Arnav Kanwal

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Skills

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

Experience

Software Engineer, Hubbell Inc – Boonton, NJ   Jan 2024 – Present
- Maintain C/C++ system infrastructure code for SCADA-compliant teleprotection devices, ensuring real-time data exchange across critical utility networks
- Collaborated in redesign of controller's inter-process communication via Linux pipes, achieving 7% reduction in CPU utilization; minimized packet overhead, prevented message overwrites, and added software watchdogs to monitor critical processes
- Integrated a new UART-to-CAN communication module driving a $350K increase in 2024 sales; developed module detection logic, optimized hardware peripheral communication to CAN bus and DSP, and created RESTful API endpoints for configuring the module
- Refactored Azure CI/CD pipeline for remote terminal teleprotection products; automated over 20% documentation coverage of codebase via Doxygen and streamlined code quality standards via Cpplint

Software Engineering Intern, Hubbell Inc – Boonton, NJ   Aug 2023 – May 2023
- Introduced on-target unit testing of teleprotection product line, improving software debugging efficiency of control bus, utilizing C++ and Fructose to create lightweight tests without impacting CPU performance
- Developed regression tests for REST API endpoints of embedded webserver, saving over 2 hours per test cycle by deploying Python scripts on an Azure Linux server to send HTTP requests to test chassis and validate JSON response data

Lead Developer, NYU High Speed Research Network – New York, New York   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
- Deployed a Hugging Face Machine Learning model with AWS Sagemaker to caption labels from user-uploaded images and OpenAI's API to generate sentiment from labels and create song recommendations; hosted website on AWS EC2 instance

Smart Photo Album
- Designed a cloud-based photo storage application allowing users to voice and text-search for photos
- Leveraged AWS Suite, including S3 for front-end hosting and blob storage, ElasticSearch for fast retrieval, AWS Lex to disambiguate user searchers, and AWS serverless Lambda's to process requests

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

Education

New York University – BS in Computer Science, Minor in Mathematics   Sep 2020 - Dec 2023