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# Jacob Varghese

## Education

**Master of Computer and Information Technology - MCIT (GPA: 4.0/4.0)** **August '16 - May '18**
University of Pennsylvania, Philadelphia

Related Course Work
Software Systems, Big Data Analytics, Database & Information Systems,
Programming for the Web, Data Structures and Software Design, Introduction to Computer Systems

**Bachelor of Technology (GPA: 8.93/10.00)** **August '10 - May '14**
Electrical and Electronics Engineering
National Institute of Technology, Karnataka, India

## Skills

- Programming: Java, Python, C, C++, Ruby, Matlab, ABAP
- Big Data and ML: TensorFlow, Spark, scikit-learn, MapReduce, Pandas
- Web design: HTML, CSS, JS, AJAX, jQuery, SQL, Angular 2, Node.js, Bootstrap, Ruby on Rails, Drupal 8, SAPUI5

## Work Experience

**Google, California** **May '17 - present**
Application Engineer Intern

- Developed an internal web portal for Google Finance Works team to streamline existing security filter's modification process.
- Leveraged Google technologies including Angular2, Google Cloud SQL, gRPC and APP Engine for the stack.
- Optimized performance and scalability of application and backend to integrate with other tools that require the security configuration.
- Developed Python scripts to translate and migrate existing flat data into the new normalized tables verified by supporting test scripts.

**Deloitte Consulting LLP, India** **August '14 - July '16**
Business Technology Analyst

- Worked on custom SAP applications to translate business requirements into robust code in ECC and CRM.
- Part of two successful project cycles including design, implementation, testing and delivery phases for clients in the textile and pharmaceutical industries.
- Developed applications that directly impacted the client's business and reduced supply chain workflow times to less than 10% the of original.
- Led a team of developers to design, develop and test web apps to ease Deloitte's recruitment availability tracking process using SAP's proprietary tech stack (SAPUi5 and NetWeaver Gateway).
- Improved the earlier manual recruitment workflow which translated to 4x participation from employees in the recruitment process.

Projects

**Distributed Cloud Service (Google Apps clone)** **March '17 - May '17**

- Implemented distributed cloud services that support multi-user authentication, a webmail service with causal ordering, a documents storage service and an admin console to troubleshoot, start and stop running servers.
- Incorporated replication and a primary based sequential consistency with fault tolerance using deterministic playback of a persistent log file for redundancy in the backend.
- Simulated a distributed Google Big Table data store and developed all the servers and monitors in C++ including the frontend HTTP servers and the backend data service servers.
- Used gRPC and proto3 to communicate between the backend and the frontend servers. Frontend servers responded to HTTP requests via TCP and the RFC2616 standards.

**Secure patient/provider web portal (www.MedimailHub.us)** **October '16 - December '16**

- Developed a web application that provides a portal for physicians to provide consultations to patients and other physicia ns remotely.
- Built secure messaging, document and reports sharing and video chat (OpenTok API) features that strictly adheres to HIPAA laws.
- Utilized Angular2 for the frontend and MySQL for the database. Built the application layer on NodeJS. Servers were hosted on AWS.
- Implemented push notifications using Firebase Cloud Messaging. The app is highly optimized for mobile browsers.

**Lung nodule detection for cancer prediction** **March '17 - May '17**

- Utilized lung segmentation and K-means on annotated lung CT scans from the LUNA16 Dataset.
- Trained a U-Net architecture based Convolutional Neural Network model to learn and identify cancer nodules present.
- Testing and validation showed an accuracy of 82%.
- Implemented the model in Python, using UNETs with 2D CNNs on Keras with a Tensorflow backend.

**PennSkype - A peer to peer Skype clone** **November '16 - November '16**

- Built a peer to peer Skype clone in Java for video calls over the same network.
- PCA based image compression was implemented using the Java Math(JAMA) library to reduce latency in data transmission.
- Transmitted the compressed data between IPs with socket programming.
- Handled concurrency for simultaneous transmission, compression/reconstruction, and display with threads.