SAI SAMPATH KEDARI

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Objective: Seeking full-time roles in learning-based control, optimization, and inference for robotic decision-making.

EDUCATION

University of Michigan, Ann Arbor	Jan 2023 - Apr 2024
M.S. in Mechanical Engineering (Robotics)	**GPA 3.66/4**
University of Michigan, Ann Arbor	Aug 2021 - Dec 2022
M.S. in Automotive Engineering (Dynamics & control)	**GPA: 3.64/4.0**
National Institute of Technology Rourkela, India	July 2015 - May 2019
Bachelor of Technology in Mechanical Engineering	**GPA: 8.22/10**

RELEVANT GRADUATE COURSEWORK

EECS 460 Control Systems Design	**EECS 505** Comp Data science & ML	**AEROSP 567** Infer/Est/Learning
EECS 562 Nonlinear Sys & Control	**EECS 553** Machine Learning	**ROB 501** Math for Robotics
EECS 565 Linear Feedback Control	**STATS 510** Prob Dist Theory	**IOE 516** Stochastic Processes II
EECS 560 Linear Sys Theory	**STATS 511** Statistical Inference	**IOE 611** Nonlinear Programming

WORK EXPERIENCE

Intelligent Robotics and Autonomy Lab (iRaL, UMich)	Aug. 2024 – Present
Research Assistant under Prof. Vasileios Tzoumas	*Ann Arbor, MI*

- Working on robotics state estimation, planning, or control with a focus on mathematical foundations

ROAHM LAB: Prof Ram Vasudevan	May 2022 – Aug 2022
Research Intern – Dynamics and Control	*Ann Arbor, MI*

- System Identification of Fetch Robot using regression and phase-plane analysis

Dassault Systemes	Sep. 2020 – Aug. 2021
CATIA R&D Software Developer	*Pune, India*

- Software development of FTA Workbench in CATIA using advanced C++

Altair Engineering	Sep. 2019 – Sep. 2020
Software Developer	*Bangalore, India*

- Development of HyperMesh *Commands(API's), Interaction between C++ and Python & TCL/TK

PROJECTS

AEROSP 567: Statistical Inference, Estimation, and Learning   Jan 2024 – May 2024
- Estimated rare-event probabilities via Monte Carlo, importance sampling, MLMC, and control variates. [**Report**]
- Built robotics scent-localization via Bayesian optimization using Gaussian Process regression and PI/EI. [**Report**]
- Implemented Metropolis-Hastings, Adaptive Metropolis, and DRAM-MCMC algorithms for Bayesian inference in nonlinear dynamical systems. Focused on posterior estimation and sampling efficiency under uncertainty.[**Report**]
- Implemented Extended, Unscented, and Gaussian-Hermite Kalman Filters along with Particle Filter for nonlinear state estimation. Focused on posterior inference and uncertainty in dynamical systems. inference.[**Report**]

Literature Review: Prof. Alex Gorodetsky   Jan 2024 – May 2024
- Reviewed "Bayesian System ID: Optimal Management of Parameter, Model, and Measurement Uncertainty." Explored joint parameter-state estimation and its unifying role in DMD and SINDy frameworks.[**Report**] [**Slides**]

ROB 590: Prof. Dimitra Panagou   Jan 2024 – present
- Developed adaptive conformal prediction for Gaussian Processes to quantify confidence intervals.

EECS 553: ML Reproducibility project   Sept 2022 – Dec 2022
- Reproducibility Report on Composing Partial Differential Equations with Physics-Aware Neural Networks, Accepted at ICML2022.[**Report**] [**Slides**]

EECS 565: Lin Feedback Control project   Jan 2022 – Apr 2022
- MIMO control design using LQR and loop transfer recovery for the Reactive Ion Etching Process

MATHEMATICAL FOUNDATIONS

Studied foundational math for ML and control by fully solving entire textbooks—documented and shared on GitHub.

Real Analysis	**Statistical Inference**	**Convex Optimization**	**Signals & Systems**
Probability	**Matrix Methods**	**Fourier Transform**	**Diff. Equations**

TECHNICAL SKILLS

Languages & Tools: C++, Python, C, ROS1, MATLAB, NumPy, SciPy, Git, CMake, Makefile, Bash, TCL/TK