Dhruv Varshney

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# EDUCATION

**B.S Computer Engineering,** San Jose State University ([President’s Scholar 22-23](https://drive.google.com/file/d/1eHgW0jgMzvENLieypqA00lJA5jEt7Ncr/view?usp=sharing)) Expected May 2025

**Relevant Coursework**: Electronics for Embedded Systems, Digital Design, Microprocessor Design, Computer Networks, D a t a Structures & Algorithms, Advanced Algorithm Design, Software Engineering 1, Computer Architecture, Operating System Design, Circuit Theory & Analysis.

# Programming Languages: Embedded C, C++, Python, Linux, Shell, Assembly Language

# Hardware Design: Verilog, Circuit Design, PCB Design, SoC Design, Analog Design, Low Power Design, RTOS, Debugging

# Embedded Systems & Communication Protocols: TCP/IP, CAN, LIN, SPI/ UART, I2C, IPC, GPIO, PWM, Bluetooth LE

# Tools: Git, JIRA, Jenkins(CI/CD), OrCAD, Altium Designer, Oscilloscope, MATLAB, JTAG, Simulink, LTSpice, EDA

# PROJECTS & RESEARCH

**SCOOTSENSE Research Project**

* Conducting research with a professor on the application of **Embedded Systems** & **Machine Learning** to advance road safety for electric scooters in downtown and urban areas.
* Integrated **Raspberry Pi 4B** with BeiTian-180 **GPS**, **Pi Camera** module, and GY-521 **gyroscope**/**accelerometer** sensors into electric scooters to create a data acquisition framework.
* Developing **deep learning** models, utilizing **CNNs** for image-based hazard detection and **RNNs** for motion pattern analysis, using **TensorFlow** and **PyTorch**, to enhance urban road safety.
* Designing a user-friendly **real-time** dashboard for rider alerts and driving adjustments.

**TI-RSLK Self-Driving Maze Edition Robot**

* Built an autonomous-driving robot capable of navigating mazes using **IR & bumper sensors** to detect turns and walls.
* Designed a **PWM & SysTick ISR** using **ARM** TI-MSP432 **Microcontroller** and utilized H-Bridge **Motor Drivers** to adjust power delivered to DC motors.
* Designed a **Free Real-Time Operating System(RTOS)**, that detects collisions & mitigates them using ISR.
* Interfaced Nokia 5110 LCD using **SPI communication** protocol.

**IBM Software Good Tech Scholar Program** [**(Visit Ease)**](https://github.com/DhruvVarshney10/LilCoders-ProtoOne/tree/main/src)

• Developed a website to identify & address the issue of rising poverty by locally connecting donors to the people in need.

• Deployed **ReactJS** & **AngularJS** web app on **Kubernetes** & IBM cloud that streamlines the process of donation by connecting low-income users with local donors and food banks.

• Designed a personalized UI using HTML, CSS, **JavaScript** with user authentication and recommendation system feature using **MySQL** and **AWS** database.

# EXPERIENCES

**Institute of Electrical and Electronics Engineers(IEEE)** June 2022 - Present

**Vice President**

• Led a board of 15 officers as Vice President of IEEE, overseeing project/events, membership, and marketing committees. Successfully implemented strategic initiatives that revitalized in-person attendance, increasing active membership to over 100 members.

**Associated Students**

**Chief Financial Officer/Controller** June 2023 - June 2024

* Developed comprehensive investment policies and strategies for effectively managing a **$6 million** reserve fund, ensuring financial stability, and maximizing returns.

# Directed the creation and management of a $9 million annual budget, funded by student fees, ensuring optimal allocation of resources, and promoting transparency in financial planning.

# Director of Sustainability Affairs June 2022 - June 2023

# Advocated to the California State Senator, CSU Chancellors & City Council to provide 9,000 commuter students free public transport across all 24 Bay-Area transit agencies. ([Read article here](https://issuu.com/spartandaily/docs/sd100422all_rev01))

# CERTIFICATIONS & LEADERSHIP

[• IBM Introduction to Cloud](https://courses.yl-ptech.skillsnetwork.site/certificates/15cdb61951624a0ca13e17d33c6633fb)

• [IBM Enterprise Design Thinking Practitioner](https://courses.yl-ptech.skillsnetwork.site/certificates/15cdb61951624a0ca13e17d33c6633fb)

•Mastering Data Structures & Algorithm using C & C++

• **Tau Beta Pi** – Public Relations Officer

• **Surface Mount Technology Association** - Secretary