ABHIJITH RAMALINGAM

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WORK EXPERIENCE

Software Engingeering Intern | A9.com (An Amazon Subsidiary)

May 2017 - Aug 2017

- Worked on the **core infrastructure** of the **Advertising Data Platform** team, that stores and processes data from the Amazon Ad Exchange. The team is Amazon's largest data platform and handles **tens of petabytes** of data on a monthly basis, that is stored across globally distributed Hadoop clusters.
- Changed **Hadoop** source code to interface with internal Amazon encryption services, enabling tools like **Hive** and **Spark** to execute distributed queries on encrypted data stored in **S3**. This is part of a team effort to switch to **S3** from **HDFS**, thereby **reducing storage costs by 75%**.
- Performed benchmark tests with **Hive**, querying **hundreds of terabytes** of data in order to compare performance tradeoffs at scale between **HDFS** and **S3**.

Software Development Intern | Capital One Canada

Sept 2016 - Dec 2016

- Developed a **secure, highly-available** and **project neutral infrastructure** for releases of Data Science projects using **AWS EC2, Docker** and **Terraform**.
- Wrote a **Node.js API** that integrated with internal services and data models, to serve Mobile Beta users with their recurring monthly transactions.

Distributed Systems Engineering Intern | Wave Financial Inc.

Jan 2016 - April 2016

- Developed scalable, fault-tolerant **backend APIs** with **Python** and **Django** for a cloud-based accounting product that has **2.5 million customers**.
- Stored each database change as a sequenced, immutable and queryable event (**Event Sourcing**), to improve **concurrency control** and **auditability**.

R&D Intern | DST Systems

May 2015 - Aug 2015

- Added features and bug fixes to a **big data engine** that cleans and prepares large datasets for analytics, using **Hadoop, Node.js** and **Ruby on Rails**.
- Developed a **C++** and **Python GUI** that authenticates users with electrocardiogram (ECG) data, streamed in real time via Bluetooth from a wearable device.

TECHNICAL SKILLS

Languages: Python, JavaScript, Java, C/C++

Data Analysis: MATLAB, Numpy, Scikit-learn, Pandas, Matplotlib

AWS: EC2, S3, RDS, Lambda, KMS, CloudWatch, IoT

Tools: RabbitMQ, Docker, Terraform, Git, Maven

Front End: HTML/CSS, jQuery, Bootstrap, React, Redux

Back End: Node.js, Socket.io, Express, Django

Big Data: Hadoop, Hive, Spark

Database: MySQL, PostgreSQL, MongoDB, Redis

PROJECTS

Smart Vents : (Sept 2017 - March 2018) Cloud Lead for an IoT vent system that allows users to control individual room temperatures inside their homes using smart vents and a smart thermostat. Currently building cloud infrastructure, web API and parts of a mobile app. *Tech Used: Python, AWS (IoT, EC2, S3)*

Autonomous Mobile Robotics Labs: (Sept 2017 - Nov 2017) Implemented path planning, mapping and localization for a small personal robot (turtlebot) as part of coursework for "Autonomous Mobile Robots". *Tech Used: C++, ROS*

Personal Finance Chatbot : (October 2016) Developed a Facebook Messenger chatbot that allows users to keep track of their finances, set savings goals and visualize their spending patterns. *Tech Used: Python, Flask, Node.js, Express, AWS EC2, MongoDB, jQuery*

Audio Player : (June 2016) Designed a microcontroller system that plays .wav files from an SD card. Implemented device drivers to read data from a FAT filesystem, and send audio data through an audio CODEC for playback. *Tech Used: C, Altera DE-2 Dev Board*

Tumor Classifier : (April 2016) Used a variety of machine learning algorithms to build binary classifiers to predict the nature of a tumor based on open data gathered from an online breast cancer dataset. *Tech Used: Python, Numpy, Pandas, Scikit- Learn*

Bouncing Ball Game : (Nov 2015) Wrote a game that simulates bouncing balls on an LCD screen of a microcontroller. It was implemented using a multi-threaded architecture, semaphore locks and hardware interrupts to interface with peripherals. *Tech Used: C, ARM-Keil Development Board*

EDUCATION

University of Waterloo

Sept 2013 - Present

- BASc in Mechatronics Engineering, Graduating in June, 2018
- **Relevant Coursework:** Algorithms and Data Structures, Real time Operating Systems, Embedded Microprocessor Systems Statistical Analysis, Autonomous Mobile Robots, Pattern Recognition, Programming for performance

Online Coursework

- **Machine Learning** | Coursera
- **Computational Investing** | Coursera
- **Exploratory Data Analysis** | Coursera