Karthik Renuprasad

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Location: Fremont, CA

EDUCATION

- **San José State University** — Graduation: Dec 2025
  Bachelor of Science in Computer Science — *San Jose, CA*
  - **Courses**: Object-Oriented Design, Intro to Computer Systems, Data Structures and Algorithms, Linear Algebra, Computer Programming Using C++

EXPERIENCE

- **Software Designer** — Aug 2022 - Present
  Spartan Racing, SJSU Formula SAE — *San Jose, CA*
  - **Battery Management System Software Designer**: Jul 2023 - Present
    - Leading a team of 4+ engineers in the development of software for a **custom Battery Management System**.
    - Writing **C** code onto the **STM32** microcontroller integrated within the master board.
    - Utilizing the **SPI** protocol to allow the master board to retrieve data from eight daisy-chained slave boards, each equipped with an **LTC6811** (12 Cell Battery Stack Monitor).
    - Parsing SPI data to write **CAN** messages for cell voltages, pack voltage, cell temperatures, faults, etc.
    - Implementation of various algorithms, notably the **Coulomb Counting Method**, for accurate assessment of State of Charge (**SOC**).
    - Integration of a conversion algorithm to translate thermistor readings into Celsius, providing precise measurements for cell temperatures.
  - **Dashboard Designer**: Jul 2023 - Sep 2023
    - Using **C++** to establish **SPI** communication with an LCD screen, which helped display critical fault information and the pack voltage.
    - Implemented LED indicators for Highest Cell Temperature, High Voltage status, and Brake System Plausibility Device faults, contributing to improved system monitoring and user awareness.
    - Investigated and resolved issues related to **CAN** message parsing by leveraging **Serial** communication.
  - **Telemetry Designer**: Aug 2022 - Jun 2023
    - Pioneered a **telemetry system** by providing leadership and guiding a team of 6+ engineers with precise project direction and requirements.
    - Utilized **Docker** within **Ubuntu** to efficiently deploy **InfluxDB** and a **CAN Bus management platform**.
    - Implemented seamless cross-network connectivity using a VPN to enable **Grafana**, hosted on a separate device, to access InfluxDB running on a **Raspberry Pi 4B**, regardless of the network configurations of each device.
    - Used **Flux** (a data scripting and query language) to analyze and display the data stored in the database (InfluxDB) on Grafana Dashboards.

- **Developmental Engineering Apprentice** — Jul 2023 - Aug 2023
  Zscaler Student Work Experience Program — *San Jose, CA*
  - Collaborated with a team of 10+ programmers to develop a website that managed 4 security policies (Firewall, DLP, Mobile Malware, Malware) using **React.js** and **Node.js**.
  - Developed a **Restful API** in **Java** using Spring Boot, ensuring efficient data communication and integration of the database and the front-end.
  - Utilized **Postman** to validate and optimize API endpoints, ensuring top-notch performance and reliability
  - Played a pivotal role in crafting the website's landing page.

VOLUNTEERING

- **Student Lead Volunteer** — Sep 2015 - May 2022
  Kannada Koota of Northern California — *Milpitas, CA*
  - Completed six years of education at Kannada Kali School.
  - Volunteered to assist the school's principal, teachers, and students, playing a role in attendance management, homework correction, and maintaining discipline.
  - Demonstrated commitment to the school community through active involvement and support.

SKILLS

Languages: Java, C/C++, Javascript, HTML, CSS, LaTeX, Flux
Technologies: Bash, Linux, Docker, Grafana, MySQL, Postman, Spring Boot, React.js, Node.js
Tools: Git, Raspberry Pi, PiCan2
Protocols: CAN (Controller Area Network) Bus, Serial Communication, Serial Peripheral Interface
Soft/Hard Skills: Data Structures and Algorithms, Object-Oriented Programming (OOP), Databases, Full-Stack Development, Embedded Code, Project Management, Risk Mitigation, Task Identification