Arnav Kanwal

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Skills

Languages: Python, C/C++, JavaScript, Go, SQL, HTML/CSS
Technologies: Git, Docker, AWS, Azure, React, Angular
Awards: 2022 NYU Technology, Culture and Society Writing Award for Best Literary Criticism

Experience

Software Engineer, Hubbell Inc – Boonton, NJ   Jan 2024 – Present
- Develop embedded Linux software in C/C++ for teleprotection products, spanning full-stack maintenance, Linux system configuration, peripheral integration, and real-time data exchange over utility networks
- Refactored internal IPC Library, used for communication across distributed processes via Linux pipes; reduced CPU utilization by 4%, optimized packet creation, simplified core architecture, and created software watchdogs to monitor for stalling processes
- Integrated new hardware peripherals driving over $350K increase in sales; developed multi-packet protocol for communication over CAN bus, controller integration logic, and C++ RESTful API endpoints
- Deployed NGINX as a reverse proxy server eliminating over 20+ critical security vulnerabilities including cross-side scripting; modernized legacy web handler code generation and built tooling to automatically update and cross-compile NGINX from source

Software Engineering Intern, Hubbell Inc – Boonton, NJ   May 2023 – Aug 2023
- Established dedicated Azure CI/CD pipeline with automated unit testing via webhooks, building C++ framework with Catch2 and simple hardware mocking, eliminating 4 hours of manual testing per release
- Created over 15% test coverage of REST API endpoints ensuring JSON and SQL data integrity; also automated code quality and documentation coverage via Doxygen and Cpplint

Lead Developer, NYU High Speed Research Network – New York, New York   Sep 2022 - Dec 2023
- Led a student engineering team in the development and deployment of a dashboard application enabling the allocation of high-performance network resources, collaborator permission and group management, and MAC address whitelisting (Next.js, Typescript, PostgreSQL, Kubernetes)

Projects

Smart Photo Album
- Built a fullstack AI retrieval photo album on AWS cloud infrastructure with event-driven architecture
- Setup requests via API Gateway; built Lambdas to service uploading photos and labeling with AWS's Rekognition model and utilize ElasticSearch for fast lookup and photo retrieval from an S3 bucket.

UFC Betting AI
- Deployed custom UFC fight classification ML models for real-time inference, trained with both XGBoost and PyTorch, achieving 64% accuracy rate on data independent of sportsbooks
- Leveraged, Flask, FastAPI, and Docker compose for both local development and deployment; created custom libraries for model inference and accessing feature stores

Patent Search Engine
- Preprocessed Harvard's US Patent dataset with Python and NLTK; created NLP search engine with TF-IDF and query expansion, achieving 87.4% ranked retrieval accuracy measured against manually annotated data

Education

New York University – BS in Computer Science, Minor in Mathematics   Sep 2020 - Jan 2024