NISHANT SHAH

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Summary

Computer Science student specializing in AI with hands-on experience in Machine Learning, Deep Learning, Computer Vision, and data-driven analytics. Developed and deployed scalable AI models achieving 90%+ classification accuracy across healthcare, domain adaptation, and assistive intelligence applications. Skilled in Python, TensorFlow, scikit-learn, FastAPI, and modern full-stack architectures, with experience translating complex data into production-ready intelligent systems and real-world solutions.

Education

Amrita Vishwa Vidyapeetham, Amritapuri (2023 – Present)
B.Tech in Computer Science Engineering (AI)

Bal Kalyan Vidhya Mandir Secondary School (2020 – 2022)
+**2**, Computer Science

Skills

Languages:	Python, Java, C, SQL, JavaScript, TypeScript
Frameworks & Libraries:	React.js, Node.js, Express.js, FastAPI, TensorFlow, PyTorch, Keras, scikit-learn, OpenCV, Hugging Face Transformers, LangChain, LangGraph, BioPython, PySam
Databases & Cloud:	MongoDB, PostgreSQL, Supabase, SQLite, AWS
Tools & Platforms:	Docker, Kubernetes, Git, Linux, Raspberry Pi, Tableau, Postman, VS Code, Jupyter Notebook
AI/ML & Technologies:	Machine Learning, Deep Learning, Computer Vision, Natural Language Processing (NLP), Large Language Models (LLMs), Retrieval-Augmented Generation (RAG), AI Agents, Agentic AI, Generative AI, Image Segmentation, Knowledge Graphs, Genome Assembly
Web Development:	MERN Stack, REST APIs, Authentication (JWT), Microservices

Research & Project Experience

NeuroBank May 2026 – Jul 2026

- Developed NeuroBank, an AI-powered banking assistant using Python, FastAPI, SQLite, and LLMs to automate banking services through natural language interactions.
- Designed a multi-agent AI architecture with NLU, Planner, Reflection, and Execution agents for accurate intent recognition, reasoning, and secure task execution.
- Integrated LLM function calling with backend APIs to enable conversational workflows for balance inquiries, fund transfers, transaction history, and financial assistance.
- Built a secure, scalable backend with authentication, persistent data management, and modular microservices, enabling reliable and extensible AI-driven banking operations.

ClarityStack Feb 2026 – May 2026

- Designed and developed an end-to-end local-first knowledge management system that extracts long-form AI chat histories into structured, version-controlled knowledge bases while maintaining raw transcripts as immutable ground truth.
- Built a distributed microservices backend using FastAPI and SQLite, incorporating dedicated services for learning optimization (SRS), document editing, and specialized analytics (ThreatLens).
- Developed a cross-platform client stack comprising a Next.js web platform and a native Android application using Jetpack Compose, delivering a seamless multi-device user experience.
- Automated long-term knowledge retention pipelines by linking markdown and rich-text editing workflows directly to Spaced Repetition Systems (SRS) and temporal tracking cards.

Automated Diabetic Retinopathy Detection using Deep Learning Sep 2025 – Jan 2026

- Engineered deep learning pipelines using EfficientNet, ConvNeXt, and SwinTiny for multi-class classification of Diabetic Retinopathy from retinal fundus images.
- Integrated Grad-CAM explainability visualizations to enhance model interpretability and highlight clinically relevant regions.

- Achieved 90.42% classification accuracy with 94.17% Quadratic Weighted Kappa (QWK) score, indicating high clinical agreement.

Domain Adaptation Jan 2025 – Jun 2025

- Engineered CNN-based models for cross-domain image classification on MNIST, MNIST-M, Caltech-256, and Office-31.
- Integrated CORAL loss and data augmentation for robust feature alignment.
- Applied transfer learning to reduce dataset bias and enhance generalization.

Genome Assembly & SARS-CoV-2 Quantification Apr 2024 – Oct 2024

- Engineered genome assembly pipelines using de Bruijn graphs for quantifying closely related viral strains.
- Optimized k-mer selection using machine learning techniques to improve assembly accuracy and robustness.
- Extended the bioinformatics workflow for SARS-CoV-2 and Omicron quantification by integrating variant calling (PySam), mutation annotation (Nextclade, CoV-GLUE), and phylogenetic tree generation (ETE3, Biopython).
- Enhanced mutation sensitivity and strain differentiation capabilities for large-scale viral surveillance and genomic analysis.

DRISTI: Multi-Modal IoT Assistive System for the Visually Impaired Mar 2024 – Sep 2024

- Architected a Raspberry Pi 5-based wearable platform integrating YOLOv8-nano, ultrasonic ranging, face recognition, and image captioning.
- Achieved 98.42% detection precision with 25 ms latency in real-time indoor navigation.
- Integrated multimodal voice and haptic feedback systems for enhanced situational awareness.
- Optimized KNN-based on-device face recognition with dynamic enrollment, eliminating cloud dependence.

Certifications

- **Associate Data Analyst**: Issued by DataCamp Feb 2026
- **Exploring Artificial Intelligence: Use Cases and Applications**: Issued by AWS Academy Sep 2025
- **AWS Academy Cloud Foundations**: Issued by Amazon Web Services Aug 2025
- **Machine Learning A-Z: AI, Python & R**: Issued by Udemy May 2025
- **AI/ML for Geodata Analysis**: Issued by Indian Institute of Remote Sensing (IIRS), ISRO Sep 2024

Achievements & Publication

- **First Place Winner** : Hackathon organized by NitroStack and WeKan
- **DRISHTI: An Edge-AI and IoT Multimodal Assistive Navigation System for the Visually Impaired**: Presented at ICTIS 2026 Conference, Bangkok, Thailand
- **Data Fellowship 2025**: Selected for data-driven research and civic tech innovation.
- **Chancellor's Scholarship**: Amrita Vishwa Vidyapeetham
- **Mahatma Gandhi Scholarship**: Embassy of India – Recognized for outstanding academic performance.