SHRUTI VARADE

Boston, MA | +1(617)606-8865 | varadeshruti27@gmail.com | linkedin.com/in/shruti-varade | github.com/shrutivarade

EDUCATION

University of Massachusetts, Boston — Boston, MA
Master of Science in Computer Science | ***GPA 3.9/4.0*** *(Teaching Assistant)* — *Sept 2022 - May 2024*

University of Mumbai, Maharashtra — Mumbai, India
Bachelor of Engineering in Computer Engineering | ***GPA 8.32/10.0*** — *June 2016 - May 2020*

EXPERIENCE

Software Engineer | MGH – Harvard Medical School | Boston, MA, USA — July 2024 - November 2024

- Developed a tractography file reader for Neuroglancer using TypeScript enabling 3D visualization of neural pathways.
- Optimized the data parsing algorithm to efficiently process datasets exceeding 1TB, reducing data fetching time from AWS S3 bucket from 15.45 sec to 2.95sec which is approximately 80.91%**.**
- Designed an RGB color map and heat map to improve fiber orientation and gain deeper insights into the neural structures.

Software Engineer | Machine Psychology Lab| Boston, MA, USA — May 2023 - Present

- Developed Boostlet.js, a JavaScript library enabling advanced image processing including Edge Detection via custom kernel, Data Visualization with plotly.js and Image Segmentation using ML model such as Segment Anything model.
- Built a processing module with NodeJS for dependency management, GitHub Actions for test automation and, GitHub Submodules for external library integration and improving code efficiency.
- Designed a modular architecture with client-side processing capabilities simplifying collaboration for developers.

Software Engineer | TATA Consultancy Services | Mumbai, India — Sept 2020 - June 2022

- Collaborated with a team of 5 developers to build an employee portal for a financial firm using Spring Boot and JS.
- Designed and optimized a MySQL database for secure data storage, achieving a 30% improvement in data retrieval efficiency through query optimization.
- Implemented RESTful APIs to integrate with authorized government portals for Identity and Access Management.
- Promoted software reliability by implementing Git for source code version control, unit and integration testing to reduce false positives by 60%, and Atlassian tools for efficient project management and cross-functional collaboration.

PROJECTS

Music Analytics and recommendation platform | React.js, Java, C++

- Architected and implemented a full stack music recommendation platform (Minimal Viable Product) utilizing **microservices architecture** with **React** as frontend framework, **Java** for user management and **C++** for analytics.
- Developed **a C++ microservice** for analytics and recommendation engine for processing user listening data to generate personalized recommendations and developed **a Java microservice** for user management showcasing Java programming capabilities for user authentication and profile management functionalities.
- Designed **a distributed system architecture** with components, running across multiple docker containers, enabling a seamless communication between all the three services.
- Implemented a **JSON based data storage approach** for user data and **in-memory processing** for Quick user session handling, listening history, recommendation during runtime and optimal performance.
- Implement **Restful API** endpoints facilitating data exchange between the frontend and backend services utilizing transport layer like http, containerized using **docker** and orchestrated with **docker compose** for local development and integration.
- Established a comprehensive testing protocol, including **JUnit** for **unit testing**, and **python-based integration testing** to validating cross service workflows across the application.

An app that prevents race conditions and deadlocks | Java

- Designed and implemented a backend algorithm using software **design patterns** for a music app, demonstrating advanced software development concepts of **multithreading** to enhance concurrency and optimize memory management.
- Solved problems related to **deadlocks** and **race conditions** by implementing **thread-safe** algorithms, ensuring seamless playlist access and validated functionality through unit testing using **JUnit**.

Matching Researchers with Students via Machine Learning deployed Web App | Python

- Developed GuideGenie, an **NLP-based** AI recommendation system (a web application) that pairs researchers with professors using **cosine similarity** and **Gemini LLM embeddings** for precise word representation.
- Deployed the ML model to a web browser using **Streamlit.py**, providing an intuitive interface for academic matching.
- Presented GuideGenie at BostonBridge Hackathon 2024 (University of Massachusetts, Boston)

Health Monitoring web dashboard using Django | Python

- Built **Layered** (**MVC) architecture** for a fitness metrics dashboard using **Django**, **Chart.js**, and **PostgreSQL**, providing users with an interactive interface to track step count, calories burned, distance covered, and workout time.
- Streamlined deployment by integrating **Docker**, reducing setup time by 50% and minimizing environment-related errors.

SKILLS

Frontend:	HTML, CSS, Bootstrap, JavaScript, TypeScript, React.js, Next.js, ECMAScript, Three.js, WebGL, 3D Graphics,
Backend:	Java, Android, JUnit 5, Apache Ant, Python, Django, Express, Node.js, C++, REST API, JSON, HTTP, Docker,
Databases:	SQL, MySQL Relational, Postgres NoSQL, GraphQL, MongoDB, Cloud Computing – AWS, Kafka, RabbitMQ
Tools:	Git, GitHub, CI/CD tools, Agile, and Scrum Methodology, SDLC, LINUX, Data Structures, Distributed Systems