Aniket Patel

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EDUCATION

ASHLAND UNIVERSITY Ashland, OH
Bachelor of Science May 2026
Major: Computer Science
Minors: Mathematics, Management Information Systems, Honors Program
GPA: 3.7/4.0

WORK EXPERIENCE

Ashland University Ashland, OH
AI/ML Researcher January 2024 - Present

- Developed an end-to-end AI + IoT system for crop recommendation, automated irrigation, and plant disease detection, boosting crop selection accuracy by 30%, reducing water waste by 25%, and achieving 98% disease detection accuracy.
- Conducted benchmarking of T5 Small, YOLOv5, and custom CNN models across CPU, GPU, and TPU platforms, optimizing computational efficiency and memory usage for large-scale AI workloads.
- Evaluated multiple small and large transformer-based LLMs on 1,600 cases to identify bias and reasoning reliability patterns.
- Compared various regression models on datasets with varying feature complexity to guide machine learning model selection.

Wilkes University Wilkes-Barre, PA
Deep Learning Researcher June 2023 - August 2023

- Created a custom TensorFlow model for protein-protein interaction-site prediction, achieving 15% higher accuracy than existing models by analyzing and improving upon DeepPPISP and D-PPIsite architectures.
- Enhanced model performance by 25% through data normalization, outlier removal, and dimensionality reduction techniques.

PROJECTS

Coursewiser: *LLaMA 3.2 3B, AWS EC2, React, Node.js, Firebase*

- Developed a course-specific AI teaching assistant by fine-tuning LLaMA 3.2 3B on lecture slides, notes, and course materials to build a context-aware reasoning model, improving academic query understanding accuracy by 70%.
- Performed a two-phase fine-tuning pipeline that first aligned the model with course semantics and then with instruction-response behavior, enhancing contextual coherence and response quality by 45%.
- Deployed optimized LLM on AWS EC2 with low-latency API and integrated into React web app with feedback-driven refinement.

AI Theft Detection System: *YOLOv8, VideoMAE, Multimodal LLM, OpenCV, FastAPI, SQLite*

- Engineered a real-time multimodal theft detection system that improved surveillance accuracy by 65% by integrating YOLOv8 for object detection, VideoMAE for motion analysis, and a reasoning-capable multimodal LLM for contextual reasoning.
- Reduced false alerts by 40% with an AI reasoning layer that cross-checks object and action detections using temporal context.
- Cut manual video review time by 80% by building an end-to-end FastAPI reporting pipeline with async jobs and HTML templates.

Fathom: *Electron, React, FastAPI, TailwindCSS, TypeScript, SQLAlchemy, Plotly, Ollama*

- Created an AI data analysis desktop app using Electron and FastAPI that allows users to query databases in natural language, reducing manual SQL querying time by 80%.
- Implemented a hybrid AI + SQL pipeline with locally hosted LLMs via Ollama for offline, privacy-preserving analytics.
- Improved accuracy and clarity by combining semantic parsing, SQLAlchemy queries, and Plotly visualizations linked to data.

MarketMinds: *React, FastAPI, CrewAI, Gemini, LangChain, SerpAPI*

- Built a multi-agent AI system using CrewAI and Gemini LLM to automate product research, reducing manual analysis time by 60%.
- Constructed a pipeline of Product, Competitor, Review, and Strategist agents with LangChain for LLM orchestration and reasoning.
- Integrated SerpAPI and FastAPI backend with a React frontend to provide dynamic insights and strategic recommendations.

TECHNICAL SKILLS

Programming Languages: Python, Java, C++, SQL (MySQL, PostgreSQL), JavaScript, TypeScript
AI/ML Frameworks & Libraries: PyTorch, TensorFlow, Scikit-Learn, Pandas, NumPy, Matplotlib, Seaborn, SciPy, LangChain, LangGraph
Deep Learning & NLP: Transformers, CNNs, LLaMA, BERT, GPT, NLTK
MLOps & Deployment: FastAPI, Flask, ONNX, TensorFlow Lite, MLflow, Docker, Kubernetes
Cloud & Tools: AWS, GCP, Microsoft Azure, Git, GitHub, Jupyter, Visual Studio Code, Google Colab

RESEARCH & PUBLICATIONS

Scaling Effects on AI Fairness: An Empirical Analysis of Stereotypical Bias in State-of-the-Art Transformer-Based Models
Comparative Analysis of Regression Models on Datasets with Varying Feature Complexity
Performance Analysis of Deep Learning Models on Modern Hardware Accelerators: A Comparative Study of CPU, GPU, and TPU