Abhijith Ramalingam

www.abhijith.info

a2ramali@edu.uwaterloo.ca
github.com/Abhijith1995
linkedin.com/in/abramalingam

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, Amazon's largest data platform that stores and processes all raw logs from the Amazon Ad Exchange. The team 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 services and AWS KMS, enabling tools like Hive, Spark and MapReduce to execute distributed queries on encrypted data stored in S3. This can result in storage cost savings of up to 75% by using S3 as a storage layer instead of HDFS.
- 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

Sept 2016 - Dec 2016

- Developed a secure, highly-available and project agnostic infrastructure for public releases of Data Science projects using AWS EC2, Elastic Load Balancers, Auto-Scaling Groups, Route53, Docker and Terraform.
- Wrote and shipped an API that serves users of the Capital One Mobile Beta App with their monthly recurring transactions.
- Developed the API with Node.js and Express to interface with internal company services and data models. Added tests using Chai, Mocha and Sinon to prevent regression bugs, mock external dependencies and test fault tolerance.

Distributed Systems Engineering Intern | Wave Financial Inc.

Jan 2016 - April 2016

- Developed scalable, fault-tolerant backend services with Python and Django for a cloud-based accounting product that has 2.5 million customers.
- Used messaging queues, database sharding, worker machines and denormalization to perform heavy computations asynchronously, leading to a 90% reduction in time to generate financial reports for each user.
- 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

- Worked with the applied analytics division to add features, improvements and bug fixes to a big data engine which used transformation rules to clean, reduce and prepare large datasets for analytics using Hadoop, Node.js, Redis, Rails and PostgreSQL.
- Developed a C++ and Python GUI that uses machine learning algorithms and relevant libraries (Numpy, Matlplotlib, Scikit-learn) to authenticate users in real time based on their ECG (Electrocardiogram) which was acquired using data streamed via Bluetooth from a wearable device (Nymi band).
- Built an image viewer with Node.js and Bootstrap that interfaced with eye tracking hardware to monitor user performance and generate live heat maps.

TECHNICAL SKILLS

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

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

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

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

Tools: Docker, Terraform, Hadoop, Hive, Spark

Database: MySQL, PostgreSQL, MongoDB, Redis

PROJECTS

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

Audio Player : (June 2016) Designed a microcontroller system which plays .wav files from an SD card. Implemented device drivers to read data from an SD card, read information from a FAT file system and to 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. Compared the performance of multiple classification algorithms such as Neural Networks, SVMs, Nearest Neighbors, Naive Bayes and Decision Trees using multiple plots. *Tech Used: Python, Numpy, Pandas, Scikit- Learn*

Audio Transcription : (Dec 2015) Used frequency analysis to transcribe classical piano pieces into sheet music. Resynthesized audio from transcription and then applied statistical analysis techniques to compare original and resynthesized audio signal. *Tech Used: MATLAB*

Bouncing Ball Game : (Nov 2015) Wrote a game that simulates bouncing balls on the LCD screen of a microcontroller which 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, Class of 2018. Currently Enrolled in 4A. Cumalative GPA: 3.5/4
- **Relevant Coursework:** Algorithms and Data Structures, Real time Operating Systems, Embedded Microprocessor Systems and Interfacing Systems and Signals, Numerical Methods, Experimental Design and Statistical Analysis, Control Systems, Autonomous Mobile Robots (ongoing)