

SHUBHAM DERHGAWEN

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EDUCATION

University of California, Riverside, GPA - 3.82/4 Sep 2024 – Dec 2025

Master of Science in Robotics, Focus Area: Embodied AI and Machine Learning

Coursework: Advanced Robotics, Reinforcement Learning, Foundations of Machine Learning, Computational Methods for Robotics, Artificial Intelligence, Foundations of Robotics, Information Theory, Advanced Computer Vision, Natural Language Processing.

University of Pune, India, GPA - 8.43/10 Aug 2016 – Mar 2020

Bachelor of Engineering in Information Technology, First Class with Distinction

Coursework: Fundamentals of Data Structures & Algorithms, Database Management Systems, Operating Systems.

EXPERIENCE

Motion Planning Lab, UC Riverside | *Visiting Research Assistant* Sep 2025 – Present

- Developed a ROS 2 and Unity platform for crowd simulation and social robot navigation, supporting 12 crowd policies.
- Built scenario, benchmarking, and evaluation tools for reproducible studies across 75-trial and 75-episode experiments.
- Integrated crowd policies with motion matching and smoothing, reducing jerk by 9% and angular jerk by 21%.

University of California, Riverside | *Grader/Reader* Sep 2025 – Dec 2025

- Graded assignments, projects, and exams for *CS258 / EE227: Introduction to Reinforcement Learning*.
- Assessed student understanding of MDPs, dynamic programming, Monte Carlo methods, temporal-difference learning, and policy gradient methods.

Collaborative Intelligence Systems Lab, UC Riverside | *Visiting Research Student* Jul 2025 – Sep 2025

- Built a 3-vehicle CARLA platform across 3 machines with Logitech G923 controls for human-in-the-loop experiments.
- Developed a record-and-playback pipeline for real-time 720p simulation and high-resolution multimodal capture.
- Collected multimodal driving data in CARLA and supported real-world multi-agent driving data collection efforts.

Vijeta Transport Private Limited, India | *Software Developer* Jul 2022 – Jul 2024

- Developed and maintained a customized transport management information system supporting business operations.
- Built real-time data handling and reporting components using Firestore and Power BI dashboards.
- Collaborated with stakeholders to translate operational requirements into deployable software features.

Tata Consultancy Services, India | *Systems Engineer* Nov 2020 – Jun 2022

- Supported migration and maintenance of ETL workflows from on-premises infrastructure to Microsoft Azure.
- Worked with C#, Azure Data Lake, Azure Data Factory, Azure Batch, and SSIS to build and maintain data pipelines.
- Monitored, debugged, and optimized ETL jobs to improve reliability and reduce downtime.

PUBLICATIONS

- **CrowdROS: A Crowd Simulation Platform for Social Robot Navigation.** Shubham Derhgawen*, Aadhar Chauhan*, Andreas Panayiotou, Fabien Grzeskowiak, Julien Pettre, and Ioannis Karamouzas. *Submitted to IROS 2026 (under review)*.

*Denotes co-first authorship

PROJECTS

Autonomous Warehouse Pick-and-Deliver Robot Jan 2025

- Developed an autonomous TurtleBot2-based robot with a manipulator for simulated warehouse pick-and-deliver tasks.
- Implemented a sampling-based planner to improve task-level planning for navigation and object delivery.
- **Technologies Used:** Gazebo, ROS1, RViz, rqt, MoveIt

Demonstration-Augmented Proximal Policy Gradient Dec 2024

- Incorporated expert demonstrations into PPO to improve sample efficiency in *LunarLander-v2*.
- Modified the training objective to leverage expert data while maintaining task performance.
- **Technologies Used:** Python, PyTorch, OpenAI Gym, Optuna, TensorBoard

CERTIFICATIONS

Azure Data Scientist Associate, Azure Fundamentals, Accessibility in Action (Microsoft), Problem Solving (Basic, HackerRank)

SKILLS

- **Programming Languages:** Python, C, C++, C#, JavaScript, PHP
- **Robotics & Simulation:** ROS, ROS 2, TF/tf2, Gazebo, CARLA, RViz, Foxglove, MoveIt, URDF, Unity, Issac Lab
- **Machine Learning Tools:** PyTorch, TensorBoard, Optuna, ONNX
- **Embedded Systems & Mechanical Design:** Arduino, Raspberry Pi, SolidWorks
- **Cloud & Data Tools:** Azure (Data Factory, Data Lake Storage, Machine Learning, Storage), AWS (EC2, RDS, S3), GCP (Cloud Firestore, Firebase Hosting), Power BI
- **Frameworks & Developer Tools:** Git, Linux, Docker, Azure DevOps, Selenium, ReactJS, CodeIgniter, jQuery