AKSHAY PATEL

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Education

Master of Science in Industrial Engineering Jan 2024 - Dec 2025
West Virginia University,Morgantown, WV

Bachelors in Technology in Chemical Engineering Aug 2019 - May 2023
National Institute of Technology,Bhopal,India

Technical Skills

Languages: Python, C++, JavaScript, TypeScript, SQL,Latex
Frameworks & Libraries: FastAPI, React 19, TailwindCSS, Scikit-Learn, PyTorch, Optuna, SHAP, LIME, Sentence-Transformers
Data Science & Analytics: Time-Series Analysis, Regression Modeling, Bayesian Statistics, Hypothesis Testing
Cloud & DevOps: AWS (EC2, S3, Lambda), Airflow, Docker, Kubernetes, Elastic Stack (Elasticsearch, Logstash, Kibana)
Databases: PostgreSQL

Relevant Experience

CyberSecurity Analyst | Data Driven WV Aug 2025 - Present
West Virginia University,Morgantown, WV

- Built a semantic NLP scanning engine using transformer models (BERT/RoBERTa) with sentence embeddings, cosine similarity, and batch inference for sub-second classification of log and code artifacts.
- Designed a hybrid pipeline combining regex-based rule matching with transformer-driven semantic detection to reduce false positives and capture intent-level vulnerabilities.
- Introduced adjustable confidence thresholds and precision–recall tuning, enabling enterprise teams to configure detection sensitivity and improve triage accuracy.
- Developed asynchronous scan execution pipelines using worker processes and UUID-based job tracking, supporting real-time progress reporting and audit-ready activity logs.
- Implemented Redis-backed caching, structured error handling, input sanitization, and secure REST APIs for scalable internal security and compliance automation.

Graduate Research Assistant – Energy & Data Analytics | WVU P2 Lab Jan 2024 - Present
West Virginia University,Morgantown, WV

- Led a team under the supervision of the PI to conduct data-driven energy audits and predictive modeling across 9 commercial and industrial facilities, identifying over $150,000 in risk-adjusted energy savings and optimizing USDA REAP funding allocation.
- Curated and normalized facility level energy datasets (equipment inventories, load profiles, operating schedules) to build baseline consumption models and simulate retrofit scenarios, quantifying energy savings and operational efficiency gains.
- Applied statistical regression and engineering economics (ROI, payback period) to evaluate project feasibility and estimate 120 tons/year reduction in Greenhouse Gas emissions.
- Developed Excel based data visualizations and energy savings dashboards synthesizing analytical results into grant compliant reports, directly supporting over $1 million in successful USDA REAP applications.
- Delivered three technical webinars on *Gamification in Energy Saving*, *Motor Efficiency Measures*, and *Boiler System Optimization*, communicating complex analytical insights to diverse stakeholders.
- Led end-to-end outreach and data-driven feasibility assessments for Combined Heat and Power (CHP) boiler system across West Virginia's wood products industry, expanding the lab's research and impact footprint.

Data Science Intern Jan 2023 - Jun 2023
BlueSpace Labs,Gurugram,Haryana

- Automated daily ETL workflows in Apache Airflow, cutting manual hand-offs and enabling near realtime analytics for sales and marketing teams
- Conducted A/B testing experiments on website features; performed statistical analysis and delivered recommendations that boosted clickthrough rates by 8%
- Scraped and parsed publicly available datasets to enrich internal data and increasing model features
- Collaborated with cross-functional teams, including engineers, product managers, and operations, to translate business needs into actionable data solutions

Projects

RAGvix - ArXiv Research Assistant | *Link* Oct 2025 – Nov 2025

- Optimized RAG pipeline achieving 24% latency reduction (2209ms→1698ms P95) through GPU acceleration, FAISS optimization, and hybrid search fusion across 1,668 academic paper chunks with 91% Recall@10

Autonomous Mobile Robot Path Planner | *Link* June 2025 – July 2025

- Designed and benchmarked path planning algorithms (Dijkstra, A*, RRT, RRT*, PRM), achieving up to 30% lower path cost across scenarios while enabling real-time replanning with dynamic obstacle avoidance and path smoothing techniques.

Time-Series Clustering for Industrial Energy Optimization | *Link* Oct 2024 – Nov 2024

- Clustered 27 time-series sensor datasets with TimeSeriesKMeans (CH score: 82.04), uncovering operator inefficiencies and reducing analysis time 80%, driving measurable energy and quality improvements.

Health Risk Prediction via Multi-Level Modeling (BRFSS + EPA) | *Link* Apr 2024 – May 2024

- Built a data pipeline integrating BRFSS + EPA datasets for early-stage cancer risk prediction (ROC AUC: 0.82), applying SMOTE, feature engineering, and Bayesian tuning to improve minority class recall.