

# Karthik Balaji

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## EDUCATION

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Cal Poly San Luis Obispo | GPA: 4.0

Expected Graduation: Jun 2027

BS, Computer Science

Relevant Courses: Data Structures, Object-Oriented Programming, Computer Organization, Systems Programming, Linear Algebra/Differential Equations, Discrete Structures

## PROJECTS

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Huffman Encoding | File Compression

Oct 2023

- 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

Fast Track | Fastest Route Calculation App | [fasttrack.vercel.app](#)

Jul 2022 - Aug 2022

- Utilized React JS in conjunction to create a single-page application for route planning
- Leveraged a geocoding API to efficiently convert user-provided addresses into geographical coordinates and provide accurate mapping services
- Implemented a lightweight and interactive mapping library to enhance the user interface with dynamic map displays, route visualization, and the ability to interact with waypoints seamlessly
- Crafted a user interface using HTML, CSS, and JavaScript, ensuring a consistent and responsive design across various devices and screen sizes

Sleepy Heads | Drowsiness Detection App | App Store

Jan 2022 - Feb 2022

- Integrated Google's machine learning kit for facial recognition to accurately identify signs of driver drowsiness. The model analyzes eye movements in real time to assess the driver's level of alertness
- Utilized React and JavaScript to create a user-friendly interface while ensuring cross-platform compatibility
- Employed the React Native framework and Expo-CLI to ensure optimal performance on iOS platforms, achieving over 100 downloads on the App Store
- Designed and implemented an intuitive user interface with HTML and CSS, providing users with a visually appealing and easy-to-navigate experience with customizable alarm sounds and options

## WORK EXPERIENCE

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AI and Data Analytics Intern | Sarakki Associates

March 2023 - Present

- Conducting research and compiling reports on the uses for newly sanctioned GPS-3 technology, specifically the LC1 signal, for civilian and border purposes
- Working on other projects involving Google's Vertex AI for predicting border wait times
- Collaborating with lead engineers on the creation of an app for the company, using React

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

## SKILLS & AWARDS

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- **Technical Skills**
  - Languages: Java, Python, C, JavaScript, Swift 3, HTML/CSS,
  - Frameworks/Platforms: React.js, React Native, NextJs, Svelte, Expo, Express
- **Awards**
  - Best App Development | Hackeo Hacks | Hackathon
  - 3rd Place | GunnHacks 8 | Hackathon
  - 4th Place | Tech Optimum Hacks | Hackathon