Advaith **Sriram**

Robotics Graduate Student

About me

Robotics Master's student at **EPFL** with expertise in robot control, AI-driven motion planning, and reinforcement learning (RL). Co-first author of an ICRA 2024 publication and lead developer of an ABB GoFa system exhibited at the Swiss Design Awards 2025. Seeking an internship or thesis to leverage technical expertise in autonomy and simulation for impactful industry challenges.

Interests

- Reinforcement Learning
- Active Perception and Manipulation
- Legged Robotics

Contact and Details

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Lausanne, Switzerland

Languages

- **English** (C2/Native)
- **French** (A2)
- **Tamil** (C2/Native)
- **Japanese** (B2)

advaithsriram.github.io/

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Education

2024 - Present **M.Sc. in Robotics**

École Polytechnique Fédérale de Lausanne (EPFL) — Lausanne, Switzerland

- Relevant Coursework: Legged Robots, Computational Motor Control, Aerial Robotics, Robotics for Manipulation, Model Predictive Control, Convex Optimization.
- Minor in **Data Science**: Machine Learning, Applied Data Analysis, Computer Vision, Image Analysis.
- Teaching Assistant: *Legged Robots*, *Mobile Robotics*

2019 - 2023 **B.E. in Mechanical Engineering**

Waseda University, School of Creative Science and Engineering — Tokyo, Japan

- Specialization in **Robotics**: Human-Robot Co-Existence, *Sugano Laboratory*.
- Researched Large-Object Human-to-Robot Handover as part of Japan Science and Technology Agency's (JST) Moonshot Program Goal 3.
- Minor in **Computer Science and Communications Engineering**

Professional Experience

Oct 2023 – Sep 2024 **Mechatronics Engineer (Full Time)**

Daimler Trucks Asia — Kanagawa, Japan

- Researched **vehicle control development** for a Highway Level-4 autonomous truck.
- Integrated a **Position and Orientation System (POS-LV)** sensor to extract data for accurate road geometry using **ROS 2**.
- Converted ROS 1 libraries to ROS 2, reducing future maintenance load and improving cross-platform compatibility.

May – Sep 2023 **Research Intern**

Beckhoff Automation K.K. — Tokyo, Japan

- Collaborated with the University of Electro-Communications to research **ElGamal encryption**, leveraging their expertise to enhance data security.
- Implemented the **ElGamal encryption algorithm** on an EtherCAT evaluation kit using TwinCAT software, demonstrating practical skills in industrial automation and controller encryption technology.

Publications

May 2024 **Overcoming Hand and Arm Occlusion in Human-to-Robot Handovers: Predicting Safe Poses with a Multimodal DNN Regression Model**

2024 IEEE International Conference on Robotics and Automation (ICRA)

- **Co-First Author** of a conference paper based on my Bachelor's Thesis research.
- **DOI**: 10.1109/ICRA57147.2024.10610777

Extracurriculars

Sep 2021 – Aug 2023 **President, Co-Founder**

Google Developer Groups on Campus - Waseda University — Tokyo, Japan

- **Co-founded and led** a developer group of **75 student members**, achieving significant event participation that engaged over 150 students.
- Enhanced the club's campus presence and *facilitated valuable internship opportunities* for members.

Technical Skills

Languages: Python, C/C++, C#, MATLAB

Robotics: ROS 2, Path Planning, Reinforcement Learning, Model Predictive Control

AI/ML: PyTorch, TensorFlow, VAEs

Vision: OpenCV, DNNs

Simulation: PyBullet, Unity, Gazebo, Webots

Platforms: Git, Docker, Linux, Jupyter

Hardware: ABB GoFa, Unitree A1 (Sim), Crazyflie

Other Skills

Leadership & Mentorship

Cross-Cultural Collaboration

Project Management | Research

Critical Thinking

Time Management

Projects

Sep 2025 - Jan 2026

Next-Best-View Aerial Swarms for Multi-Viewpoint Monitoring

Semester Project @ Laboratory of Intelligent Systems (LIS), EPFL

- Designed and evaluated a multi-drone monitoring framework comparing **swarm-based control** (Olfati–Saber) with **Next-Best-View** (NBV) planning for 3D scene observability.
- Implemented a full simulation pipeline in **Unity**, integrating depth sensing, point cloud fusion, and NBV planning guided by a PoinTr-based **shape completion model**.
- Proposed a **mesh visibility metric** to quantitatively assess surface observability without full reconstruction, and demonstrated trade-offs between coverage efficiency, flight time, and data redundancy.
- **Tech Stack**: Python, Unity, C#

Feb - Jun 2025

AI and Music-Driven Choreography for ABB GoFa Robot

Semester Project @ REHAssist Lab, EPFL (Collaboration with ABB)

- Created an interactive installation with the **ABB GoFa CRB 15000 robot arm**, mapping instrumental music to expressive robot motion using a custom-trained **Variational Autoencoder (VAE)**
- Deployed the system using **ROS 2 Humble** for joint control and integrated a hand-following element using **MediaPipe** for real-time human interaction.
- Exhibited the final robotic system at the **Swiss Design Awards 2025**, Basel.
- **Tech Stack**: Python, C++, ROS 2, VAE, ABB RobotStudio Suite.

Mar - Jun 2025

Crazyflie Drone: Autonomous Gate Navigation

Course Project (Aerial Robotics)

- Developed an autonomous navigation pipeline in both simulation and hardware for the Bitcraze **Crazyflie 2.1** nano drone.
- Designed and deployed a robust trajectory controller using the **crazyflie-lib-python** library for navigation using both known waypoints (hardware) and vision-derived points (simulation).
- **Tech Stack**: Python, OpenCV, Webots API.

Sep 2024 - Jan 2025

Reinforcement Learning for Legged Locomotion Simulation

Course Project (Legged Robots)

- Trained a simulated quadruped (Unitree A1) for stable locomotion over challenging terrains (slopes, stairs, gaps) using the Proximal Policy Optimization (PPO) algorithm via **Stable-Baselines3**.
- Optimized the Action, Observation, and Reward Spaces to enable robust learning without a reference gait, utilizing **domain randomization** for improved real-world transferability.
- **Tech Stack**: Python, PyBullet, Stable-Baselines3 (PPO), PyTorch, OpenAI Gym.