

# Sahil Shah

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## Education

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**The University of Texas at Austin**  
Bachelors of Electrical Engineering  
GPA: 4.0/4.0

August 2021 - Present  
*Austin, TX*

**Millburn High School**  
SAT: 1550

September 2017 - June 2021  
*Millburn, NJ*

## Technical Skills

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**Languages:** Java, Python, C/C++, JavaScript, Dart, Swift

**Platforms:** Google Cloud, Node.js, Flutter, OpenCV, Arduino, Raspberry Pi, iOS, Android, AWS

**Tools:** Visual Studio, Verilog, KiCad, Autodesk Fusion 360, Autodesk CFD, Azure, MATLAB

## Experience

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### Longhorn Racing

August 2021 - Present  
*Austin, TX*

*The University of Texas at Austin*

- Member of the electronics team of the Formula SAE competition
- Created a CAN network to send and receive data on multiple nodes connected across a network
- Developed a multithreaded watchdog algorithm to concurrently monitor values across the network
- Coded a state machine to keep track of the transition between different states set in the vehicle

### Millburn Robotics and Rocketry

September 2017 - June 2021  
*Millburn, NJ*

*Millburn High School*

- Captain of Millburn's 8405 FTC team, 7405X VEX AI team, and 4676 TARC Team
- Created a model predictive control algorithm to control the movement of the robot through quintic splines and a field positioning system that calculated the robot's exact position and heading
- Wrote OpenCV algorithms to detect an object by its shape, size, and color and calculate its exact field location
- Developed an algorithm to control the rocket's apogee by determining the optimal altitude to deploy the parachute during its ascent to acquire the goal of an apogee of 800 feet
- Formulated a feedback reversible reefing system to control the rocket's 40-second flight time and impact velocity by continuously modifying the shape of the parachute by reeling a central control line in-flight

### hackMHS

September 2017 - June 2021  
*Millburn, NJ*

*Millburn High School*

- Leader of the overall management of the hackathon in 2019 and 2020
- Received over 200 participants from colleges, high schools, and middle schools from across the tri-state area
- Managed the logistics and the budget of the hackathon and contacted companies to sponsor it
- Taught younger students the basics of programming languages in workshops

### Cisco Externship

July 2019  
*New York, NY*

*Cisco Systems*

- Worked on developing a network using Cisco's Packet Tracer Program
- Programmed in HTML to create a website that can be hosted on a server

### Surgery Department and Emergency Room Volunteer

July 2017 - September 2018  
*Elizabeth, NJ*

*Trinitas Regional Medical Center*

- Patient advocate and doctor assistant; provided care to patients who are recovering from surgery
- Assisted nurses in handling equipment during their routine checkups of patients
- Collected case information from patients to improve patient care by talking to them in Spanish
- Responsible for managing patient records and assisting patients and families in filling out admission forms

## Projects

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### Bioinformatics Diedel Research

July 2017 - August 2021

*City University of New York*

*New York, NY*

- Determined the purpose and effect of the Diedel protein in the NK-kB and JAK/STAT signal transduction pathways in the fruit fly
- Researched the mechanism of the infection of *Drosophila Melanogaster* by the wasp *Leptopilina heteroatom*
- Used BLAST, PyMOL, and MODELLER to compare the primary, secondary, and tertiary structures
- Determined the regions the Diedel protein and surrounding protein interacted using protein-docking
- Presented at the New York Structural Biology Conference in 2020

### Allergy AI

September 2019 - Present

- Currently patent-pending and won top 30 projects in the Pennapps XX hackathon
- Allows people to experiment with eating new foods while avoiding allergens
- By allowing the user to take a picture of their food, this mobile app employs a neural network to classify the food and then queries a database of recipes looking for potential allergens
- Returns to the user the probability he or she is allergic to the food and what it may contain in real-time

### Hydroponics Project

May 2019 - June 2019

*Millburn High School*

*Millburn, NJ*

- An interdisciplinary project between the biology department and the computer science department
- Created an effective and self-sustainable hydroponics chamber to grow vegetables and other plants

### Kiosk System

May 2018 - August 2018

*Millburn High School*

*Millburn, NJ*

- Built three kiosks to track and validate seniors leaving for lunch
- Developed a Java server to manage student data, built a client system with Raspberry Pi's that sent requests to the server to obtain data, and created a user interface using HTML for our school to use.
- Given a budget of \$10,000 by the high school; delivered in less than \$4,000
- Currently used and actively maintained at Millburn High School

## Honors and Awards

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### NASA App Development Challenge

January 2021

- Among 10 teams selected as winners of the challenge
- Created an app to visualize the lunar South Pole and assist in planning lunar exploration missions
- Program a rover to traverse the moon on a computed path that optimizes elevation or altitude change
- Created a heightmap that establishes the lunar terrain and used various algorithms to compute a path for the rover to follow on the application; used a PID controller to control the rover's movements

### AP Scholar with Distinction

July 2020 and July 2021

- Grated by the College Board

### African Library Project

January 2019

- Received the annual Compassion in Action Award
- Created twelve libraries by donating 12,000 books to locations in Africa like Ghana, Botswana, and Malawi