Science graduate student with a passion for programming robots, drones, and vehicles to operate autonomously using techniques like Reinforcement Learning, Computer Vision, and Deep Learning. Helping develop safer and more efficient mobility solutions for tomorrow.

RESEARCH AND EXPERIENCE

Graduate Student Researcher — Los Angeles, CA
CPS-VIDA Group, University of Southern California — June 2022–Present
Advisor: *Jyotirmoy V. Deshmukh*

- Integrating Autonomous driving softwares with the Carla simulator to run RL based experiments and tests.
- Building a RL based Train braking controller using a custom OpenAI Gym environment.

SDE Intern - Mobile — Bengaluru, India
Practo — March 2021–July 2021

- Worked in Practo's mobile team as an iOS application developer.
- Built new features, made app improvements, and fixed bugs.
- Learned how to create and maintain iOS applications in Swift and gained valuable experience collaborating with a team.

Backend Developer Intern — Bengaluru, India
Mezzlink Systems Pvt. Ltd. — June 2018–August 2018

- Developed API's with Express.JS, a Node.JS Framework.
- Worked with MySQL Databases, and REST APIs to process and store data from a ML model.

EDUCATION

University of Southern California, Viterbi School of Engineering — **Los Angeles, CA**
Master of Science Computer Science — Graduation: May 2023
Relevant Coursework: Advanced Computer Vision, Analysis of Algorithms, Autonomous Cyber-Physical Systems, Foundations of Artificial Intelligence, Applied Natural Language Processing, Holodecks — **GPA: 3.68**

Dayananda Sagar College of Engineering — **Bengaluru, India**
Bachelor of Engineering, Computer Science — Graduated: June 2021
Relevant Coursework: Data Structures, Object Oriented Programming, Machine Learning, Artificial Intelligence and Agent Technology, Internet of Things, Computer Networks — **GPA: 9.45/10**

SKILLS

- Programming Languages: Fluent in C, Java, Python, MySQL, Conversational in JavaScript, C++, Swift, Basic in Dart, Objective-C
- Technical Skills: Git, Android, iOS, OpenCV, Keras, Tensorflow, PyTorch, OpenAI Gym, Stable-Baselines, Node.JS, Express, Arduino, Carla, Working knowledge of: Flask, Flutter, ROS, MATLAB, Simulink, Jira, Docker, Transformers
- Soft Skills: Quick Learner, Adaptable, Team Player, Problem-Solving Attitude
- Interests: Autonomous Vehicles, Artificial Intelligence, Robotics, Reinforcement Learning, Computer Vision, Aviation, Algorithms

ACADEMIC PROJECTS

Gesture Controlled Swarm — 2nd year MS, 2022

- An individual project that uses miniature drones to render a simple 3D point cloud which can be controlled and manipulated by a user's hand gestures. Rendered object follows movements of user's arm. Can be activated and deactivated using a gesture.
- Built upon USC ACT lab's Crazyswarm which defines a Python API to track and control a swarm of Crazyflie 2.0 miniature drones.

Mapping Fires using a Drone Swarm — 1st year MS, 2021

- Developed a path planning policy for a drone swarm to efficiently locate and dynamically map the boundary of a fire.
- Designed a grid-world environment in Python that models a spreading fire, and a variable number of drones.

Posture Coach — Senior year UG, 2020 - 2021

- Developed a cross platform mobile application using Flutter, to track and correct a user's exercise posture in real time.
- Determined the correctness of a user's posture during exercise using timed automata over a set of body key-points obtained by fine-tuning a Pose Estimation model called PoseNet.

Bluetooth Controlled Quadcopter — Junior year UG, 2019

- Programmed and assembled a quadcopter to be controlled remotely via Bluetooth, from a smartphone.
- Utilized an Arduino Microcontroller to implement flight control systems, communication, and signal timing.