SHARACHCHANDRA BHAT

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EDUCATION

Master of Electrical and Computer Engineering (Robotics Major), UT Austin 2021 - 2023
GPA: 3.87/4

Bachelor and Master of Engineering, IIT Madras 2013 - 2018
GPA: 8.93/10 (Top 5 in Department)

SKILLS AND COURSEWORK

Math	Convex Optimization, Linear Algebra, Probability & Stochastic Processes, Algorithms
Data Science	Applied Time Series Analysis, Data Mining, Natural Language Processing
Machine Learning	Computer Vision, Statistical Machine Learning, Reinforcement Learning
Robotics	Optimal Control, Probabilistic Robotics, Formal Verification, Robot Mechanics
Programming	C++, Python, R, PyTorch, scikit-learn, OpenCV, MATLAB, Mathematica, ROS, Git

PUBLICATIONS

- Manabu Nakanoya, Sai Shankar Narasimhan*, **Sharachchandra Bhat*** et al. "Co-Design of Communication and Machine Inference for Cloud Robotics." Autonomous Robot (2023).
- Sai Shankar Narasimhan*, **Sharachchandra Bhat***, and Sandeep P. Chinchali. "Safe Networked Robotics via Formal Verification." arXiv preprint arXiv:2302.09182 (2023).

ACADEMIC RESEARCH

Imitation learning for robot manipulation. (robomimic and robosuite datasets) *Fall 2022*

- Evaluated **Transformer** policy design choices like cross-modal attention and featurizer networks.
- Trained generative **Diffusion Model** to learn the action distribution of the expert via demonstrations.

Mobile robot navigation. (real world environemnt) *Fall 2021*

- Implemented a **full autonomous stack** to run on an **F1/10th** car in a mapped environment.
- Global navigation via Jump Point Search A*, localization via **Particle Filters**, obstacle avoidance via Path Scoring, and local navigation via **Model Predictive Control**.
- Real-time correlative scan matchin using **Convolutional Neural Networks** regression model that achieves fast **point-cloud registration** of 2-D Lidar scans.

PROFESSIONAL EXPERIENCE - 3 YEARS

Robotics Engineer (Awarded *employee of the quarter* for product innovation) Jul 2018 - Jul 2021
Systemantics India Pvt Ltd *Bengaluru, India*
C, C++, MATLAB, Mathematica, ROS, Git

In charge of developing, real-world testing and release of robotics algorithms:

- *Motion Planning.* Efficient **trajectory generation** and **path-blending algorithms** for smooth robot motion.
- *Robot Kinematics and Dynamics.* Fast closed-form forward and inverse **Kinematics & Dynamics** algorithm for various robot architectures. Safety enhanced via **robot singularity avoidance** algorithm.
- *Motion Control.* Low-level **robot axes controllers** with dynamic friction compensation and gain scheduling.

Summer Intern (*Project selected for presentation*) May 2016 - Jul 2016
Airbus Group India Pvt Ltd *Bengaluru, India*
JavaScript, Big Data Visualization

- Developed an interactive JavaScript tool (Crossfilter and D3.js) for **data analysis** and **data visualization** of large datasets of aircraft structural loads, necessary for design iteration.