Aditya Narayanan

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EDUCATION

The University of Texas at Austin - *Junior, Electrical and Computer Engineering Honors*

- GPA: 4.0/4.0
- Current Coursework: Algorithms, Real Analysis, Circuit Theory, Engineering Communications
- Relevant Completed Coursework: Computer Vision, Software Design, Embedded Systems, Matrices and Matrix Calculations

College Station High School *Class of 2021*

- Took courses at Texas A&M University while in high school, including Signals and Systems, Random Signals and Systems, Differential Equations, Materials Science, and Multivariable/Vector Calculus
- Texas A&M GPA: 4.0/4.0

SKILLS

Languages: Proficient in Python, Experience with MATLAB, C, C++
Packages/Frameworks: Numpy, Pytorch, PyZMQ, Python-multiprocessing
Tools: Robot Operating System (ROS), Git, Linux, Docker, Fusion 360
Microcontrollers/Microprocessors: Arduino, Raspberry Pi, Nvidia Jetson Nano

EXPERIENCE

Swarm Robotics Lab *UT Austin, June 2021-Present*

- *Summer 2022*: Programmed and ran 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 ZMQ (Zero MQ) for custom data sharing, and Pytorch for ML model training and real-time inference on Jetson Nano GPUs. Used results from hardware experiments to extract benchmarks of on-edge model inference and communication costs, which were included in revisions of a submission to CoRL 2022 (Conference on Robot Learning).
- *June 2021 - May 2022*: researched computer vision on edge-computing devices using Python on Nvidia Jetson Nano hardware.

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 sensors with Deepracer hardware.

STEM to SHTEM Internship *Stanford University, 2020*

- Implemented neural networks on low power edge-computing devices. Built an audio classification model with Tensorflow/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.

CONFERENCES/PUBLICATIONS

2020 Materials Research Society Fall Symposium

- Zhang, Z., Zhang. D., Narayanan, A., Ramabadran, A., Simon, M., Rafailovich, M., Deng, Y., Zhang, P., "AI-Guided Coarse-Graining for More Efficient Modeling of SARS-CoV-2 Spike Glycoprotein", 2020 MRS Spring/Fall Meeting & Exhibit, November 28 - December 4, 2020. (abstract #3480255)

2021 American Chemical Society Spring Meeting

- Presented research on coarse-grained modeling for efficient simulation of SARS-CoV-2 Spike Glycoprotein.

PROJECTS

Pool Testing Backlight *2020*

- Developed a tool to help lab technicians with COVID Pool Testing: github.com/adityanarayanan03/pool-testing-backlight

V5 Serial Plotter *2020*

- Developed serial plotter application for use with the VEX V5 System. github.com/adityanarayanan03/V5SerialPlotter

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 500 students selected nationwide to take the American Invitational Mathematics Exam (AIME). Scored 7/15, with national median being 6/15.

VEX Robotics Competition *2019-2020*

- Advanced to Texas State and CREATE US Open (National) tournaments based on numerous regional awards.