ANIKA VERMA

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Education

University of Southern California (USC) — **Los Angeles, US | Aug 2024 - May 2026**
Master of Science in Computer Science — **GPA: 3.50/4.0**

S.R.M Institute of Science and Technology — **Tamil Nadu, India | Jun 2018 - May 2022**
Bachelor of Technology in Computer Science Engineering — **GPA: 3.8/4.0**

Experience

Research Assistant – Transactional Graph Databases (in collaboration with eBay) — Los Angeles, USA | May 2025 – Aug 2025

- Improved backend throughput by 15% and reduced query planning time by 35%.
- Collaborated with eBay to build scalable OLAP optimized storage using UNIX automation, microservices for efficient data processing.
- Designed and implemented a scalable JanusGraph FoundationDB system using Java and Gremlin, improving query efficiency by 25%
- Automated performance benchmarking through CI/CD pipelines and shell scripts, reducing manual testing effort by 20%.
- Benchmarked In-Memory, BerkeleyDB, and FoundationDB (FDB) backends, FDB achieved 20–30% lower latency fault tolerance.

HighRadius Corporation, Associate Consultant 2 — Hyderabad, India | Jun 2022 - Jul 2024

- Developed Python and SQL based ETL workflows integrated the Cash Application module across diverse ERP systems for global clients.
- Automated Account Receivables (AR) reconciliation and secure SFTP data exchange, reducing invoice matching time by 98%.
- Optimized CI/CD data pipelines and analyzed large-scale Order to Cash (OTC) workflows, enhancing AR reconciliation by 40%.
- Enhanced SQL queries and optimized data models, boosting pipeline performance by 20%.

Projects and Hackathons

X-GastroAI - Explainable Gastric Cancer Detection (ResNet-50, GasHisDB160, PyTorch, Grad-CAM, Streamlit) — Oct 2025

- Fine-tuned a ResNet-50 CNN on the GasHisDB160 histopathology dataset using transfer learning and Cross-Entropy loss with the Adam optimizer, achieving **97.6% accuracy**, 98% precision, and 97% F1-score in cancer tissue classification.
- Integrated Grad-CAM explainability into the development pipeline to visualize model attention on pathological regions, enhancing interpretability and clinical trust, deployed results via an interactive Streamlit UI for real-time inference visualization.

Echoes (AV-HuBERT 433h, Fairseq, FlaskMail, MediaPipe, OpenCV, PyTorch, React, SMTP) — Sept 2025

- Award-winning hackathon project revolutionizing speech therapy gaps for patients with autism and post-stroke challenges.
- Developed an AI lip-reading assistant integrating AV-HuBERT for speech decoding and DeepFace for emotion tracking,
- Implemented real-time camera stream analysis with automated SMTP real-time based report generation to the doctor.
- Fine-tuned HuBERT on a 20-word vocabulary, achieving <300 ms inference latency and 90% emotion detection accuracy.

PostgreSQL B-Tree Index Optimization (C, SQL, PostgreSQL, Docker, GDB) — Aug 2025

- Enhanced PostgreSQL's B-Tree indexing mechanism by modifying source code to optimize query traversal.
- Optimized leaf-page prefetching and linear-scan optimization algorithms within PostgreSQL internals.
- Validated on JOB/IMDB benchmarks for cloud data environments.
- Achieved 15% reduction in query latency and significantly improved index scan throughput and scalability.

SeeBeyond - For visually challenged (BLIP2, LLaVA, React, OCR) — Jan 2025

- Built an image captioning evaluator for visually impaired using VizWiz (39K+ images) dataset.
- Fine-tuned BLIP-2 and analyzed LLaVA for multimodal understanding, achieving 91% image-to-text translation accuracy and strong
- performance across BLEU, ROUGE, METEOR, and cosine similarity metrics.

Moodify Market (Blockchain, Next.js, Node.js, MongoDB, Crypto, SpotifyAPI, DAIN, Metaplex) — Nov 2024

- Developed a decentralized web application for emotion-based music curation using blockchain and AI-driven personalization.
- Integrated Spotify API with Metaplex and DAIN frameworks, implemented MongoDB backend for data management.
- Delivered a scalable, interactive platform featuring real-time emotion-to-music mapping and robust backend integration.

Defense Services Hackathon (OpenCV, YOLO, Python) — Mar 2021

- Built a border surveillance system for real-time object detection.
- Trained YOLO models with Darknet and OpenCV to identify intrusions and obstacles across varied terrains.
- Improved detection accuracy to 92% and generated real-time alerts for field operators.

Technical Skills

Languages: Python, C/C++, SQL (Postgres MySQL), HTML, CSS
Machine Learning & Deep Learning: PyTorch, TensorFlow, Hugging Face, Scikit-learn, OpenCV, YOLO, Regression, SVM, Trees, Grad-CAM, Feature engineering, Cross-validation, hyperparameter tuning, CNN, Adam Optimizer, SGD, POS Tagging, Embeddings
Large Language Models & AI: LangChain, Hugging Face Transformers, RAG, Vector Search, Prompt Engineering, Transfer learning
Data Engineering & Cloud: AWS, Databricks, Snowflake, Docker, ETL
Developer Tools & Frameworks: Git, GitHub, Docker, React, Agile, Jira, GDB, IntelliJ, VS Code