# 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 writen in Python and Django for the accounting product that is used by 1.7 million users.
- Used messaging queues, database sharding, worker machines and denormalization to distribute load and perform large 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 within applied analytics to add features, bug fixes and improvements to a big data engine which reduced large datasets by up to 20% by applying transformation rules using Hadoop, Node.js, Redis, Websockets and Rails.
- Developed a C++ and Python GUI that uses Numpy, Scikit-learn and Matplotlib to create neural-network based classifiers to authenticate users in real time based on their ECG (Electrocardiogram) which was acquired using data streamed via Bluetooth from a wearable band (Nymi).

**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*

- Optimised 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

**Database:** MySQL, PostgreSQL, MongoDB

**Data Analysis:** R, Matlab, Numpy, Scikit-learn, Pandas, Matplotlib

**Tools:** Hadoop, RabbitMQ, Redis, Git

**Testing:** Jasmine, Selenium, unittest, Protractor

**Embedded:** ARM-Keil Development Board, Arduino, FPGA, PLC

## PROJECTS

- **Machine Learning Experiments :** (Jan 2016 ) Built a binary SVM classifier 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 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 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** *Graduating May 2018*

- BASc in Mechatronics Engineering, 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 *Oct 2014 - Jan 2015*
- **Computational Investing** | Coursera *Sept 2014-Nov 2014*