# GAUTHAM VIJAYARAJ

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## PROFESSIONAL SUMMARY

Dynamic professional with 3+ years of experience in full-stack development, mobile app solutions, and AI system integration. Specialized in building robust multi-agent AI workflows and enhancing applications with advanced machine learning techniques. Proficient in technologies like Flutter, React.js, Python, and Node.js, with a solid foundation in backend frameworks and cloud services. Strong leadership in Agile teams, focusing on project management, process optimization, and performance enhancement. Known for delivering high-quality, scalable solutions while ensuring alignment with business goals and client expectations.

## FUNCTIONAL SKILLS

Mobile App Development (Flutter) | Full-Stack Development | API Integration | Agile Methodology | Database Management | Project Management & Planning | Strategic Planning | Financial Management | Stakeholder Management | Risk Management | Business Analysis | Process Optimization | Change Management | Budgeting and Forecasting | Performance Management | Client Relationship Management | Deep Learning | Artificial Intelligence (AI) | Generative AI | Recommendation Systems | Large Language Models (LLMS) | Reinforcement Learning from Human Feedback (RLHF) | Retrieval-Augmented Generation (RAG) | Fine-tuning & Model Customization | Generative Agents & AI Workflows

## TECHNICAL SKILLS

- **GenAI & ML:** OpenAI API, Gemini API, Hugging Face Transformers, LLM Fine-tuning, CNN, BiLSTM, BLIP
- **AI Agent Systems:** Prompt engineering, RAG pipelines, multi-agent workflows, Streamlit, LangChain
- **Backend:** Flask, Python, FastAPI, Node.js, REST APIs, MongoDB, Redis, Spring Boot, Java
- **Frontend:** React.js, JavaScript, HTML/CSS, Tailwind, Flutter
- **DevOps & Cloud:** Docker, GitHub Actions, AWS (EC2, S3), GCP, Firebase
- **Other:** Git, Figma, Webpack, Jest, Mocha, UX/UI Design

## WORK EXPERIENCE

**Founding Mobile App Developer | *CrateDig, Tempe, AZ | July 2025 – Present***
- Designed and developed real-time, user-centric UX workflows in Flutter, integrating REST APIs for chatbot functionality and CRM dashboards.
- Created dynamic, interactive UI flows for investment tracking, ensuring seamless data visualization and navigation.
- Applied prompt engineering strategies to craft AI-powered in-app experiences customized to user requirements.
- Collaborated in an Agile startup environment, utilizing Git for version control to drive iterative development and deployments.

**Student Ambassador | *Adobe, Tempe, AZ | September 2024 – May 2025***
- Produced innovative UI/UX prototypes and digital experiences using Adobe Creative Cloud tools, including XD, Illustrator, and Photoshop.
- Developed compelling digital content and visuals to support marketing campaigns, events, and learning initiatives.
- Led and organized a student volunteer team to facilitate knowledge-sharing sessions and coordinate event logistics.
- Hosted events and workshops to promote Adobe tools, incorporating Generative AI workflows to enhance design processes.
- Conducted peer training sessions on digital content creation and emerging AI-driven design trends.

**AI Engineering Lead (Graduate Services Assistant) | *Arizona State University, Tempe, AZ | September 2023 – December 2023***
- Partnered with Dr. Stephen S. Yau to conduct AI research, focusing on fine-tuning LLMs for specialized applications.
- Developed and tested AI pipelines utilizing OpenAI, Hugging Face Transformers, and Google Gemini API for enhanced reasoning and context.
- Contributed to cross-functional development of AI-driven features and model inference endpoints for a research prototype.
- Conducted literature reviews and performance assessments to optimize fine-tuning strategies and model accuracy.

**Assistant System Engineer | *Tata Consultancy Services, Chennai, India | June 2021 – November 2022***
- Developed full-stack dashboards for financial analytics using React, TypeScript, and Java (Spring Boot), integrating with SQL databases.
- Created ML/NLP modules for anomaly detection, fraud scoring, and trend forecasting using Azure AI and Cognitive Services.
- Implemented APIs to deliver machine learning predictions into interactive dashboards, enabling real-time insights for financial professionals.

- Optimized backend processing pipelines for high-throughput, low-latency data retrieval while adhering to financial regulations.

## INTERNSHIPS

**Software Developer Intern |** *HCLTech, Chennai, India | May 2024 – August 2024*
- Developed user workflows for a medical GenAI assistant, enabling doctors to access patient history, evaluate treatment risks, and predict diagnoses.
- Created microservices with React, Java (Spring Boot), and MongoDB for secure data handling and NLP-based interfaces.
- Engineered Retrieval-Augmented Generation (RAG) transformer model pipeline to summarize complex patient case files into actionable insights.
- Enhanced backend services with transformer-based models, improving response accuracy and medical terminology processing.
- Fine-tuned LLM-based solutions to enhance domain-specific performance, increasing reliability and efficiency for mission-critical use cases.

**Mobile App Developer Intern |** *Magicstep Solutions Private Limited, North Lakhimpur, India | May 2023 – July 2023*
- Collaborated with the founder to define product roadmaps, aligning technical objectives with business goals.
- Presented technical demos to investors, showcasing the app's ML-powered advantages and securing funding.
- Managed unit and UI testing, ensuring optimal performance and reliability for the customer experience.

