Basel Timothy Kamoua

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EDUCATION

University of Michigan, Ann Arbor, MI

Bachelor of Science in Engineering in Computer Science (Honors) *December 2021*
Engineering Honors Program *GPA: 3.82/4.00*
Coursework: Introduction to Operating Systems, Computer Networks, Intro to Computer Security, Web Systems, Data Structures and Algorithms, Computer Vision, Computer Organization

SKILLS

Programming/Scripting Languages: C++, Python, Java, C, JavaScript
Frameworks and tools: React, Flask, HTML/CSS, JavaScript, SQLite3, PyTorch, Git, AWS

EXPERIENCE

Software Development Engineer Intern

Amazon, Seattle, WA *May 2021 – July 2021*

- Increased Amazon Alexa inference model and framework compatibility by replacing the current inference backend with AWS SageMaker
- Implemented solution in existing Java backend codebase, performed asynchronous HTTPS POST requests to SageMaker endpoint using AWS Java SDK and Java Futures, retrieved data from backend inference engine using gRPC protocol buffers, tested new components using Junit5 unit test framework and mockito, deployed to Alexa codebase using CI/CD with Amazon pipelines/integration tests, created inference endpoints hosted with state of the art machine learning models using AWS SageMaker, and performed performance/cost analysis using AWS CloudWatch and AWS Cost Explorer to prepare solution to meet service level agreements. Continuously iterated on my solution design through code reviews, design reviews, and presentations.
- Improved testing workflow for Alexa research scientists by decreasing the time it takes to add support for incompatible models from several months to several days.
- Demoed solution by fine-tuning and integrating off-the-shelf BERT-tiny model into Alexa NLU runtime.

Student Software Engineer

Honda Research and Development, Ann Arbor, MI, *January 2021 – Current*

- Developed improved navigation system for Honda vehicles by incorporating weather data into route suggestions.
- Developed solution using Navit, an open source car navigation system. Added custom routing feature to Navit in C, created custom Human Machine Interface to display routing suggestions for Honda cars using C and ROS.
- Collected over 10 TB of traffic and weather data using Python and HERE Traffic Data API, and built/trained/deployed custom DCRNN model using PyTorch to predict how inclement weather affects traffic speed, which obtained 10% improvement in RMAE over model without weather data.

Software Developer

UM Solar Car, Ann Arbor, MI, *September 2018 – September 2020*

- Prototyped CloudMap, a cloud mapping application to display live cloud satellite imagery over race route.
- Programmed frontend using HTML/CSS/JavaScript to create interactive map, backend using Django web framework, Python and tkinter for displaying speeds/car location, and stored car speeds/location using Sqlite3 database.
- CloudMap was used in the 2019 World Solar Challenge which contributed to our 3rd place finish.

Computer Science Instructor

Coding4Youth, Pleasanton, CA, *April 2020 – August 2020*

- Taught K-12 students the basics of C++, Python, OOP, and data structures during weekly sessions.

PROJECTS

MapReduce Server

University of Michigan, April 2021

- Built a multi process, multi-threaded MapReduce server in Python that executes user-submitted MapReduce jobs.
- Implemented multi-threaded master/worker processes using python threading library to perform health checking, input partitioning, and fault tolerance to maximize concurrency.

Client-side dynamic Instagram Clone

University of Michigan, March 2021

- Implemented frontend using HTML/CSS, JavaScript, and React to create features such as infinite scrolling as well as image uploading, commenting on posts, and the following of other users.
- Created a secure login and account creation for users using SQLite3 database and Flask session cookies.
- Created REST API for fetching posts/comments/likes using Flask, Python, and SQLite3.