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 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 (Research) | Machine Psychology Lab, UMass, Boston | Boston, MA — 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 MVC 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 (IAM).
- 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

- 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 **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 **microservices 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.
- 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, Angular
Backend: Java, Android, JUnit 5, Apache Ant, Python, Django, Express, Nodejs, C++, REST API, JSON, HTTP, Docker, Kubernetes
Databases: SQL, MySQL Relational, Postgres NoSQL, MongoDB, AWS – Cloud Computing, Kafka, Azure, GCP
Tools: Git, GitHub,CI/CD tools, MATLAB, Agile, and Scrum Methodology, SDLC, LINUX, Data Structures, Distributed Systems