

# KETU PATEL

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## EXPERIENCE

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### Software Engineer

July 2024 – Present

MAXISIQ

Arlington, VA

- Spearheaded the design and development of a real-time threat detection and enforcement pipeline that reduced response time from **5 minutes to under 1 minute** and improved policy violation detection by **20%**, enabling real-time security enforcement across distributed systems.
- Co-engineered an LLM-powered proposal generation platform that analyzes **300+ government opportunities daily** and generates **10 high-match proposals/day**, supporting **5 capture teams**, contributing to **\$10M+ in contract wins**, and reducing turnaround time **from weeks to 2 hours**.
- Optimized a distributed *Rust/Python* policy engine to reduce end-to-end enforcement latency by **60% (500ms to 200ms)** through improved execution flow and *PostgreSQL* access patterns.
- Architected and implemented **20+ production REST API endpoints** in *Rust* to integrate *Palo Alto* firewalls with internal enforcement, frontend, and notification services, enabling real-time event routing platform-wide.
- Designed fault-tolerant request handling using *logging*, *retries*, and *graceful degradation*, ensuring continuous system operation during **5+ API outages**.
- Built a **Rust-based inference service** for a **PyTorch steganography detection model**, enabling low-latency real-time image classification in **SIEM pipelines**.

### Software Engineer Intern

Aug. 2022 – Dec. 2022, May 2023 – Aug. 2023

MAXISIQ

Arlington, VA

- Re-architected a high-throughput log processing pipeline handling thousands of daily files, reducing ingestion time by **90% (50s → 5s)** and enabling near real-time monitoring.
- Owned development of a latency-sensitive file transfer feature spanning **7 services**, coordinating cross-service APIs to achieve **95%+ hardware utilization**.
- Developed components within a *mission-critical distributed system* supporting a **\$50M+ defense contract**, deployed across **10,000+ operational missions**.
- Engineered modular virtualized environments for development, testing, and CI, reducing setup overhead and supporting a **15-engineer** distributed systems team.

### Software Engineer

July 2021 – Feb. 2022

eCom Elite Consulting

Rockton, IL

- Architected and implemented a high-throughput product matching system that scaled **from 300 to 3,000 matches/day** at **98.5% accuracy**.
- Created and operationalized a dynamic pricing engine that increased average profit margins by **50% over a 6-month A/B test**.
- Engineered *Python* automation pipelines that doubled product throughput **from 500 to 1,000 listings** and eliminated **100+ hours/week** of manual work.

## PROJECTS

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### Personal Finance Insight Engine | *Rust, ML, LLM, Semantic Caching*

April 2026

- Designed a semantic caching layer using cosine similarity, achieving **60% cache hit rate**, reducing query latency **from 82ms to 32ms**.
- Built a natural language query system that translated plain-English questions into *SQL* for local financial analysis with anomaly detection.
- Developed an ML-based transaction categorization system across 12 categories with an online learning pipeline that improves through user corrections

## EDUCATION

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### Rensselaer Polytechnic Institute

May 2024

*Bachelor of Science in Computer Science and IT & Web Science*  
*Magna Cum Laude, Dean's Honor List*

GPA: 3.71/4

**Coursework:** Machine Learning, Parallel Programming, Computer Architecture, Network Science

## SKILLS

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**Languages:** Python, Rust, Go, C/C++, SQL, JavaScript, TypeScript, Java

**Infrastructure & Tools:** Kafka, Docker, AWS, GitLab CI/CD, VMware, Splunk, Git

**ML & Data:** Transformer Models, Feature Engineering, Semantic Caching, Model Evaluation