

# Aditya Narayanan

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## EDUCATION

**The University of Texas at Austin** – Electrical and Computer Engineering Honors – GPA: 3.98/4.0

## SKILLS

**Languages:** Python • C • Matlab/Simulink

**Packages/Frameworks:** Numpy • Pytorch • PyZMQ • Python-multiprocessing

**Other:** Robot Operating System (ROS) • Git • Linux • Docker • Nvidia Jetson Nano • Arduino • Raspberry Pi • Fusion 360 (CAD)

## EXPERIENCE

### **Engineering Development Group Intern**

*Mathworks, May 2023 - Aug 2023*

- Worked with the Simulink Verification and Validation team as well as a Simulink development team on a new Simulink toolbox for fault modeling and analysis. Performance and scalability tested various API and UI workflows for modeling and simulation of fault-enabled Simulink models. Wrote latency measurement code and model generation code in Matlab.

### **Swarm Robotics Lab**

*UT Austin, June 2021-Present*

- **Summer 2022:** Designed and executed hardware experiments on a cluster of NVIDIA Jetson Nano embedded GPUs implementing a novel system for distributed robotic data collection from autonomous vehicles. Wrote code in Python, using ZeroMQ for a custom communication protocol, and Pytorch for ML model training and real-time inference. Used results from hardware experiments to extract benchmarks of on-edge model inference and communication costs, included in a submission to CoRL 2022 (Conference on Robot Learning).

### **Learning and Emerging Networked Systems Lab**

*Texas A&M University, 2021*

- Implemented various Simultaneous Localization and Mapping (SLAM) techniques on the AWS Deepracer as part of research into autonomous navigation and path-planning using deep reinforcement learning. Wrote custom ROS packages to integrate external sensors and Deepracer hardware.

### **STEM to SHTM Internship**

*Stanford University, 2020*

- Implemented neural networks on low power edge-computing devices. Built an audio classification model with Tensorflow and Keras, explored the effects of model quantization using Tensorflow Lite, and ran real-time inference on an Arduino Nano 33 BLE Sense.

### **Intelligent Systems Lab**

*Texas A&M University, 2019*

- Implemented a sensor fusion algorithm using the Kalman Filter for attitude estimation on low-cost IMU sensors. Built real-time attitude estimation system on Raspberry Pi with Python and MPU9250 sensor along with test platform for evaluation.

## PROJECTS

- **Pool Testing Backlight (2020)** - Constructed multiplexing LED array backlight to identify cells in a 96-well plate to help lab technicians with COVID Pool-testing. Designed and built led multiplexing and serial communication circuitry and wrote software to interface device with Windows/Mac GUI program. [github.com/adityanarayanan03/pool-testing-backlight.git](https://github.com/adityanarayanan03/pool-testing-backlight.git)
- **Human Pose Estimation for Video Game Control (2022)** - Built a video game control system based on real-time human pose estimation. Implemented real-time inference on Jetson Nano Embedded GPU with ResNet Human Pose Estimator. Demonstrated human control of two different video games.

## AWARDS

- **USA Physics Olympiad (2020)** - Among 400 students selected nationwide to take the USA Physics Olympiad Exam based on score on F=ma exam
- **American Invitational Mathematics Exam (2020)** - Among top 250 students nationwide on the American Invitational Mathematics Exam
- **VEX Robotics Competition (2019-2020)** - Advanced to Texas State and CREATE US Open (National) tournaments based on numerous regional awards.

## COURSEWORK

- **Fall 2023** - Data Science Principles • Data Science Lab • Introduction to Quantum Information Science
- **ECE** - Computer Vision • Operating Systems • Signals and Systems • Algorithms • Digital Logic Design • Circuit Theory Embedded Systems • Unconventional Computation (graduate level)
- **Math** - Real Analysis • Differential Equations • Multivariable Calculus • Linear Algebra • Probability • Mathematical Statistics Discrete Math