Clay **Ndugga**

Software Engineer

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Summary

My Applied Mathematics and Engineering degree equips me with a unique skill set for tackling complex problems. By combining a Software Engineer's ability to effectively implement ideas with a Mathematician's emphasis on problem-solving, I can approach a wide range of challenges from a unique perspective. Committed to lifelong learning and quick adaptation to emerging technologies, I consistently aim to exceed project expectations, turning each obstacle into an opportunity for innovation.

Work Experience

Longview Systems — *Calgary, AB*

Software Engineer — *8 Months 2023*

- Built an **end-to-end IoT cloud solution** encompassing data ingestion, storage, and real-time decision-making through an **ML model**
- Designed and implemented a robust data ingestion system using REST APIs, achieving a 70% improvement in ingestion times.
- Modernized an existing codebase with best-practice **system design** patterns and migrated to **Azure/Databricks** cloud architecture
- Utilized Agile Scrum methodologies for CI/CD, while tracking project in Azure DevOps. (Jira Equivalent)
- ***Technologies:*** *Azure, Databricks, Python, SQL*

Boardwalk Real Estate — *Calgary, AB*

Machine Learning Engineer — *4 Months 2022*

- Built an **ML model** using **Tensorflow** to predict tenant lease renewals with 85% accuracy, reducing profit loss to empty properties
- Collected and processed over 1,000,000 data points from various sources including databases, surveys, and property management reports.
- Identified significant factors that effect the probability of a tenant renewing their lease
- Optimized the model by hyperparameter tuning and feature engineering, increasing precision metrics by 20% compared to baseline models
- ***Technologies:*** *Python, SQL, Jupyter, Pandas, NumPy, Scikit-Learn, Tensorflow*

Thesis

Deep Learning for Point Cloud Compression — *Link*

Ongoing: Sep 2023 - April 2024

- Conducted an extensive review of existing literature and integrated cutting-edge developments to establish an neural network architecture for point cloud data compression.
- Optimized TensorFlow code to efficiently process large-scale point cloud datasets, achieving significant improvements in resource utilization.
- ***Technologies:*** *Azure, Databricks, Python, Tensorflow*

Projects

Queen's Housing — *quhousing.com*

Full Stack Web Application

- **Deployed** a web application that allows students to share and discuss their rental experiences.
- Built a robust, scalable RESTful API backend using NodeJS and Express, incorporating authentication techniques for secure user sessions.
- Architeched a highly efficient database structure tailored to project needs, optimizing data storage and retrieval processes.
- ***Technologies:*** *Javascript, NodeJS, MongoDB, Express, Passport, Heroku, Tailwind CSS*

Genetic Algorithm PID Tuning — *Link*

Control Systems Engineering

- Optimized the performance of a PID controller for an unknown black box system using the genetic algorithm
- Merged principles from software engineering, control theory, and mathematical optimization showcasing innovative problem-solving abilities
- ***Technologies:*** *Matlab, Simulink, Pandas, Matplotlib*

Education

Queen's University — *Kingston, ON*

Applied Mathematics and Engineering — *2019 - 2024*

- Similar to Software Engineering with a focus on advanced mathematics
- ***Relevant Coursework:*** Statistical Modelling, Data structure's and Algorithms, Stochastic Processes', Operating Systems, Embedded Systems, Control Theory, Information Theory

Skills

Languages Python · C · JavaScript · TypeScript · SQL · MATLAB · HTML · CSS/SCSS

Other Pandas · Scikit Learn · Tensorflow · NodeJS · MongoDB · Express · React · Azure (Cloud Technologies) · Databricks