

Karthik Balaji

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EDUCATION

Cal Poly San Luis Obispo | GPA: 4.0

Expected Graduation: Jun 2026

BS, Computer Science

Relevant Courses: Data Structures, Object-Oriented Programming, Computer Organization, Systems Programming, Linear Algebra/Differential Equations, Discrete Structures, Analysis of Algorithms, Introduction to Software Engineering

WORK EXPERIENCE

Software Developer | Hack4Impact

October 2024 - Present

- Developed an application for a nonprofit to streamline their volunteering process, using full-stack principles and **Git** methodologies
- Completed an 8-week bootcamp course to learn advanced usage of **TypeScript**, **Next.js**, **MongoDB**, **REST APIs**

AI and Data Analytics Intern | Sarakki Associates

March 2024 - Present

- Conducted research and compiled reports on the uses for newly sanctioned GPS-3 technology, specifically the LC1 signal, for civilian and border purposes
- Used and integrated Google's **Vertex AI** for predicting border wait times
- Collaborated with lead engineers to help make improvements to the client UI for the company website

Instructor | Mathnasium

Jun 2022 - Jan 2023

- Developed customized tutoring programs aligned with the specific needs and goals of students
- Employed a variety of interactive teaching methods, such as workshops, hands-on exercises, and case studies, to ensure that students actively participated in the learning process

PROJECTS

PolyMessages | Messaging Web App

- Worked as a team to develop a messaging web application that enables Cal Poly students to connect and communicate with fellow students, using **Git** and **Agile** methodologies for our workflow, and **Microsoft Azure** for deployment
- Integrated the **React** frontend with the **Express** and **MongoDB** backend, enabling user authentication, real-time sending/editing/deleting of messages from both ends, profile creation/editing, and more

Huffman Encoding | File Compression

- Implemented a file compression algorithm in **Python** with the ability to efficiently process large text files and greatly shorten the time needed to process each character of the file by over 50%
- Used Binary Search Trees to recursively assign bits to each character, by assigning less frequent characters longer sequences of bits and vice versa, thus increasing the overall processing speed of larger files

Sleepy Heads | Drowsiness Detection App | App Store

- Developed an app to accurately identify signs of driver drowsiness, that analyzes eye movements in real-time to assess the driver's level of alertness, and sets off a customizable alarm if necessary
- Used **React Native** and **Expo** to ensure optimal performance on iOS platforms, and **Google's ML kit** to integrate eye-tracking and detection
- Presented to Google(Waze) Technologies Head of Carpooling, and achieved over 100 downloads on the App Store

SKILLS & AWARDS

Technical Skills

- Languages: Java, Python, C, JavaScript, TypeScript, Swift 3, HTML/CSS
- Frameworks/Databases: React.js, React Native, Next.js, Expo, Express, MongoDB, MySQL, PostgreSQL
- Tools: Git, Github, Visual Studio, Vim, Microsoft Azure, Vercel

Awards

- Best App Development | Hackeo Hacks | Hackathon
- 3rd Place | GunnHacks 8 | Hackathon
- 4th Place | Tech Optimum Hacks | Hackathon