

Prashanth Ravichandar

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EDUCATION

University of Southern California	2022 – 2024
M.S. in Computer Science (Honors)	GPA: 4.0/4.0
Indian Institute of Technology Guwahati	2016 – 2020
B.Tech. in Engineering Physics, Minor in Computer Science and Engineering	GPA: 9.11/10.00 (<i>Rank 1</i>)

TECHNICAL SKILLS

Languages: Python, JavaScript, C++, C, MATLAB, C#, SQL, TypeScript, HTML/CSS, LaTeX
Libraries/Frameworks: PyTorch, MuJoCo, Nvidia Isaac Lab (Isaac Sim), ROS, JAX, Pandas, NumPy, Matplotlib, Scipy, Flask, Angular
Tools: Docker, Git, Linux



PUBLICATIONS

- **Dynamic Bipedal Loco-manipulation using Oracle Guided Multi-mode Policies with Mode-transition Preference**
Prashanth Ravichandar, Lokesh Krishna, Nikhil Sobanbabu, Quan Nguyen
Submitted to **ICRA 2025** arXiv, video 

EXPERIENCE

- Student Researcher - Dynamic Robotics and Control Laboratory, USC** July 2023 - Present
Mentor: Prof. Quan Nguyen *Los Angeles*
- Exploring reinforcement learning based controllers for agile humanoid locomotion.
 - Developed a framework to build policies for dynamic loco-manipulation tasks like playing soccer on a 16-DOF bipedal robot.
- Research Intern - Robotic Embedded Systems Laboratory, USC** June 2023 - Present
Mentor: Prof. Gaurav Sukhatme *Los Angeles*
- Working on small and efficient neural network policies for memory-constrained robots.
 - Exploring parameter prediction for visual control policies using transformer-based graph hypernetworks and RL.
- Senior Technology Associate - Morgan Stanley** August 2020 – July 2022
Mortgages, Wealth Management Technology *Mumbai*
- Improved raw read speeds for risk calculations by 15x using distributed caching (Redis and Apache Ignite).
 - Upgraded a .NET Core application from a monolithic to a microservices architecture using domain-driven design.
- Research Intern - Indian Institute of Science** May – August 2019
Mentor: Prof. Aditya Gopalan *Bengaluru*
- Investigated the problem of sequential detection of change in the distribution of data with adaptive measurements.
 - Performed a literature survey along with a preliminary problem formulation, in the context of multi-armed bandits.

PROJECTS

- Controller for Unitree A1 Quadruped Robot** *GitHub* 
Course Project: Robot dynamics and control
- Designed controllers for Unitree A1 quadruped robot in MATLAB Simscape to perform walking, turning, running, stair climbing and obstacle avoidance.
 - Developed and implemented QP and MPC controllers, trotting gait sequence, a linear trajectory for walking, a cycloid trajectory for running and a 5th-order polynomial trajectory for stair climbing.
- Masked Autoencoders for Adversarial Purification** *GitHub* 
Course Project: Deep Learning and its Applications
- Designed and implemented an adversarial image purification model using fine-tuned Masked Autoencoders (MAEs) to restore perturbed images to their original form, rendering adversarial attacks ineffective.

- Conducted experiments on the ImageNet dataset, successfully mitigating adversarial attacks generated by Gaussian noise and the Fast Gradient Sign Method (FGSM).

Analysis of Surface Names for entities in Wikipedia

GitHub 

Bachelor's Thesis under Prof. Amit Awekar, Dept. of CSE, IIT Guwahati

- Analyzed the characteristics of incorrectly mapped links in Wikipedia pages and explored solutions to correct them.
- Created a novel dataset to aid in further research to provide contextual information of errors.

Contact estimator

GitHub 

- Developed a ROS package that predicts foot contact using supervised learning on motion capture data, joint states and IMU.

Line Follower Robot

TechKriti, IIT Kanpur

- Led the development of a line follower robot using an Arduino board and a PID controller.

KEY COURSES

Mathematics: Linear Algebra, Advanced Calculus, Graphs and Matrices

Computer Science: Analysis of Algorithms, Computer Systems, Computer Architecture, Software Engineering

Artificial Intelligence: Fundamentals of AI, Machine Learning, Deep Learning, Convolutional Neural Networks (CS231n Stanford), Reinforcement Learning (David Silver), Autonomous Decision-Making

Robotics: Robotics, Robot Learning, Robot Dynamics and Control

Miscellaneous: Game Theory, Computational Physics

ACHIEVEMENTS

- **USC Computer Science Master's Honors Program:** Earned honors by maintaining a GPA of 3.9+
- **Institute Silver Medal 2020:** Awarded for securing **1st rank** in the Dept. of Physics, IIT Guwahati
- **Institute Merit Scholarship:** Granted for best academic performance, 2018-19, IIT Guwahati
- **Inter IIT Tech Meet 2018:** Won **Bronze** in the Star Cluster Identifier event, competing against 23 IITs
- **M.P.Birla Inst. of Fundamental Research:** Graded excellent in the 2014 Astronomy Summer School
- **Hindustani Talavadya Junior Grade in Tabla - 2012:** Secured first class
- **21st National Chess Championship - 2007:** Ranked 158 on the merit list in the Under 9 category

EXTRACURRICULAR ACTIVITIES

Viterbi Graduate Mentor, USC

Jan 2023 - Dec 2023

- Mentored 3 Master's students, helping them adjust to life at USC and guiding them in achieving academic and career goals. Nominated for the **Outstanding Mentor Award**.

Club Secretary, Astronomy Club, IIT Guwahati

April 2018 - 2019

- Supervised the financial and technical planning and growth of the club. Led the development of projects including constructing a planetarium, astronomical data analysis, star spectroscopy, space balloon, and radio astronomy.

Organizer, Techniche, IIT Guwahati

September 2016 - 2017

- Organized the Exhibitions and Industrial Conclave modules of the annual techno-management festival, engaging with industrialists from Bosch, IBM, and Dell, and research groups from the USA, Bangladesh, and India.

Volunteer, Prashanthi Balamandira Trust

October 2015 - Present

- Supported initiatives such as providing breakfast to underprivileged children, distributing COVID relief kits in rural areas, launching a website for free educational resources, and translating Sanskrit verses from ancient Indian texts.