**Flutter Developer |** *Metfolio, London, UK (Remote) | December 2022 – March 2023*
- Designed and implemented UI components for a fintech mobile app, translating Figma designs into interactive screens with Flutter.
- Participated in an Agile team, contributing to feature delivery and collaborating in sprint planning and retrospectives.
- Developed core app features by integrating front-end UI with backend services, ensuring seamless app functionality.

**Software Engineer Intern |** *Encore Theme Technologies, Chennai, India | June 2019 – July 2019*
- Designed responsive front-end interfaces for a cryptocurrency trading platform using JavaScript, HTML, and CSS.
- Integrated real-time blockchain and market data via REST APIs to enhance user engagement and data security.
- Collaborated with backend engineers to ensure smooth data flow and UI/UX consistency across modules.
- Applied performance optimization techniques to improve app load times and responsiveness.

## PUBLICATIONS & CERTIFICATES

**Publications:**
- Revolutionizing Data Security with Reverse Swap Index Shifting (RSIS) — [IEEE Link](IEEE Link)
- Is Studio Ghibli Overrated or a Timeless Classic? A Design & Storytelling Analysis — [Article Link](Article Link)
- My Cover Letter as Python Code: How I Mixed Sincerity with Syntax — [Article Link](Article Link)
- Certification: IBM Certified Generative AI Engineering Professional

## PROJECTS UNDERTAKEN

**Startup Copilot (Multi-Agent AI System) [GitHub](GitHub)**
- Developed a multi-agent AI platform with 7 specialized agents for real-time startup evaluation, covering key areas such as idea review, risk assessment, and market research.
- Integrated dual LLM models (Azure OpenAI & Google Gemini) for dynamic model selection and multi-domain prompt execution.
- Built a Node.js + Express backend for API routing, session management, and agent orchestration, paired with a responsive frontend using Tailwind CSS.
- Created modular agent pipelines leveraging Retrieval-Augmented Generation (RAG) for competitive analysis and compliance scanning.
- Led the end-to-end development lifecycle, ensuring scalability, session persistence, and seamless user interaction across multi-screen navigation.

**Customer Purchase Prediction (ANN Model) [GitHub](GitHub)**
- Built and deployed an Artificial Neural Network (ANN) to predict customer purchase likelihood using demographic and behavioral features.
- Preprocessed 500k+ customer records, handling categorical (label/one-hot encoding) and numerical (scaling) features.
- Achieved ~92.5% validation accuracy using EarlyStopping and TensorBoard for stable training and monitoring.
- Packaged preprocessing + model into an inference pipeline for real-time predictions on new customer profiles.
- Deployed the entire application on Streamlit as a proof of concept.

**Zoom Lang Buddy (2nd Place – Zoom Campus Spark Challenge 2025) [Demo](#)**
- Designed a real-time GenAI companion for translating Zoom speech into American Sign Language (ASL) and multiple spoken languages.
- Utilized RTSM for speech capture and WebSocket for low-latency streaming, ensuring real-time communication.
- Developed an animated, interactive frontend to display ASL signs and translated text, improving accessibility.

**Automated Image Captioning (Fine-Tuned) [GitHub](#)**
- Curated a custom dataset of 50 Tom & Jerry-themed images, annotated for supervised learning, and fine-tuned the Hugging Face BLIP model for context-aware captioning.
- Improved model generalization through image preprocessing and augmentation to ensure accurate caption generation across various frames and character interactions.
- Integrated the fine-tuned model into a real-time web UI, enabling instant caption generation for uploaded images.
- Optimized inference to ensure low-latency and high-accuracy captioning for entertainment-focused use cases.

**Twitter Sentiment Analysis (ML Pipeline) [GitHub](#)**
- Collected and preprocessed a Kaggle dataset of 400,000 tweets for sentiment classification, performing tokenization, stopword removal, and text normalization.
- Compared five ML and deep learning models (SVM, Logistic Regression, CNN, BiLSTM) for sentiment prediction, determining SVM as the top performer with 98% accuracy.
- Conducted extensive hyperparameter tuning, improving macro-F1 scores and generalization.
- Developed an end-to-end ML pipeline for scalable sentiment analysis and deployment-ready inference.

**Music Recommendation System (Spotify API & Random Forest) [GitHub](#)**
- Built a music recommendation engine using 100,000+ tracks from the Spotify API and trained a Random Forest model to predict playlists based on audio features.
- Integrated model predictions into a Flutter UI, enabling users to filter songs by mood or genre and receive personalized playlists with 82% accuracy.

**Interactive Data Visualization of Formula 1 Safety Evolution [GitHub](#)**
- Created an interactive data visualization platform with D3.js and React, visualizing Formula 1 safety evolution from 1950 to 2020.
- Performed data preprocessing and analysis in Python, transforming raw data into structured JSON for seamless web integration.
- Built interactive charts and visualizations to explore accident trends, safety measures, and performance metrics, incorporating advanced data visualization principles.
- Led the full development lifecycle, from data acquisition and feature engineering to cloud deployment, ensuring scalability, responsiveness, and accessibility.

## EDUCATION

- Master of Science: Computer Science (Cybersecurity) | Arizona State University, Tempe, AZ | May 2025
- Bachelor of Technology: Computer Science and Engineering | SRM Institute of Science and Technology, India | May 2021