

Kenil Patel

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EDUCATION

Northeastern University, Khoury College of Computer Science | Boston, MA
Master of Science in Computer Science

Expected: May 2027

Vellore Institute of Technology | Vellore, India
Bachelor of Technology in Computer Science

August 2020 – May 2024

EXPERIENCE

Sardar Vallabhbhai National Institute of Technology | Surat, India

December 2024 – July 2025

Junior Research Fellow

- Developed an automated data extraction algorithm in Python (Pandas, NumPy) that reduced manual traffic data analysis from 3–4 weeks to under 30 minutes, enabling rapid research iterations.
- Engineered YOLO-based computer vision models in PyTorch to detect and track vehicle trajectories from drone traffic footage, achieving ~75% accuracy at 150m altitude and ~90% accuracy at <100m altitude.
- Implemented GPU-enabled preprocessing pipelines that automated cleaning, batching, and direct transfer of multi-GB datasets to GPUs, establishing the infrastructure for scalable deep learning experiments.
- Collaborated in a 3-member team to design modular Python codebases for data collection, annotation, and feature extraction, improving dataset preparation efficiency and reusability.

Isix Software | Surat, India

June 2024- November 2024

Software Developer

- Developed and deployed .NET applications (C#, ASP.NET, SQL Server), delivering 10+ new features and enhancements for enterprise clients.
- Collaborated with 5+ clients to gather requirements, implement solutions, and ensure successful feature delivery.
- Managed project workflow in Azure DevOps, creating roadmaps, epics, and user stories that improved sprint planning and delivery tracking for a 6-member team.

PROJECTS

RAG Knowledge Assistant | AWS, PostgreSQL (pgvector), FastAPI, React, OpenAI

- Designed and deployed** a cloud-native document Q&A system, enabling users to upload and query files with natural language, achieving **95%+ retrieval accuracy** on test documents.
- Implemented database schema** in PostgreSQL with pgvector, storing and indexing **10,000+ text chunks** with vector embeddings to support efficient **top-k similarity search in <200ms**.
- Engineered RESTful APIs** with FastAPI on AWS Lambda + API Gateway, orchestrating document ingestion, embedding generation, and query answering with Retrieval-Augmented Generation.
- Developed a React frontend** with real-time chat UI, increasing user engagement by **40% compared to static search**.

YOLO + ByteTrack Vehicle Trajectory Extraction | Python, PyTorch, OpenCV

- Developed a computer vision pipeline using **YOLO object detection** and **ByteTrack tracking** to identify and track vehicle trajectories from drone traffic videos.
- Achieved **~75% detection accuracy at 150m altitude** and **~90% accuracy at <100m**, enabling reliable traffic flow analysis across conditions.
- Automated **data preprocessing and GPU-enabled training workflows**, streamlining experimentation and scalability.

Supply Chain Management Using Blockchain Technology

- Deployed **Ethereum smart contracts** on Sepolia testnet via Remix IDE, tracking **100+ products** across the supply chain.
- Developed **RESTful APIs** enabling stakeholders to **add products, update shipments, and verify 500+ transactions**, improving operational transparency.
- Launched system on a stable blockchain network with **real-time monitoring** and automated updates, ensuring **99% uptime** and compliance.

SKILLS

Languages: Python, Java, Golang, JavaScript, C++, SQL, .NET

Frameworks/Libraries: Flask, FastAPI, TensorFlow, PyTorch, scikit-learn, LangChain

Databases: PostgreSQL, MongoDB, Firebase

DevOps/Cloud: AWS, Azure, Docker, Git