Arnav Kanwal

arnavkanwal@gmail.com | linkedin.com/in/arnavkanwal | github.com/arniekanwal

Education

New York University — New York, NY
Bachelor of Science in Computer Science, Minor in Mathematics — *Sep. 2020 - Dec. 2023*

Experience

Hubbell Incorporated — Boonton, NJ
Software Engineer — *Jan. 2024 - Present*

- Develop and maintain firmware and backend code for SCADA-compliant teleprotection devices, enabling real-time communication for critical utility infrastructure (C/C++, Linux, Bash, Make, and SQL)
- Integrated a UART-to-CAN communication module, developing detection logic, polling functions, alarm triggers, and embedded web app handlers; built a CAN bus decoder to reduce debugging time by 30%
- Overhauled Linux-based pipe inter-process communication (IPC), preventing message overwrites and introducing software watchdogs of critical processes, reducing CPU overhead by 12%
- Collaborate with multiple teams to extend web API functionality and integrate new client features with TCP/IP-based SCADA network protocols, leveraging Wireshark to debug packet-level communication
- Refactored Azure CI/CD pipeline to include C++ linting and automate generation of Doxygen documentation, streamlining the code quality process

Software Engineering Intern — *May 2023 - Aug. 2023*

- Developed on-target software test framework for embedded teleprotection devices in C/C++ and Fructose, ensuring efficient memory management and reducing manual testing of configurations by 2 hours per test cycle
- Deployed an embedded web server on a network-accessible IP and created Python scripts to test API endpoints, ensuring reliable remote access and validate HTTP GET/POST responses

NYU High Speed Research Network — New York, NY
Undergraduate Developer/Project Lead — *Sep. 2022 - Dec. 2023*

- Led an undergraduate engineering team in the development of a dashboard application enabling the allocation of high-performance network resources, permission management, and device whitelisting utilized by outside collaborators of our lab (Next.js, Typescript, PostgreSQL)
- Created Python scripts to ingest Google Scholar data and leveraged GraphQL to create collaboration maps and identify potential cross-university relationships among NYU researchers

Projects

Soundscape | *AWS (EC2, SageMaker, DynamoDB, Cognito), Flask, OpenAI API*

- Developed and hosted full-stack website on AWS EC2 instance which generates song recommendations for user-uploaded images
- Hosted a Hugging Face Machine Learning model with Sagemaker to caption image labels and OpenAI API to convert labels into tailored song recommendations for different profiles

Smart Photo Album | *AWS (S3, ElasticSearch, Rekognition, Lex Chatbot, Lambda)*

- Designed a smart photo album utilizing S3 buckets for photo-storage and front-end hosting
- Implemented a Lex chatbot to allow users to perform natural language searches, translating queries into labels and retrieving tagged photos through ElasticSearch

NLP Patent Search Engine | *Python, NLTK*

- Pre-processed and manually annotated data from Harvard's US Patent Office dataset; built and tested a TF-IDF and query expansion-based NLP patent search engine with 87.4% ranking accuracy for patent retrieval

Algorithmic Trading Bot | *Python, Alpaca API, Web Scraping*

- Built a realtime trading bot which monitors stock-market conditions to algorithmically buy/sell ETFs with a mean-reversion strategy
- Live ETF data is scraped via Yahoo Finance and bot uses Alpaca API to retrieve technical indicators

Technical Skills

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