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SHRUTI VARADE

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EDUCATION

University of Massachusetts, Boston — Boston, MA
Master of Science in Computer Science | GPA 3.9/4.0 — *September 2022 - May 2024*
Teaching Assistant at UMass, Boston for courses such as 'Introduction to Computing using Python' and 'Programming in C'.

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

SKILLS

Frontend: HTML, CSS, JavaScript, TypeScript, React.js, NextJs, Streamlit.py, Bootstrap, Three.js, WebGL, 3D Graphics
Backend: Java (Android, JUnit 5, Apache Ant), Python (Django), Express, Nodejs, C++,REST API, JSON, HTTP
Databases: SQL, MySQL, PostgreSQL, MongoDB, AWS cloud storage
Tools: Git, GitHub, IntelliJ, PyCharm, VS Code, MATLAB, Agile, and Scrum methodologies

EXPERIENCE

Software Engineer | MGH – Harvard Medical School | Boston, MA — July 2024 - November 2024
- Conducted research on *3d visualization* tool called Neuroglancer, used for displaying brain fibers and MRI images.
- Analyzed the existing .trk file reader developed in *python*, *C++* and *Julia* and referred the functions built in `nibabel` library to write the .trk file reader in typescript that is supported by Neuroglancer interface.
- Developed a feature using typescript to read, process, write and display .trk files that store the brain tractography data.
- Collaborated with various research lab such as MIT and Harvard on the idea to make .trk files readable in Neuroglancer.

Software Engineer (Research) | Machine Psychology Lab | Boston, MA — May 2023 - June 2024
- Studied web based medical imaging libraries to develop a new framework that provide image processing capabilities.
- Developed *Boostlet.js*, a JavaScript framework to serve Edge Detection using kernel for image filtration, Data Visualization using plotly library, Image Segmentation using segment-anything (ML model built by Meta).
- Injected a user-friendly plugin, *PowerBoostlet.js*, a bookmarklet for easy installation of Boostlets in any host website.
- Built a processing module using technologies like *NodeJS* for handling the project dependencies and *GitHub actions* for automated testing, *GitHub submodules* for managing the external libraries and increasing code effectiveness by 40%.
- Designed a modular architecture with client-side processing capabilities making it easier for researcher and developers to collaborate and apply advanced image processing techniques using consumer level hardware.

System 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 queried a *MySQL* database for secured data storage and improved the data retrieval rate by 30%.
- Implemented *API* request to pull the data from authorized government portals for authentication and authorization.
- Implemented good coding practices by using *Git* for version control and cross-functional team collaboration, *Unit* and *Integration testing* reducing false positive by 60% for software reliability and used Atlassian tool for project management.

PROJECTS

Music app that prevents race conditions and deadlocks| Java
- The objective of this project to build a backend algorithm for a music app that demonstrates the advanced software development concepts of multithreading to enhance the workload and concurrency for effective memory management.
- Studied the *software design patterns* to provide efficient solution and performed unit testing using *JUnit*.
- Diagnosed the problem of deadlocks and potential race condition that can occur in a music app and built a thread unsafe and safe algorithm to resolve the issues ensuring that threads can access the playlist without interfering with one another.

Matching Researchers with Professors via ML-Enhanced Web Application | Python
- Built a recommendation system called GuideGenie, a strong NLP-based model that pairs academics professors with researchers by using cosine similarity and Gemini LLM embeddings to provide precise word embeddings.
- Used *Streamlit.py*, an open-source Python framework, to successfully launch the machine learning model on web browser.
- Presented GuideGenie at *BostonBridge Hackathon 2024* (University of Massachusetts, Boston)

Health Monitoring web dashboard using Django | Python
- Developed a Fitness Metrics offering users a dynamic interface with *Django*, *Chart.js* and *PostgreSQL* to visualize and monitor fitness progress including step count, calorie burnt, distance covered and workout time.
- Enhanced deployment by integrating *Docker* and cutting setup time in half, minimizing environment related errors.