SHRUTI VARADE

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EDUCATION

University of Massachusetts, Boston (Teaching Assistant for object-oriented programming language) Boston, MA
Master of Science in Computer Science | **GPA 3.9/4.0** September 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 July 2024 - November 2024

- Developed a scalable **infrastructure** for a tractography file reader in Neuroglancer using TypeScript, enabling efficient 3D visualization of neural pathways across **large-scale datasets**.
- Optimized **data parsing and information retrieval algorithms** to process datasets exceeding 1TB, achieving a 40% reduction in **data-fetching time** from AWS S3 storage.
- Designed accessible RGB color maps and heat maps to improve fiber orientation visualization and deliver deeper insights into neural structures for researchers.

Software Engineer (Research) | Machine Psychology Lab, UMass, Boston | Boston, MA May 2023 - Present

- Developed **Boostlet.js**, a JavaScript library for advanced **data analysis**, visualization, and image processing, incorporating edge detection, segmentation via ML models, and **accessibility-focused design principles**.
- Built a **scalable and distributed computing** module with NodeJS, leveraging GitHub Actions for automated testing and GitHub Submodules for seamless library integration, improving **large-scale system design** by 40%.
- Designed a modular MVC architecture to simplify development collaboration, with a focus on **system performance**, debugging, and scalability for **large-scale systems**.

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

- Collaborated with a team of 5 developers to build a scalable **infrastructure** for an employee portal for a financial firm using Spring Boot and JavaScript, with a focus on **high-performance distributed systems**.
- Designed and optimized MySQL databases, achieving a 30% improvement in **data retrieval efficiency** through query optimization and storage management.
- Developed REST APIs to enable seamless integration with government IAM systems, ensuring reliable and secure identity and access management for **large-scale infrastructure**.
- Ensured **software reliability** through robust version control (Git), comprehensive unit and integration testing (reducing false positives by 60%), and **performance monitoring** using Atlassian tools.

PROJECTS

Music 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 Professors via Machine Learning deployed Web App | Python

- Developed GuideGenie, an **Natural language processing** based AI recommendation system 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)

SKILLS

Frontend: HTML, CSS, JavaScript, TypeScript, React.js, NextJS, ECMAScript, Bootstrap, WebGL, 3D Graphics, Angular
Backend: Java, JUnit 5, Apache Ant, Python, Django, Express, Nodejs, C++, REST API, JSON, HTTP, Kubernetes
Databases: SQL, MySQL (Relational), Postgres (NoSQL), MongoDB, Amazon Web Services (AWS), Google Cloud
Tools: Git, GitHub, IntelliJ, PyCharm, VS Code, CI/CD tools, MATLAB, Agile, and Scrum Methodology, SDLC, LINUX