Nihal Thangallapally

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CAREER OBJECTIVE:

- Currently pursuing a B.Tech in Computer Science Engineering at SR University, specializing in machine learning and artificial intelligence.
- Proficient in advanced machine learning tools and technologies, including computer vision and natural language processing (NLP).
- Skilled in developing and deploying machine learning models, large language models (LLMs), and Retrieval-Augmented Generation (RAG) for real-world applications.
- Knowledgeable in cloud computing platforms such as Google Cloud Platform (GCP) and Amazon Web Services (AWS).
- Enthusiastic about contributing to innovative projects and applying machine learning solutions in a dynamic and collaborative work environment.

EDUCATION:

SR University, Telangana, India   **(2021 – 2025)**
Bachelor of Technology in Computer Science Engineering | CGPA: 7.0

SR Junior College   **(2019 – 2021)**
Intermediate (MPC) | Percentage: 48%

Bharati Vidya Bhavan High School   **(2019)**
SSC | CGPA: 9.0

TECHNICAL SKILLS:

Category		Tools/Technologies
Programming Languages	:	Python, C, JavaScript, Java, HTML, CSS
AI Frameworks/libraries	:	PyTorch, Keras, LangChain, scikit-learn, TensorFlow
Computer Vision	:	OpenCV, CLIP, YOLO, TensorFlow Lite
NLP Frameworks	:	SpaCy, NLTK, LLM (GPT-3, GPT-4, PaLM 2, LLaMA), Transformers
Data Science Libraries	:	NumPy, Pandas, Matplotlib, SciPy, Seaborn, Plotly
Cloud Platforms	:	AWS, Azure, Google Cloud Platform (GCP), Heroku, Firebase
Database Packages	:	MySQL, XAMPP, MongoDB, PostgreSQL, SQLite, Pinecone
Version control	:	Git, GitLab, GitHub
CI/CD Pipeline	:	GitHub Actions, Docker, Azure ML

PROJECT DETAILS:

Project Name	:	**AI Powered Traffic Sign Recognition for Autonomous Vehicles Using Raspberry PI 3B+**
Technologies	:	TensorFlow Lite, OpenCV, Raspberry Pi, CNN, GEMMA
Role	:	Full Stack AI Developer

Project Description:

This is going to be a state-of-the-art traffic sign recognition system designed for self-driving automobiles by employing a richer context of images of traffic signs along with their annotations. To leverage this, the deep learning model would use Vision Transformers to gather vision-based information while thereby enhancing the knowledge pool regarding types of traffic signs or what separates these signs from the others. In this manner, this shall better enhance accuracy and reliability over detection using critical visual ingredients and context in real life.

We use a Transformer-based architecture to do the detection and classification on traffic signs. Such an architecture is used in analysing the visual features so that meaningful classification is achieved. The use of attention mechanisms allows efficient and accurate alignment of the visual features with labels corresponding to traffic signs, thus bringing about efficient detection. Standard evaluation metrics are accuracy, precision, and recall, compared to the system against its capabilities to correctly classify traffic signs in relation to the real ground truth labels.

The general approach shows how combining Vision Transformers and advanced computer vision techniques yields high accuracy traffic sign detection systems that have great potential to lead to the development of safe and efficient autonomous vehicles on modern roads.

Roles and Responsibilities

- **Conduct Research on Traffic Sign Detection Techniques**

Investigate current methods for traffic sign detection and classification, including existing models and performance metrics, to inform the design and implementation of the system.

- **Design and Implement the Detection System**

Develop the traffic sign detection system using Vision Transformers for visual feature extraction and integrate a classification model to classify the traffic signs in real-time.

- **Data Preprocessing and Model Training**

Preprocess a comprehensive dataset of traffic signs for training and evaluation purposes. The images should be appropriately augmented and normalized. Then, train the model using the proper machine learning frameworks for optimal performance.

- **Model Evaluation and Improvement**

Evaluate the performance of the system using metrics such as accuracy, precision, recall, and F1-score. Test the model and improve its detection accuracy and efficiency based on the results of the testing. Record the entire process of the project from system design to implementation steps and testing results. Also, prepare user guides for system deployment and discuss with team members regarding code reviews and technical discussions for improving overall functionality.

