

# Rudra Patel

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## Education

Lewis University, Romeoville, IL

Expected: May 2026

Bachelor of Science in Computer Science, Concentration in Artificial Intelligence

GPA: 3.87 / 4.0

Dean's List (All Semesters) | Relevant Coursework: Machine Learning, AI, Data Mining, Software Engineering

## Experience

Hometown Liquor | React, TypeScript, Python, FastAPI, PostgreSQL, Tailwind, Docker

May 2025 - Jul 2025

Software Engineer (Contract)

Remote

- Increased monthly revenue by **45%** to **\$40,000** by building a full-stack e-commerce platform for **750+** products with mobile-first design, PostgreSQL full-text search achieving sub-200ms response times, and checkout flow supporting guest and authenticated purchases
- Built **89** REST API endpoints across **15** route modules using FastAPI and async PostgreSQL, implementing JWT authentication with tokens, role-based access control, and error handling
- Automated POS integration synchronizing inventory across distributed store network with API client handling pagination for **100+** items per batch, SKU matching with conflict resolution, eliminating manual inventory updates

QuizMaster | React, JavaScript, Node.js, Tailwind, Google Cloud Platform, Github Actions, Firebase

Aug 2025 - Dec 2025

Lead Developer (Capstone) - Led a team of 6 developers

Romeoville, IL

- Eliminated N+1 query pattern through network waterfall analysis, reducing dashboard load time from **30+** seconds to sub-5 seconds by implementing batch Firebase queries with a caching layer, consolidating **6** API calls to 1 endpoint
- Reduced production bundle **89%** (**16.1MB to 1.7MB**) and cut cloud hosting costs **37%** by converting 15MB of PNG assets to WebP, removing **9** unused Firebase Functions, and eliminating 26 redundant npm packages
- Migrated **17** Firebase Functions from deprecated Node.js 16 to Node.js 20 ahead of the October 2025 deadline, implementing error handling and async patterns across **1,474** lines of cloud function code
- Refactored component architecture to eliminate **80%** of redundant database reads by extracting business logic into service layer, implementing React Context API for state management, and consolidating duplicate component render

## Projects

Analytics Pipeline | React, Node.js, TypeScript, Redis Streams, TimescaleDB, Docker

Jan 2026

- Built event processing pipeline handling **2.4M** events over 24 hours (**28** events/sec, **280** events/sec burst) with Redis Streams consumer groups achieving **<10ms** latency and zero message loss
- Reduced dashboard query latency **55x** (**1.8s → 33ms**) by implementing TimescaleDB continuous aggregates with 3 materialization levels (minute/hour/day) and automatic refresh policies, eliminating real-time aggregation
- Developed REST API with **5-38ms** response times using strategic caching (**5-10s** TTL) and continuous aggregates, powering React dashboard with auto-refresh polling (**5s** intervals) and Recharts visualization across **2.4M+** records

Social Media Sentiment Classifier | Python, Scikit-learn, TF-IDF, GridSearchCV

Nov 2025

- Built a sentiment classification system comparing three approaches on **241K** social media posts: Logistic Regression with TF-IDF (**78%** accuracy), Multinomial Naive Bayes with Bag-of-Words (**67%**), and pretrained RoBERTa (**54%**)
- Implemented GridSearchCV with 5-fold cross-validation testing **192** parameter combinations (max\_features=25k, C=1.0, sublinear\_tf=True), achieving **78%** test accuracy demonstrating strong generalization
- Validated data quality impact through cross-dataset evaluation. RoBERTa hit **74.6%** on tweet\_eval but dropped on noisy Kaggle data, while Logistic Regression showed the opposite trend, proving domain alignment outweighed model complexity

## Skills

Languages: Python, Java, JavaScript/TypeScript, SQL, HTML/CSS

Frameworks & Tools: React, Node.js, Spring Boot, FastAPI, Tailwind, Docker, CI/CD, GitHub Actions

Database & Cloud: PostgreSQL, Redis, Firebase, MySQL, AWS, GCP, Azure, TimescaleDB

ML/Data & Architecture: Scikit-learn, TensorFlow, Pandas, REST APIs, System Design, Microservices, Event-driven Architecture