SHUBHAM KUMAR

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EDUCATION

Dougherty Valley High School ***Aug. 2018 - Jun. 2022***

San Ramon, CA

- GPA: 3.97 UW / 4.53 W | SAT Math II: 800, SAT: 1550 (750 EBRW / 800 Math)
- AP Scores: Calculus BC: 5, World History (Modern): 5
- Advanced Coursework: Multivariable Calculus; AP Calculus BC, AP Physics, AP Computer Science, AP Statistics
- Certificates: Udacity Deep Learning Certificate
- Other Courses: Art of Problem Solving - Counting & Probability (Discrete), Number Theory, Intermediate Algebra

Competitions / Research

- Math: AIME Qualifier, MATHCOUNTS States Qualifier, AMC8 Honor Roll of Distinction, MIT PRIMES Honorable Mention - Forum Contributor, Harvard MIT Math Tournament participant.
- Computer Science: USACO Gold (Silver perfect score), VEX State Champions (Innovator & Programming Skills Distinction).
- Research presenter at Harvard (HCJI) IYRC 2020

EXPERIENCE AND PROJECTS

Wolfram Emerging Leaders Program | *Research Student* ***Jul 2020 – Dec 2020***

- Collaborated with four other members to construct 3D models for acoustic simulation in real environments using generated depth maps, which we presented during the poster session.
- Was among the top 16 students invited to participate in the semester long program from summer camp to continue to project.

Wolfram Summer Camp | *Research Student* ***Jul 2020 – Jul 2020***

- Researched and developed a project that explores an enhanced way to deliver spatial audio using acoustic modeling and artificial sound localization instead of traditional filtering and delay based approaches.
- Presented and wrote a research paper that was published and selected by staff and program as a notable project for my year.

Spatiotemporal Innovation Center | *Software Engineering Intern* ***Apr 2020 – Jul 2020***

- Working alongside a team of Harvard professors to analyze the effects of environmental conditions on coronavirus case data.
- Build and maintain a data pipeline to ensure the most recent data is available for use on our server.
- Webscraped NASA Earth Data management site to obtain datasets with Selenium and clean them using netCDF and Numpy.

Optime | *Web Developer* ***Apr 2020 – Jun 2020***

- Co-developed and designed a web application that advises users when to leave the house during the pandemic based on environmental & case data using predictive analysis.
- Created a python based flask server integrating APIs from Google, ArcGIS & Climacell and using MongoDB.
- Utilized an SEIR model built on Wolfram & transcribed in Python with Scikit to pinpoint factors that increase rate of spread.

Kronos (Hackathon: 2nd Place OmniHacks, DVHacks II) ***Sep 2019***

- Collaborated with a team to develop a voice assistant application for doctors that summarizes the most important data mentioned in the conversation between a patient and their doctor.
- Used a Raspberry Pi to run an HTTP protocol that securely transfers the conversation recording file to an API.

Tillage (Hackathon: 1st place) ***Jun 2019***

- Developed an application for crop management using a simple feedforward neural network built with NumPy, which was trained on agricultural data. Project received funding from a venture capital fund to further develop.
- Broadcasted data using MQTT to a local application for farmers to remotely manage the farm.

Autonomous Drone ***Fall 2018 - Current***

- Designed an autonomous drone and implemented a reinforcement Q-learning driven software to process live data from sensors and train the agent to fly safely and efficiently.
- Utilized PyTorch for developing the algorithm and Pixhawk flight stack & QGC to communicate with the UAV.

EXTRACURRICULARS

VEX Robotics | *Lead Programmer* ***Jul 2019 - Current***

- Lead programmer on a team of 13 students working to develop the software for the various robots designed.
- Most recently worked on an autonomous system which uses odometry to accurately position and move the robot.

Tech San Ramon | *Co-Founder & Vice President* ***Jul 2017 - Current***

- Non-profit organization founded to equip students from middle and elementary schools with basic computer science skills and resources. Currently overseeing 500+ students from 3 schools.
- Overlook progress made by our trained mentors, design curriculum and reach out to companies for sponsorships.

TECHNICAL SKILLS & INTERESTS

Languages: Python, R, C++ (PROS, Okapi), Wolfram Mathematica, HTML/CSS/JS, LaTeX
Tools: NumPy, Pandas, Scikit-learn, TensorFlow, Keras, Flask, Selenium, DroneCode, Illustrator, XD CC, CAD, 3D Printing
Interests: Guitar, Biking