VISHAL NAGARAJAN

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EDUCATION

- **University of California, San Diego** — San Diego, United States
*Master of Science - Computer Science; **GPA: 3.97/4.0*** — *Sep 2022 - Jun 2024 (Expected)*
Courses: *Principles of Software Engineering, Networked Systems, Unsupervised Learning*

- **SSN College of Engineering (Affiliated to Anna University)** — Chennai, India
*Bachelor of Engineering - Computer Science and Engineering; **GPA: 8.55/10.0*** — *Aug 2018 - Jun 2022*
Courses: *Operating Systems, Data Structures and Algorithms, Software Engineering, Computer Architecture*

SKILLS

- **Languages**   **Python**, Java, JavaScript, C++, Go
- **Frameworks**   **React.js**, **Next.js**, Redux, **TailwindCSS**, Express.js, Node.js, Selenium, Unittest
- **Tools**   **Git**, GitHub Actions, Docker, MongoDB, Postman, gRPC
- **Platforms**   **AWS**, Google Cloud Platform, Linux, Raspberry

EXPERIENCE

- **Software Developer (Graduate Student Researcher)** — Apr 2023 - Jan 2024
UC San Diego Health (The Nemati Lab) — *San Diego, United States*
  - Implemented utilities to **automate** extraction of vitals and fitness data from **Fitbit** devices. Developed a custom framework to use **Google Fit API** calls and extract healthcare data from **Apple Watch**. Automated login sessions, handled existing session tokens using **OAuth2** authentication, and **cron-job** to automate executing backgrounds repeatedly.
  - Built a **Raspberry Pi** based virtual health assistant using open source Speech-To-Text and Text-To-Speech frameworks to interact with patients. Utilized **LLM** for real-time validation of patient responses with **5** secs/query inference time. Exploring ways to perform differential diagnosis using **LLM**.
  - Developed an LSTM based hospital readmission prediction model that achieved AUC of **81%**. Preparing to integrate the model in real-world setting.

- **Research Assistant and Teaching Assistant** — Jun 2020 - Jun 2022
Solarillion Foundation — *Chennai, India*
  - **"End-to-end optimized arrhythmia detection pipeline using machine learning for Ultra-Edge devices"** - Research project developed with Python to detect Atrial Fibrillation in subjects using ECG signals. Applied machine learning algorithms that used only **0.508 KB** of RAM on Raspberry Pi 3. Published in the 20th **IEEE International Conference on Machine Learning and Applications (ICMLA)**. [Code-Link]
  - Developed a novel two-staged pipeline containing XGBoost Classifier and Regressor using Python to improve performance of evaluation of flight delay in minutes. Data processing was performed on over 10 million datapoints by **combining flight and weather data** based on time of the flight date. Achieved a Mean Absolute Error of **13.82** minutes, and R^2 score of **0.94**. [Code-Link]
  - Guided and mentored **5 students** through assignments in Python and basics of Machine Learning.

SELECTED PROJECTS

- **BlogAnalyticsDashboard** — San Diego, United States
Next.js | Node.js | TailwindCSS | MongoDB — *Mar 2024*
Spear-headed the blog tracking and dashboard analytics application built using *Next.js*. **Interactive charts** and **sortable tables** are rendered using *chart.js* and *TailwindCSS* for aesthetic design. Admins access the dashboard that tracks aggregate and individual blog tracking data including likes, dislikes, source of visit. **Authentication** uses JWT middleware and sign-in page tracks **honeypot** for invalidating bot-automated sign-ins. [Code-Link]

- **SurfShare - File Storage Server** — San Diego, United States
Go | gRPC — *Mar 2023*
Implemented a fault-tolerant and scalable file storage server that syncs to multiple blockstores and metastores (similar to DropBox) using Consistent Hashing algorithm and RAFT protocol.

- **Sentiment Analysis Flask App using Docker and Google Cloud** — San Diego, United States
Python3 | Flask | Docker | Google Cloud Run — *Dec 2022*
Developed a small scale sentiment classification web application that takes a sentence as input. Trained XGBoost model classifies the input text. The app is wrapped using Flask, containerized using Docker, and deployed on Google Cloud Run. [Code-Link]

- **TechWorld** — Chennai, India
MongoDB | Express.js | ReactJS | Node.js | Redux — *Feb 2022*
Managed team of 3 and designed a web app with functionalities enabling users to purchase and admin to add products. Sign-in is authenticated using JWT (JSON Web Token). Cookies are saved to store cart items. Order history is stored in MongoDB database that is accessed by admin using mongoose tool. [Code-Link]