Sai Varshini Thupakula

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EDUCATION

Master's in Computer Science, Northeastern University | Boston, MA, United States Aug 2025 - May 2027

- Courses: Programming Design Paradigm | Database Management Systems

Bachelor's in Computer Science, Vasavi College of Engineering | India | GPA: 3.7/4.0 June 2019 – May 2023

- Courses: Data Structures and Algorithms | Design and Analysis of Algorithms | Object-Oriented Programming - Java | Software Engineering | Networking | Database Management Systems | Computer Organization and Architecture

EXPERIENCE

IBM - ISDL (IBM's Largest Development Hub), *Software Engineer* | Hybrid (Pune, India) Aug 2023 – June 2025

- Led OS upgrade from RHEL 8 to 9.5 by building upgrade workflows and a custom RHEL ISO, porting codebase for Python 3.9, and migrating the kernel, cutting upgrade downtime by 40% across 500+ servers.
- Refactored core architecture, migrating OSGi (Virgo-based) modules to a Spring Boot monolith and redesigning boundaries, improving system stability by 25% through resolved dependency injection and rewritten shared services.
- Migrated backend persistence from PostgreSQL to a unified MongoDB collection handling 5M documents, merging two MongoDB instances into a single replica set for 20% faster queries and supporting rolling upgrades in production.
- Enhanced platform stability by implementing advanced logging systems, mitigating memory leaks, and optimizing session management logic, reducing memory usage by 30% and improving runtime reliability by 15%.
- Introduced synchronized function handling to prevent Virgo crashes and led global customer engagements, restoring systems from crash to live operation within a day for 10+ high-priority clients.
- Built mini feature modules in Bash, Python, and JSON for automated data retrieval and workflows, automating 40% of manual data processing. Led BIRT development, enhancing reports for 20% improved customized analytics.

IBM - ISDL, *Software Engineer Intern* | On-site (Pune, India) Jan 2023 – July 2023

- Built a full-stack Resource Management Tool (React.js, Node.js, MySQL, Docker) with RESTful APIs, reducing resource allocation time by 25%; awarded Best Project for technical impact.
- Engineered virtualization support by deploying the application on VMs and optimizing Docker resource utilization, cutting isolated testing setup time by 30% via secure configurations.
- Integrated Python-based VM collectors to gather real-time metrics from hypervisors and virtual machines, enhancing resource visibility and improving project efficiency by over 30% through automated monitoring and reporting.
- Developed and automated high-priority test cases for Microsoft Teams, contributed to the internal CBA automation framework, reducing manual QA cycles by 40% through streamlined validation processes and increased test coverage.

SKILLS

Languages & Frameworks:	Java, Python, JavaScript, C/C++, Spring Boot, Node.js, React.js
Databases, Development & Deployment Tools:	MongoDB, SQL, PostgreSQL, MySQL, Linux, Docker, Git, Jenkins, OVA/ISO
ML/AI & Data Tools:	NumPy, Pandas, TensorFlow, Scikit-learn, Matplotlib, Jupyter Notebook
Virtualization & BI	Virtualization, VMWare, RHEL, BIRT, Tableau

RESEARCH PAPER

Automated Glaucoma Detection – Published Paper

- Engineered a diagnostic system for early glaucoma detection by integrating CNN, SVM, and KNN models, achieving 94% accuracy on the RIGA dataset (2,664 retinal fundus images), using advanced image preprocessing, supervised learning, and model evaluation techniques to enable scalable, AI-assisted screening and support vision-loss prevention.

PROJECTS

Track-It (Source)

- Developed a full-stack job application tracking system with a dynamic status workflow (Pending, Interview, Declined) and integrated data analysis visualizations (graphs/histograms) on the dashboard, built using ReactJS, HTML/CSS (frontend), Node.js, ExpressJS, and MongoDB (backend) for seamless tracking, organization, and insight generation.

Spectrum (Source)

- Developed a responsive web application using ReactJS, Bootstrap, and JavaScript for managing color palettes, enabling users to copy shades in hex, RGB, or RGBA formats with one click and create/delete custom palettes.

Java CLI Food Ordering System (Source)

- Designed and implemented a modular, console-based food ordering system in pure Java, featuring user authentication, dynamic menu management, discount-based billing, using OOP principles, exception handling, modular classes, and interface-driven design, with a scalable architecture for future integration of GUI or database enhancements.