DEVA SAI KUMAR BHEESETTI

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OBJECTIVE

AI and Machine Learning Engineer with 5+ years of combined experience in software development, data automation, and AI research. Skilled in building scalable AI pipelines, fine-tuning transformer models, and integrating LLMs into production systems, seeking to leverage expertise in predictive modeling, NLP, and generative AI to design intelligent, data-driven solutions that drive operational and strategic impact across healthcare, business, or infrastructure domains.

EDUCATION

Master of Science in Computer Science, University of Massachusetts Lowell Aug 2023 – Aug 2025
GPA: 3.94 Coursework: Machine Learning, NLP, Computation in Health and Medicine, Human-AI Interaction
Bachelor of Technology in Electronics and Communication Engineering, K L University, India 2016 – 2020
GPA: 3.52

TECHNICAL SKILLS

Languages & Frameworks: Python, JavaScript/TypeScript, Java, C++, FastAPI, Flask, LangChain, LlamaIndex, ReactJS, Node.js
AI/ML & Deep Learning: PyTorch, TensorFlow, Scikit-learn, Hugging Face Transformers, XGBoost, LightGBM, CatBoost
LLMs & RAG: FAISS, Chroma, Hybrid Search, Fine-tuning (LoRA/QLoRA), DeepSeek, LLaMA, Longformer, Prompt Engineering
NLP & Computer Vision: Token-level Explainability (Captum, LIME), OpenCV, Medical Imaging, Active Learning
Cloud & DevOps: AWS (S3, Lambda, SageMaker, SNS), Azure, Docker, Kubernetes, CI/CD, GitHub Actions, Jenkins
Databases: PostgreSQL, MySQL, MongoDB, Oracle SQL, Firebase
Data Tools: Pandas, NumPy, Matplotlib, Seaborn, Plotly, Tableau, Power BI
Automation: Google Apps Script, Selenium, BeautifulSoup, ETL Pipelines, Web Scraping

EXPERIENCE

Full-Stack Engineer *Jan 2025 – Present*
OurFreedom.ai, New York (Remote)

- Architected production-ready social graph system using NestJS, MongoDB, and TypeScript with RESTful APIs
- Built 8+ React Native/Expo mobile screens with Zustand state management for seamless user experience
- Integrated Twilio Voice SDK with JWT authentication and token management for real-time voice communication
- Implemented content moderation and reporting system with privacy-aware APIs serving 100K+ relationships
- Managed CI/CD pipelines via GitHub Actions and AWS deployments, achieving 99.9% uptime

Graduate Research Assistant, AI & Healthcare *Jan 2024 – Aug 2025*
University of Massachusetts Lowell, MA

- Built end-to-end NLP pipeline on 2,636 clinical notes, predicting 15 SDoH categories using Clinical Longformer, DeepSeek-R1, and LLaMA 3.2
- Fine-tuned transformer models with CORN ordinal heads and CEM-ORD+CE hybrid loss, achieving 92.6% accuracy (MAE = 0.235)

- Integrated entropy-based active learning and token-level explainability using Captum and LIME for clinical interpretability
- Automated preprocessing, annotation QA, and benchmarking pipelines with PyTorch, Hugging Face Transformers, and CUDA
- Applied synthetic data generation to handle class imbalance and improve rare-class calibration

Graduate Assistant, Software Development & Data Automation *May 2024 – Aug 2025*
Manning School of Business, University of Massachusetts Lowell

- Developed FastAPI microservices and LangChain-based RAG agents for academic workflow automation
- Built GPT-based advising assistant with integration to Google Sheets API and LMS for personalized student guidance
- Created predictive analytics dashboards in Tableau, integrating live SQL and event data, reducing manual workload by 70%
- Deployed Dockerized CI/CD pipelines and automated reporting systems using Google Apps Script
- Enhanced low-resolution images using RealESRGAN and implementeda GUI with PySide6 for accessibility

Senior Software Engineer (Technology Analyst) *Aug 2022 – Aug 2023*
Infosys Ltd. (Client: Verizon), Hyderabad, India

- Led Publish Module for Verizon's Pega Offer Management system, integrating Case Management, Process, and Decisioning
- Built REST API integrations connecting ReactJS front-end with Pega Decisioning Hub for real-time offer deployment
- Designed agent-driven automations for offer migration and validation, improving system reliability
- Developed Kibana utilities for unified API logging and monitoring, enhancing debugging visibility
- Mentored a 4-member cross-functional team and resolved critical production outages post-version upgrades

Software Engineer (Associate Business Analyst) *Dec 2020 – Aug 2022*
Infosys Ltd. (Client: Verizon), Hyderabad, India

- Developed and optimized Pega case types, decision tables, and business flows for marketing offer lifecycle
- Automated repetitive processes using declarative rules, agents, and job schedulers, improving productivity by 30%
- Designed reusable REST/SOAP APIs for database integration and data synchronization with Oracle SQL
- Debugged and resolved issues using SQL, Postman, and Pega tools, maintaining workflow stability across environments

SELECTED PROJECTS

Multi-Label Ordinal Modeling for SDoH Prediction (Thesis): Built a transformer-based pipeline predicting 15 SDoH categories on a 0-3 ordinal scale from 2,636 clinical notes. Implemented CORN ordinal heads with CEM-ORD hybrid loss, achieving 92.3% accuracy. Integrated active learning and Captum explainability.
VitaScan / AI-Powered Symptom Checker: Developed an intelligent health assistant leveraging Large Language Models (OpenAI/Gemini) integrated with Retrieval-Augmented Generation (RAG) using PostgreSQL pgvector extension for semantic search across embedded medical documents. Implemented vector similarity-based recommendation engine for personalized nutrition plans and multi-tier context-aware conversational AI with evidence-backed triage classification (home care, PCP, urgent care, ER), ensuring red-flag detection.
NeuroHandSim / Brain-Computer Interface: Built a real-time BCI system using MUSE EEG sensors with deep learning models to classify EEG patterns and control virtual hand gestures.
MURA Classification / Medical Imaging: Developed DenseNet201 and VGG16 models with transfer learning

for musculoskeletal abnormality detection. Created Streamlit interface with GradCAM visualization for clinical interpretability.

Watermark Faculty Automation System: Automated AACSB form submissions and grading workflows using Python, Selenium, and BeautifulSoup. Leveraged GPT models for intelligent data formatting before submission, reducing manual entry by 70% and integrating with LMS.

Human Activity Recognition: Built an ensemble ML model using RGB-Pose for fall detection, deployed on Raspberry Pi with AWS SNS email notifications.

CERTIFICATIONS

IBM Data Science Professional — Google IT Automation with Python

Applied AI: Building NLP Apps with Hugging Face Transformers — AWS Certified Cloud Practitioner (CLF-C02) Cert Prep

Certified Pega Senior System Architect (CSSA) — Certified Pega Decision Consultant (CPDC)

LEADERSHIP

Mentored junior engineers and interns across AI, full-stack, and Pega teams. Led cross-functional projects involving automation, evaluation, and AI integration. Managed high-impact modules for enterprise clients.