Harshit Vadodaria

Ph. No: 9547823654 | **Email:** harshitv95@gmail.com | **LinkedIn:** harshit-vadodaria | **GitHub:** harshitv95

EDUCATION

Master of Science in Computer Science, CGPA: 4.0/4.0 | **State University of New York,** ***Binghamton, New York***

Relevant Coursework: Complex Algorithms, Distributed Systems, Advanced OOP, High Performance Computing, Database Systems, Operating Systems

Bachelor of Engineering in Information Technology | **University of Mumbai,** ***India*** ***July 2013 - June 2017***

TECHNICAL SKILLS

Programming Languages:	*(expert:)* Java, C++, Javascript, *(proficient:)* Python, Typescript
Web / Backend:	Spring, Kafka, Zookeeper, Netflix Eureka, REST/SOAP, RMI/RPC, Load Balancing,Angular, Microservices, Nginx, Node.js, TCP/UDP
Databases:	SQL, PL/SQL, MongoDB, Cassandra, Redis, Firebase, Elastic Search
Misc.:	Agile, Multi-threaded programming, CI/CD (Git, Jenkins, SonarQube), TestNG, Maven, Linux Kernel Development

EXPERIENCE

Software Engineer Intern | United Health Services, *Binghamton, New York* *Jan 2016 – May 2021*

COVID-19 After-Test Workflow Application | *Java, Object Oriented Javascript, Materialize.js, MS-SQL, ETL*

- Independently developed software architecture including front-end and back-end using REST APIs for a mandatory after-test checklist used at all COVID-19 testing centers of UHS in upstate New York for over 2000 patients per day – helped reduce daily manual effort by approximately 70%.

Physician Productivity Tracking Engine | *PHP, Javascript, T-SQL, ETLs*

- Implemented a productivity tracking engine (app and UI), including reporting services for employees to generate work summary results by measuring productivity. It helped UHS finance team generate payroll accurately for employees reducing the manual validation and reporting process by 35%.

Graduate Research Assistant | State University of New York, *Binghamton, New York* *September 2019 – May 2021*

Stress Prediction for Devices running A.R. or V.R. apps | *Java, Android, Python, NumPy, Scikit, Matplotlib, OpenCV*

- Created an android application to collect O.S. kernel level state of device's thermal and hardware data for apps using heavy computations for AR and/or VR, and a linear regression ML model trained with the same. It predicted hardware (resource) and thermal stress of the device with 90% accuracy.
- Published research paper titled "Smartphone Thermal Temperature Analysis for Virtual and Augmented Reality" in Proceedings of IEEE International Conference on Artificial Intelligence & Virtual Reality (AIVR), December 14-18, 2020.

Dynamic Adaptive-Bitrate Video Streaming over HTTP (DASH) using Super Resolution | *Java, Android, Javascript, PyTorch, MatPlotLib*

- Developed an efficient video streaming infrastructure by utilizing DASH video streaming protocol, by implementing a 2-factor ABR video player that uses Super Resolution deep learning model to upscale low bitrate videos at client and/or Edge network devices to reduce video streaming latency by 45%

Senior Software Engineer | Media.net, *Mumbai* *March 2019 - August 2019*

- Served as Distributed Systems and Full-Stack Engineer in Agile team responsible for developing contextual advertisements service and UI for clients like Microsoft Bing Search, Yahoo Ads, WebMD, etc.

Social Network Platform to share experiences with Electronic Devices | *Node.js, Next.js, React.js, Angular.js, MongoDB, MS SQL, OAuth 2.0*

- Lead a team of four for development of the web platform and PWA with REST APIs for FirstUp a social network website featuring profiles, following users, posts, etc. Lead the team from conception to production phase, increasing 3% annual revenue for an already large revenue base.

Captain SEM – Web UI Builder (drag and drop) and CI/CD | *Object Oriented Javascript, Java, PHP*

- Created a website builder that automated development of static webpages for 30+ websites, used by UI developers to greatly reduce toil (by 4 hours/day), and added one-click publish including automated selenium test scripts to verify the website followed by automatic deployment to server.

Software Engineer (Distributed Systems) | Institutional Shareholder Services, *Mumbai* *September 2017 - March 2019*

- Developed a large-scale micro-service oriented application skeleton framework (written in Java, and utilizing Spring, Kafka, Zookeeper, Thrift, SQL & NoSQL) used for standardization and centralized maintenance of various applications within the company. It was used to build six projects including two flagship products and reduced development time by 45% for applications using this framework.
- Implemented CI/CD process impacting projects in multiple teams, by using Jenkins and enabling automatic build & deploy after git push, including automated test scripts with SonarQube. It reduced deployment time and defect leakages and bugs by 25%, thus improving products' overall quality.

Systems Monitoring and Alerting Distributed Service | *Java, Spring Boot, Angular.JS, ZingChart, SparkJava, MS-SQL*

- Created a service using micro-service architecture to allow monitoring CPU and memory utilization of any remote server throughout the company and visualize performance fluctuations using real-time line charts on an interactive Web UI which helped system admins save upto 2 hours of work a day

Distributed System Health Monitoring Service (like Netflix Eureka) | *Java, HTTP + REST, TCP Sockets*

- Reverse-engineered Netflix Eureka and implemented a light-weight mechanism to allow micro-services to discover and communicate with each other over HTTP or TCP, and master nodes using heartbeat (frequent polling) mechanism to detect changes in micro-services' health and state. Made it fault-tolerant by saving global system state to persistent storage. Made it more memory-efficient by 90% relative to previous version.

Concurrent Load Simulator | *Java, REST APIs, Spring, Kafka, Zookeeper, MongoDB, MySQL, RegEx, Python, NumPy, MatPlotLib, Pandas*

- Created distributed master-slave system to exert concurrent stress on application server to examine server performance (Response Time, CPU & Memory performance trends, Transactions per unit time) under real-like load, built by implementing efficient task synchronization across micro services

PROJECTS

Cassandra-like Always available Distributed Key-Value Store | *Java, Apache Thrift, Protocol Buffers*

- Built a Distributed Key-value store based on Facebook's paper on Cassandra Database following principles of CAP theorem, featuring Configurable Consistency for read/write, Hinted Handoffs and Log-based failure recovery ensuring high availability and no data loss in the event of multiple node failures

Distributed File System over Peer-to-Peer Network using Distributed Hash-Table | *Java, Chord DHT, Apache Thrift*

- Developed a File System that supports uploading/downloading files, by leveraging consistent hashing to implement Chord Distributed Hash-Table protocol

Distributed and Replicated Data-Store | *Java, Binary Search Tree, Pub-Sub Model*

- Developed a distributed in-memory cache using a replicated BST that relies on a robust replication algorithm using the Publish-Subscribe model