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SHRUTI VARADE

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EDUCATION

University of Massachusetts, Boston — Boston, MA
Master of Science in Computer Science | ***GPA 3.88/4*** — *September 2022 - May 2024*
OODP - UML, Design Patterns, OOSD - Stream API, Concurrency, Analysis of Algorithms, User Interface Design, Computer Graphics
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*** — *June 2016 - May 2020*
Machine Learning, Artificial Intelligence, Cloud Computing, Database Management System, Data Structures, Operating System

SKILLS

Frontend: HTML, CSS, JavaScript (ES6+), UI/UX, React.js, Streamlit.py, Bootstrap, xtk.js, Three.js, webGL, Figma
Backend: Java (JUnit 5, Apache Ant), Python (Django, Flask), Express.js Nodejs, C/C++, API, JSON, XML
Databases: MySQL, PostgreSQL, MongoDB, AWS cloud storage
Tools: Git, GitHub, IntelliJ, PyCharm, VS Code, Agile, and Scrum methodologies

EXPERIENCE

Software Engineer (Research) | Machine Psychology Lab | Boston, MA — May 2023 – Present
- Conducted research on JavaScript based medical image processing libraries such as Cornerstone2D.js, Niivue.js, OpenSeaDragon.js, xtk.js, and papaya.js to design and construct image processing module for the web browser.
- Assisted a team of developer to design, build, share and maintain the project under guidance of Professor Daniel Haehn.
- Presented our research and project outcomes at various hackathons, such as BrainHack 2023 at MIT, and BrainHack 2024 at UMass Boston and the one organized by Niivue developers at the University of South Carolina.
- Co-Authored a paper published at ISMRM conference 2023 collaborating with a team of Australian researchers focusing on image segmentation and submitted a paper at IEEE VIS 2024 aiming to provide web plugin for image processing.

Advisor: Professor Daniel Haehn | mpsych lab

System Engineer | TATA Consultancy Services | Mumbai, India — Sept 2020 – June 2022
- Collaborated on the design and development of webpages for the SBI's CRM software, using Java and JavaScript ensuring alignment with the Software Development Life Cycle resulting in a 20% improvement in user experience within a year.
- Implemented APIs and SQL to optimize data retrieval and process automation, seamlessly integrating them with the backend infrastructure. Utilized Git version control to ensure code integrity and collaboration across cross-functional teams.
- Performed unit testing, achieving a test coverage of approximately 95% and reducing software defects by 50%.
- Employed ATLASSIAN tools for project documentation and knowledge sharing and provided hands-on mentorship to interns, imparting valuable insights into debugging, and troubleshooting practices for full-stack application development.

PROJECTS

Development of open-source image processing framework for medical images:
- Developed a *JavaScript* framework, Boostlet.js that provides a tool suite enabling additional image processing functionalities. These functionalities include edge detection, image captioning, data visualization, segmentation, and ML models on the web.
- Injected a user-friendly plugin, *PowerBoostlet.js*, a browser bookmarklet for easy installation of Boostlets in any host website.
- Built a processing module using technologies like *Puppeteer* along with node package dependencies and *GitHub actions* for automated testing locally and remotely, *GitHub submodules* for an efficient build process, and Javascript as the core language.
- Boostlet's *modular architecture* and *client-side* processing capabilities makes it valuable for researchers and developer seeking to apply advanced image processing techniques on the web browser using consumer level hardware.

Region of Interest (ROI) selection library for any DOM element:
- Developed an easy to integrate *JavaScript* library, BoxCraft.js that allows to select precise regions of the web pages.
- Integrated this widget library into *Boostlet.js*, ensuring uniform region of interest selection across various medical imaging libraries for functionality such as the *Segment Anything model* developed by *Meta*.

Matching Researchers with Professors via ML-Enhanced Web Application:
- 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:
- 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 by 70%.

RESEARCH PAPER

Thuy Dao, Chris Rorden, Korbinia Eckstein, Daniel Haehn, Shruti Varade, Steffen Bollmann
Developing a secure, browser-based, and interactive image segmentation system for medical images.
Conference: International Society for Magnetic Resonance in Medicine | Australia and New Zealand Chapter – 2023