Malav Shah

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EDUCATION

The University of Texas at Austin — B.S Electrical and Computer Engineering Honors — December 2021
GPA: 4.0/4.0
Courses: Algorithms, Software Dev I & II, Digital Logic, Intro to Embedded Systems, Circuit Theory I & II, Linear Signals and Systems
Certifications: Machine Learning, Operating Systems, Image/Signal Processing

RELEVANT EXPERIENCE

Human Signal Lab | **Undergraduate Research Assistant** | *UT Austin* — September 2019 - Present
- Designed feature extraction program to process real-time sensor data on embedded system in C
- Implemented machine learning models (KNN, Random Forrest, Linear Regression) in C for use on Nordic nRF52820 microcontroller

Texas Spacecraft Laboratories | **Undergraduate Research Assistant** | *UT Austin* — June 2019 – December 2019
- Collaborated on SEEKER II project with NASA to estimate distance and pose of Cygnus spacecraft from a camera feed in real-time
- Automated synthetic image generation and labeling on Blender using Python to save 10+ hours of manual work per data set
- Increased team training rate and efficiency by integrating AWS S3/EC2 services into pipeline, allowing for distributed training

McAfee Security | **Engineering Intern** | *Plano, TX* — June 2017 - September 2017
- Designed and implemented Python script to analyze input of twelve-thousand test data points from multiple excel sheets
- Automated test data parsing, previously done manually, to increase department efficiency by saving five hours of work weekly
- Initiated bi-weekly meetings with team members to tailor program for department need

PERSONAL PROJECTS

EyeMove | **$20,000 Technology Innovation Award and Best in Category at International Science and Eng. Fair** — 2017-2019
- Designed circuit to capture, filter (HPF, LPF, notch, clipper), and amplify electrooculography signals from eyes using off-the-shelf components
- Retrofitted existing wheelchair with 48V Brushless DC motors controlled by eye signals (eye-controlled wheelchair)
- Proposed low cost solution (< $1,000) to provide mobility and increased quality of life for people suffering from paralysis

Air-Control — 2020
- Programmed finger gesture recognition system for external computer control using scikit-learn machine learning library
- Designed circuit with an array of IR sensors outputting data to an Arduino Uno with communication over serial port
- Achieved 94% accuracy in classifying four different finger gestures (swipes, circle, up/down)

Mac Music Control — 2020
- Programmed and trained machine learning model to recognize various hand gestures using Hexiwear IOT wearable-device
- Implemented communication protocol with reduced latency over low-power BLE for controlling music on phone or computer

True-HEV | **3rd Place International Science and Eng. Fair** — 2015-2016
- Engineered and constructed Hybrid-Electric Engine with electric solenoids and pistons on one crankshaft
- Devised low-cost solution to convert existing Internal Combustion Engines to electric engines for 50% reduction in carbon emission
- Designed and fabricated PCB for controlling engine prototype, capable of managing multiple 24V pulsing outputs

Image Processor — 2020
- Built digital image visualizer that allows users to create, visualize, and configure an image processing pipeline
- Implemented image filters, denoising filters, and base transforms using Numpy library

Please view all my projects at: **mshah0686.github.io**

LEADERSHIP

Texas 4000 | **Business Coordinator and Route Mechanic** — Fall 2018 - Present
- Bike ride the longest annual charity ride in the world, from Austin, TX to Anchorage, AK (~4,500 miles, 70 days) to spread Hope, Knowledge, and Charity about cancer across the nation
- Fundraised $4,500 for cancer research, volunteered 50+ hours at local hospitals, logged 2,000+ training miles

UT Austin ECE Tutoring Services | **Tutor** — Fall 2019 - Present
- Tutor fellow peers at university in Probability and Signal Processing courses

UT Austin Electrical and Computer Engineering Camp | **Camp Counselor** — June 2019
- Mentored underprivileged middle school students to inspire STEM beyond financial status using an Arduino based project