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*
- **Relevant Coursework:** Data Structures and Algorithms, Machine Learning, Software Engineering, Artificial Intelligence

Experience

Hometown Liquor | *React, TypeScript, Python, FastAPI, PostgreSQL, Tailwind, Docker* **May 2025 - Jul 2025**
Software Engineer (Contract) *Braceville, IL*
- Increased monthly revenue **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 achieving **99.9%** uptime on critical operations
- 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
- Built an admin dashboard with real-time analytics (revenue trends, order patterns, top products), bulk email system with customer segmentation, and CRUD operations for 5 modules reducing administrative overhead by **60%**

QuizMaster | *React, JavaScript, Node.js, Tailwind, Google Cloud Platform, Github Actions, Firebase* **Aug 2025 - Dec 2025**
Lead Developer (Capstone) *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 renders

Projects

ExoViz | *React, TypeScript, Spring Boot, FastAPI, PostgreSQL, Docker* **Dec 2025 - Present**
- Building an exoplanet exploration platform processing **5,000+** NASA records with real-time 3D visualization using Three.js, enabling astronomers to filter by habitability score, stellar type, and orbital characteristics
- Architected 3-service microservices backend (Spring Boot for data aggregation, FastAPI for ML inference, Redis for caching), reducing query latency by **50%**, developed ML model predicting planet habitability with **82%** accuracy using Scikit-learn

Social Media Sentiment Classifier| *Python, Scikit-learn, TF-IDF, GridSearchCV* **Nov 2025**
- Built a sentiment classification system achieving **78%** accuracy on **241K** social media posts using hyperparameter-tuned Logistic Regression with TF-IDF vectorization, outperforming pretrained RoBERTa **(54%)** on noisy data through GridSearchCV with 5-fold cross-validation
- Demonstrated deep learning limitations by comparative analysis showing domain-aligned RoBERTa (**74%** on tweet_eval) vs task-tuned traditional models (**78%** on Kaggle), proving model-data alignment matters more than architectural complexity

MasterChef Claude | *React, Claude API, Tailwind, Firebase, Docker, AWS* **Apr 2025 - May 2025**
- Built an AI recipe generator integrating Claude API, serving personalized recipes in under **5** seconds through optimized prompt engineering and async request handling for dietary restrictions and ingredient preferences
- Simplified deployment with Docker containers and automated CI/CD pipeline on AWS, reducing deployment time by **80%**

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