

# SANJAYKUMAR MUTHUKUMAR

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<https://msanjay94.github.io/portfolio>

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## PROFESSIONAL EXPERIENCE

Zoho Corporation, Chennai, India - Software Engineer

May 2016 - August 2019

### Datacenter Management Tool - Java, Spring, HTML, CSS, MySQL

- Designed and implemented a module in the DC management tool to fully manage the life cycle of network infrastructure components like Load Balancers, DNS, SSL Certificates.
- Involved in agile development of the tool using test driven development and weekly sprints.
- The tool helped migrate the server management from AWS to the indigenous tool which helped **cut costs by 30% on Infrastructure expenses**.
- Demonstrated the deficiencies and vulnerabilities of Struts and the benefits of migrating to Spring to the CTO of Zoho, which was accepted and implemented. The migration **reduced bug bounty reports by 15%**.

### Programmatic SSL Certificate purchase - Java, ACME, REST API [[Git](#)]

- Demonstrated the benefits of using Let's Encrypt's ACME to purchase SSL certificates programmatically using a PoC.
- Integrated the certificate purchase module into the DC management tool to make the entire process fully automated.
- The tool helped **reduce time consumption by 90% and increased revenue by 25%**.

### R&D - Cloud Infrastructure

- Worked closely with the CTO of Zoho in analysing key technologies to improve the network infrastructure inside the data centre.
- Analysed and demonstrated technologies include : HTTP/2.0, TLSv1.3, CAA, ECDSA, Certificate Transparency, OCSP Stapling.
- Improved page load time by 15%** by implementing HTTP/2 and TLSv1.3 support in Nginx load balancer.

### Nginx source code development - C

- Designed and implemented an enhancement to Nginx's third party module to support dynamic addition/removal of servers from Nginx Load Balancer without reloading the server.
- The enhancement helped **reduce server reloads by ~30%** and in turn reduced the number of dropped client connections by ~50%.

## PROJECTS

### Canada Tourism - Microservices based application - Java, Spring, Docker, AWS [[Git](#)]

- Designed and developed a microservices based application to demonstrate the benefits of the architecture.
- Implemented a CDN to host static resources and demonstrated the benefits of isolating static resources from dynamic endpoints - Faster page loads using cache-control headers and removing authentication / authorisation logic for static content.

### Artist Classification using song lyrics - Python, NLTK, React.js

- Experimented with Naive Bayes classifier algorithm to classify artists using their song lyrics. NLTK library was used for the algorithm. The classification was performed with an accuracy of ~76%.
- Designed a visualization of the tool using React.js.
- Ongoing research to try and detect deepfake audio by applying the classifier on the utterance data of the person impersonated.

### Service Genie - Android App - Java, Android Studio [[Git](#)]

- Lead a team of 4 in designing an android application that provides a platform for uniting customers and service providers.
- The app can be used to search a technician, book an appointment, and rate the technician based on service.

### Game development - Lua, JavaScript [[Git](#)] [[Git](#)] [[App](#)]

- Designed and developed game applications using 'Programming' framework, 'Unity' framework, and simple JavaScript based web games.
- Some of the games include FlappyBird, Ludo, Game of Life.

## TECHNICAL SKILLS

**Languages :** Java, Python, C, JavaScript, HTML, CSS, SQL

**Databases :** MySQL, MongoDB, PostgreSQL

**Frameworks :** Spring, Struts, Node.js, React.js, REST, gRPC

**Tools :** AWS, Docker, Git, Hg, Jira, Linux, macOS

## EDUCATION

### Master of Applied Computer Science (GPA 4.15/4.3)

Dalhousie University, NS, CA

**Key Courses :** Cloud Computing, Network Security, Serverless Data Processing

### Bachelor of Engineering - Computer Science (CGPA 8.3/10)

Anna University, TN, IN

**Key Courses :** Data Structures, Analysis of Algorithms, DBMS, Object Oriented Programming

## LEADERSHIP AND AWARDS

### Teaching Assistant

Dalhousie University, NS, CA

- Tutored a course on Software Engineering for undergraduate students - Conducted lab sessions and collaborated with the instructor in designing course materials.
- Managed 5 team-of-6 and guided the students towards building an Android application following design principles such as Agile, TDD, S.O.L.I.D.

### Academic Scholarship

Dalhousie University, NS, CA

- Recognized by Dalhousie University's Faculty of Computer Science for academic excellence and got awarded a **scholarship of 1500 CAD**.