

VISHAL NAGARAJAN

Portfolio: <https://vishaln15.github.io>

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EDUCATION

- **University of California, San Diego** San Diego, United States
Master of Science - Computer Science; GPA: 4.0/4.0 Sep 2022 - Jun 2024 (Expected)
Courses: AI: Probabilistic Reasoning and Learning, Recommender Systems and Web Mining, Biomedical NLP
- **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: Machine Learning, Artificial Intelligence, Data Warehousing and Data Mining, Data Structures, Design and Analysis of Algorithms, Objected Oriented Programming, Social Network Analysis, Software Engineering

SKILLS

- **Languages:** Python, Go, Java, C++, C, SQL, JavaScript, HTML, CSS, \LaTeX
- **Frameworks:** PyTorch, TensorFlow, Scikit-learn, NLTK, Pandas, NumPy, Keras, Flask, ReactJS, Angular
- **Tools:** Docker, Git, MySQL, MongoDB
- **Platforms:** Google Cloud Platform, Linux, Web, Raspberry
- **Soft Skills:** Design Thinking, Leadership, Time Management, Teamwork, Flexibility

EXPERIENCE

- **Solarillion Foundation** Chennai, India
Research Assistant and Teaching Assistant Jun 2020 - Jun 2022
 - **Publication:** 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]
 - **Flight Delay Prediction Project:** 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]
 - **Website Maintenance:** Managed official website of Solarillion Foundation using Javascript. Revamped research and contact pages using Google App Script with better UI. Delivered the changes in 1 day. [Code Link]
 - **Teaching Assistant:** Guided **5 students** through assignments in Python and basics of Machine Learning.
- **SSN College of Engineering (Affiliated to Anna University)** Chennai, India
Undergraduate Student Researcher Sep 2021 - Feb 2022
 - **Publication:** Scalable machine learning architecture for neonatal seizure detection on ultra-edge devices - Research work culminated into publication and presented at the 2nd **International Conference on Artificial Intelligence and Signal Processing (AISP)**. Explored various signal filtering methods, segmented signal into window lengths to pass input to ML models. Secured **87%** sensitivity score with **4.84 KB** memory footprint. [Code Link]

SELECTED PROJECTS

- **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. [Web-Application-Link] [Code-Link]
- **Early sepsis prediction using clinical radiology reports and vitals** San Diego, United States
LSTM, CNN, DNN, Scikit-Learn, NLTK, SciSpacy Dec 2022
Collaborated with a multi-disciplinary team to build Deep learning (DL) models using TensorFlow that take structured vitals and annotated clinical reports of patients to predict sepsis by utilizing the innate time-series properties. LSTM + Word2Vec delivered **66%** AUC score and **37%** PPV score on the highly imbalanced dataset.
- **TechWorld** Chennai, India
E-commerce web application using MERN stack 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]

OPEN-SOURCE CONTRIBUTION

- **PySigPro** Chennai, India
Python package for EEG/ECG feature extraction Dec 2021
Collaborated a one-stop open-source **Python** package for signal processing and feature extraction of HRV features, and features pertaining to seizures. Features frequently used in EEG and ECG signal processing are included from time-domain and entropy-domain. To be published as PyPI distribution. [Code Link]