Abhijith Ramalingam

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WORK EXPERIENCE

Distributed Systems Engineer | Wave Inc

Jan 2016 - April 2016

- Developed and shipped scalable, fault-tolerant backend services with Python and Django for the cloud-based accounting product that has 1.7 million users.
- Used messaging queues, database sharding, worker machines and denormalization to distribute load and perform heavy computations asynchronously in the background, leading to more than 90% reduction in time required to generate unique financial reports for each user.
- Stored each database change as a sequence of immutable queryable events (Event Sourcing), resulting in improved concurrency control and auditability.

R&D Developer | DST Systems

April 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, PostgreSQL, and ActiveMQ.
- 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.

Test Developer | HubHead Corp

Sept 2014 - Dec 2014

- Wrote end to end and unit tests for a cloud-based data quality product using Angular.js, Protractor, and Selenium, increasing test coverage by 40%.
- Detected and documented software bugs, by managing the automated testing infrastructure running on a Continuous Integration server (Jenkins).

Junior Developer & QA | Protecode Inc

Jan 2014 - April 2014

- Optimized SQL of a data warehousing GUI written in C# and PostgreSQL using SQL joins, reducing project processing time by about 25%.
- Developed web crawlers in C# to download over 120,000 open source projects into a MySQL database from websites like Github and SourceForge.

TECHNICAL SKILLS

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

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

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

Database: MySQL, PostgreSQL, MongoDB

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

Other/Tools: Hadoop, RabbitMQ, Redis, Git

Testing: Jasmine, Selenium, unittest, Protractor

Embedded: ARM-Keil Board, Arduino, Altera DE-2 Board

PROJECTS

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*

Half Fit Memory Allocator : (Oct 2015) Wrote a program to allocate and de-allocate memory in O(1) time. *Tech Used: C, ARM-Keil Development Board*

Path Follower : (Sept-Nov 2015) Soldered and configured sensors and motors onto a PCB creating a small robot. Tested sensors using an oscilloscope, signal generator and multimeter. Programmed the robot in C to follow a path using magnetic and light sensors.

Crib : (June 2015) Built in 24 hrs during AngelHack Toronto, Crib is a Ruby on Rails chat app with a real-time editable poll for users to discuss options.

Makeshift Caliper : (March 2015) Calibrated readings from an infrared sensor using a microcontroller to measure small distances. Used machine learning algorithms (Nearest Neighbor Search, Polynomial Regression) to reduce measurement uncertainty to 0.15 cm. *Tech Used: Python, Numpy, Arduino*

Market Simulator : (Oct 2014 - Nov 2014) Developed a program that accepts trade orders for stocks at past dates to calculate profit using data from Yahoo Finance API. Used Bollinger Bands, a stock price volatility indicator to generate trade orders. *Tech Used: Python, Numpy, Pandas*

EDUCATION

University of Waterloo

Sept 2013 - Present

- BASc in Mechatronics Engineering, Class of 2018. Currently Enrolled in 3A. GPA: 3.7
- **Relevant Coursework:** Algorithms and Data Structures, Real time Operating Systems, Embedded Microprocessor Systems and Interfacing (ongoing) Digital Logic, Systems and Signals, Numerical Methods, Statistical Analysis

Online Coursework

- **Machine Learning** | Coursera
- **Computational Investing** | Coursera
- **R Programming** | Coursera
- **Intro to Financial Accounting** | Coursera
- **Exploratory Data Analysis** | Coursera
- **Scalable Machine Learning** | edX (BerkeleyX)