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

- o Developed a tractography file reader for Neuroglancer using **TypeScript** enabling 3D visualization of neural pathways.
- o Optimized the **data parsing algorithm** to efficiently process datasets exceeding 1TB, reducing data fetching time by 40%
- o Designed an RGB color map and heat map to improve fiber orientation and gain deeper insights into the neural structures.

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

- o 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.
- o Built a processing module with **NodeJS** for dependency management, **GitHub Actions** for automation testing and, **GitHub Submodules** for external library integration, improving code efficiency by 40%.
- o Designed **a modular MVC architecture** with client-side processing capabilities simplifying collaboration for developers.

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

- o Collaborated with a team of 5 developers to build an employee portal for a financial firm using **Spring Boot** and **JS**.
- o Designed and optimized a **MySQL** database for secure data storage, achieving a 30% improvement in data retrieval efficiency through query optimization.
- o Implemented **REST APIs** to integrate with authorized government portals for Identity and Access Management (IAM).
- o 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 app that prevents race conditions and deadlocks| Java

- o 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.
- o 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

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

Health Monitoring web dashboard using Django | Python

- o Built **microservice-based 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.
- o Streamlined deployment by integrating **Docker**, reducing setup time by 50% and minimizing environment-related errors.

SKILLS

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