Jayaraman Venkatesan

Email : venkatesan.j@northeastern.edu
Mobile : +1-857-204-9241

 Linkedin Github - jayaraman-venkatesan

EDUCATION

Northeastern University, Khoury College of Computer Sciences — Boston, MA
Master of Science in Computer Science; GPA: 4.00 — Aug 2022 - April 2024
Courses: Program Design Paradigms, Web Development, Algorithms, Computer Systems, OS Implementations

Madras Institute of Technology — Chennai, Tamil Nadu
Bachelor of Engineering, Computer Science, GPA: 8.33/10; — Aug 2016 - May 2020
Treasurer at Student Association of Computer Technology (2019), Member of coders club of MIT

SKILLS SUMMARY

- **Languages**   : Java, JavaScript, HTML, CSS, SQL, C/C++, Kotlin, Python, C#
- **Frameworks**   : Spring Boot, Spring Framework, Node, Django, React.js, Angular, Mockito
- **Databases and ORM** : MySQL, MongoDB, Postgres, Hibernate, DGraph
- **Technologies**   : Git, BitBucket, GitHub, Apache Kafka, Redis

EXPERIENCE

Northeastern University — Boston, USA
Research Scientist - Supply Chain Datahub — August 2023 - Present

- Played a key role as a **full-stack developer** in the development of a cutting-edge supply chain web application under Professor Dr. Shawn Bhimani, aimed at identifying forced labor within an extensive network of 100,000+ companies and 170,000+ relationships.
- Orchestrated the architecture and development of the application, strategically designing the backend using **Django** and the frontend with **React.js** resulting in a cohesive and user-friendly interface.
- Designed and developed 20+ APIs capable of efficiently processing and returning large amounts of data using **Redis caching**.
- Implemented **Test-Driven Development** best practices during application development, resulting in a significant reduction in the occurrence of bugs.

Northeastern University — Boston, USA
Research Assistant - Systems Research Group — May 2023 - Present

- Played a key role in **database research** under Professor Cheng Tan, to pinpoint isolation level bugs in real-time and cloud database systems.
- Designed and employed multiple deterministic approaches to rigorously test isolation levels, involving the generation of 1M+ transactions and interleaving on 10+ databases.
- Designed and implemented a comprehensive testing approach, utilizing the **.NET framework** to generate interleaving, coupled with **Java** for verifying isolation levels.

Visa — Bengaluru, India
Software Engineer - Engineering Apps and Analytics — October 2020 - July 2022

- Led full-stack development initiatives for a mission-critical global billing platform, integral to the operations of over 15,000 financial institutions worldwide and contributing significantly to Visa's revenue (33%).
- Developed **RESTful API** endpoints for backend microservices using **Spring Boot** and designed the front-end application for the platform using **Angular**.
- Implemented validation module using **JS Nashorn engine** capable of real-time validation of over 100,000 metrics, including profile information, transaction counts, and volumes, with a focus on scalability and performance.
- Developed multiple batch jobs using **Spring Batch** to asynchronously send validation status notifications, leveraging **ActiveMQ** and the Enterprise Email Service to reach over 1000 users.
- Core Developer of Employee dashboard, built using Spring Boot and **Kotlin** for the backend, Angular framework for frontend and **MongoDB** as a database service.
- Guided and **mentored** two batches of 5 interns each in 2021 and 2022 for five months. Led their learning in project architecture and construction, emphasizing **agile** best practices.
- Researched and applied **ADA** compliance guidelines using tools like WAVE, axe Accessibility Testing, a color contrast analyzer, etc., resulting in a 15% increase in application accessibility and user satisfaction

- Enhanced code quality by resolving vulnerabilities and **SonarQube** issues, actively contributing to PR reviews, and producing comprehensive documentation.
- Successfully migrated the entire project from **Spring Boot 2 to version 3**, ensuring compatibility and leveraging the latest features for enhanced performance and functionality.
- Created 10+ test suites using **Selenium** to thoroughly test the UI changes in the new release, allowing QA testers to focus primarily on functional aspects.

- **Visa** — Bengaluru, India
  Software Engineer Intern — May 2019 - July 2019
  - Designed and developed a robust user-user recommendation system as a **full-stack developer** for Visa's intranet portal, catering to the needs of over 50,000 employees.
  - Conducted a thorough analysis of 20GB+ **Google Analytics** data, identifying the most impactful algorithm for the recommendation system and selecting the one with most accuracy and least RMSE.
  - Utilized **Java** and **Apache Mahout** to create an intelligent system on **Adobe Experience Manager CMS**, personalizing the intranet portal based on individual features, enhancing user experience.
  - Designed a personalized section using **AngularJS**, elevating the user interface and providing a tailored experience for users.
  - Achieved a remarkable success rate, with 70% of users actively utilizing the recommendation feature, demonstrating its effectiveness and positive reception within the intranet portal.

ACADEMIC PROJECTS

- **Event Notification System** : Developed an intricate Change Data Capture (CDC) system for real-time monitoring of **AWS** hosted databases. Implemented **Kafka** for seamless event messaging, with **Spring Boot** efficiently processing detected changes.

- **Come sell with me**: Designed and developed a E-Commerce website utilizing **React** for frontend, **Node** and **Express** for backend, and MongoDB for database management. Integrated seamlessly with **Azure Storage Account** for efficient image storage and management.

- **EGOS-2k+**: Developed a microkernel (OS) within 3000 lines of code which is extension of EGOS-2000 published in Cornell university. Added threading libraries , File system support , page table support , process scheduling using multilevel feedback queue.

- **Secure file sharing and retrieval in cyber-physical cloud systems**: Devised an innovative thesis project to enhance file-sharing, employing Elliptic Curve Cryptography and a sophisticated asymmetric cryptographic logic for robust data security. Implemented with Java and Angular technologies.

- **Smart Attendance System**: A Government sponsored and funded project created with Raspberry pi 4 and Pi camera which can predict face as biometric data trained before. It was presented at an expo at Centre for Technology development and transfer place, Anna University, Chennai

VOLUNTEERING EXPERIENCE

- **Northeastern University** — Boston, USA
  Teaching Assistant - Computer Systems — Jan 2024 - Present
  - Conducted weekly office hours for graduate students to clarify complex concepts in systems, ensuring they gained a clear understanding of the material.
  - Assisted in the grading process, providing constructive feedback to students for improved comprehension and performance in computer systems coursework.
  - Mentored over 300 students, offering guidance on assignments and addressing questions through the Piazza platform.

- **Madras Institute of Technology** — Chennai, India
  Mentor - Coders club of MIT — August 2018 - May 2020
  - Mentored over 100 underprivileged students, offering guidance on getting started with the basics of coding.
  - Led 50+ sessions covering various topics related to Data Structures and Algorithms.