

AAYUSH SANJAY PRASAD

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A Software Engineer with a robust proficiency in Python, Java, and Data Structure & Algorithm Implementation, I bring a wealth of experience in system design, image processing, natural language processing, clustering, and cloud computing.

EDUCATION

Master of Science in Computer Science

Rivier University, NH, USA

Relevant Coursework: AI and ML, Robotics, Algorithms, JAVA Programming, OOD, OS, CS Fundamentals

Bachelor of Engineering Computer Engineering

Gujarat Technological University, Patan, India

Relevant Coursework: Analysis and Design of Algorithms, IoT, Data mining and BI, Database Management System

TECHNICAL SKILLS

Programming: C/C++, C#, JAVA, MATLAB, Python, HTML, CSS, Javascript, PHP, React.js, Node.js, SQL

Certifications: R language, Arduino, AWS Cloud

Python Libraries and Framework: NumPy, Pandas, TensorFlow, PyTorch, gTTS, PyAudio, pytsx3, Django, Keras

Cloud Computing: AWS, Azure, Google Cloud Platform, Kubernetes

Competitions and Conferences: Smart India Hackathon 2017, Gujarat Industrial Hackathon 2018, AWS Cloud

EXPERIENCE

Research Assistant | Rivier University

September 2023 - May 2024

- Designed and implemented hardware setup, integrating motor drivers, **GPS modules**, and computer vision components for obstacle detection using **OpenMV**
- Developed Python-based modular software architecture to seamlessly integrate robot control, motor driving, and GPS navigation functionalities using **UART** for communication to achieve a **62 %** better performance
- Debugged and validated GPS navigation accuracy, obstacle avoidance effectiveness, and overall system performance in real-world environments through comprehensive testing **by 15%**

Software Engineer | Webyant, Deesa, India

September 2020 - April 2022

- Implemented a platform using **Python, Flask, RESTful API**, and **MySQL**, serving over 100k citizens and reducing paperwork by **85%**. Built scalable microservices with **SQLAlchemy** for database integration and deployed using AWS services
- Created user-facing features with **ReactJS**, building **50+ reusable UI components**. Collaborated in **Agile** to integrate external APIs, increasing completion rate by **30%** and reducing development time by **20%**. Utilized **JavaScript, HTML**, and **MySQL**
- Conducted unit testing with **PyTest** and **Behave**, significantly reducing bugs. Configured **Flask-Admin** for monitoring health and performance metrics. Ensured seamless microservices integration and performance in an Agile environment

Software Development Intern | Desire Infotech, Gandhinagar, India

August 2019 - August 2020

- Constructed a program utilizing a combination of **Natural Language Processing (NLP)** with **NLTK** and **spaCy**, and machine learning algorithms with **TensorFlow** and **OpenCV**, allowing end-users to interact with screen using hand gestures via a camera
- Executed various features, such as voice assistance using **gTTS** and **speech recognition**, to increase productivity by **62%**
- Increased efficiency from **10% to 78%** by implementing different approaches to maintain sensitivity of the cursor, including adaptive thresholding and real-time data processing with **PyTorch** and **NumPy**

ACADEMIC PROJECTS

Generative Adversarial Networks - Image Synthesis

- Designed and implemented computer vision pipelines for **object detection and recognition** using deep learning techniques and managed and processed large datasets efficiently
- Preprocessed and augmented image datasets to reduce training time **by ~70 %**, utilizing libraries such as **OpenCV** and **PIL** and trained neural networks using **Pytorch** employing transfer learning and hyperparameter optimization
- Leveraged **YOLOv5** for real-time object detection, customizing model for specific tasks and datasets
- Applied evaluation metrics like precision, recall, and mAP improving F-score **from 0.76 to 0.82** to assess model

Minesweeper

- Conducted core game mechanics including grid generation, mine placement, and adjacent cell calculations **using C++** data structures and algorithms to improve time spent while gaming **by ~60%**
- Built a functional Minesweeper game in **C++ with GUI**, customizable levels, and strategic game logic using **SFML**
- Implemented event handling mechanisms to detect and process user input events and utilized SFML's event system to register callbacks and respond dynamically to player actions increasing response accuracy **from 55 % to 89.55 %**

Time Series Analysis

- Performed Time Series Analysis of monthly Sunspots from 1749 – 1983 with a **Markov Chain**
- Committed Autocorrelation and **GoF test at 5%** significance level to determine valid states of chain

Cloud-Based Data Analytics Dashboard

- Crafted cloud-based data analytical dashboard leveraging AWS cloud platform services, including **AWS Glue** for data ingestion, **Amazon Redshift** for data storage, and **AWS EMR** for data processing and analysis
- Constructed the frontend dashboard using **React.js**, with **D3.js** and **Plotly** for interactive data visualizations
- Integrated **AWS Cognito** for user authentication, ensuring scalability by implementing monitoring using **AWS CloudWatch**

EXTRA ACTIVITIES AND INTERESTS

- Circulation Assistant for Regina Library at Rivier University
- Vice President of Mozilla Group at Gujarat Technological University