PROJECT DETAILS:

Project Name	:	**Expense Tracker Mobile Application**
Technologies	:	React Native, Firebase, Node.js, MongoDB, Expo, Redux
Role	:	Full Stack Mobile Developer

Project Description:

      This project involves creating an advanced mobile application that can facilitate precise tracking of the financial activities of the user. The application provides a very easy-to-use interface to log, categorize, and analyse daily expenditures to make the user more financially literate and disciplined in terms of budgeting. With contemporary technologies and frameworks, the system offers great functionality and smooth cross-platform user experience.

The application architecture uses Redux for state management with the accuracy that is required and then uses Node.js and MongoDB for scalable support on the back end. Real-time notification and operation offline also enhance the convenience for users. Its modular structure with reusable components has ensured that it is both scalable and maintainable. The deployment using Expo has optimized it on both Android and iOS platforms.

Roles and Responsibilities:

Requirements Analysis and System Design:

- Engage in deep consultations with stakeholders to get their requirements and transform them into technical specifications.
- Design the user interface and experience (UI/UX) in a manner that balances functionality and aesthetic appeal, keeping in view best practices for usability.

Application Development:

- Develop the front-end using React Native and Expo in a manner that has seamless compatibility across diverse platforms.
- Engineer backend services using Node.js and integrate Firebase for authentication and secure data management.
- Implement data synchronization mechanism to let the application move seamlessly from offline to online usage.

State Management and Backend Integration

- Use Redux for efficient yet reliable management of complex application states.
- Develop RESTful APIs and integrate these into applications to enable efficient client-server communication.

Testing, Evaluation, and Optimization:

- Test and ensure that the applications meet critical quality standards.
- Diagnose faults and correct to deliver applications that are high performance yet fault free.

Deployment and Lifecycle Management:

- Manage deployment to Google Play and Apple App Stores, while aligning with requirements specific to each platform.
- Iterative support based on user feedback, changing needs, and refined features for the application through its life cycle.

Conclusion:

The Expense Tracker Mobile Application aspires to empower users with actionable insights into their financial behaviours. By combining advanced analytics, robust architecture, and user-focused design, the system offers a comprehensive tool for achieving sustainable financial management and planning.

OTHER PROJECTS:
Web Application Firewall
Technologies: Python, Pandas, Jupyter, MYSQL, Cloud WAF

A Web Application Firewall (WAF) Project involves designing and implementing a security solution that protects web applications by monitoring, filtering, and blocking malicious HTTP/S traffic. The project typically includes configuring WAF rules to safeguard against common threats such as SQL injection, cross-site scripting (XSS), and denial-of-service (DoS) attacks, ensuring compliance with security standards, and optimizing performance without disrupting legitimate user traffic. Technologies include Python for scripting, SQL for backend security testing, and WAF tools like AWS WAF or MoD Security for deployment.

Breast Cancer Prediction
Technologies: Python, Pandas, Jupyter, MatPlot

A machine learning-based system designed to predict the presence of breast cancer using diagnostic data. The project utilizes classification algorithms to analyse features such as cell radius, texture, and compactness. It aims to provide accurate, early detection to assist in medical decision-making.

INTERNSHIPS:

AICTE – PALO ALTO CYBERSECURITY VIRTUAL INTERNSHIP
Machine Learning Intern
- Completed a virtual internship focusing on Ethical Hacking.

1Stop Cyber Security Virtual Internship
Ethical Hacking Intern
- Gained hands-on experience in Ethical Hacking.

INFOSYS AIML Virtual Intership
Machine Learning Intern
- Worked on Machine learning projects.

PARTICIPATIONS:
- Attended workshop on Drones and received certificate and award.
- Attended Hackathon in S R University and received Certificate.
- Given an idea presentation in T-HUB.
- Attended Undergraduate Business meeting and gave an idea presentation
- Worked as Volunteer for Telangana's biggest student carnival **PROST**.
- Member of Rotaract Club Hyderabad

Research Papers:
- Done and Wrote my Research on Ancient Temples of India.
- Done and Wrote my Research on Chat Bots for College Project.

- Done And Wrote a Research Paper on AI Powered Traffic Sign Detection for Autonomous Vehicles Using Raspberry Pi.

Certifications:
- Cisco Networking Academy: Ethical Hacker (Intermediate)
- Professional Business Analytics from University of ILLINOIS (Coursera)
- Fundamentals of Entrepreneurship in the Family Business (EdX)
- Artificial Intelligence on Microsoft Azure (Coursera)
- Introduction to Android Mobile Application Development (Coursera)
- Principles of UX/UI Design (Coursera)
- Version Control (Coursera)
- Programming Fundamentals in Kotlin (Coursera)