RITU RAJ

Stony Brook, NY 11790 | rituraj735@gmail.com | +1 (631) 352-8408 | linkedin.com/in/rituraj735/ |
github.com/rituraj735

SKILLS

- **Languages/ Databases:** C, C++, Java, Python, Go, SQL Server, MongoDB, PostgreSQL, Redis and SQLite
- **Cloud/ Tools:** GCP, AWS, Git, Linux, UNIX, Docker, Kubernetes
- **Frameworks/Technologies:** Django, NodeJS, Express, React, TailwindCSS, TensorFlow, Pandas, NumPy, LLMs

EDUCATION

MS in Computer Science, Stony Brook University   **Aug 2025 – May 2027**
Coursework: *Distributed Systems, Wireless and Mobile Networks, TA for Computer Science Fundamentals*

BS in Computer Science, JSS Science and Technology University **(GPA 3.85)**   **Aug 2018 – Jun 2022**
Coursework: *Operating Systems, Database Systems, Computer Networks, Machine Learning, NLP, Data Structures*

PROFESSIONAL EXPERIENCE

SanDisk, Bengaluru, India
Senior Software Development Engineer   **Apr 2024 – Jul 2025**
- Led the development of Auto Validation Tool vNext, a Python 3-based automation framework; **reduced reproduction time from days to minutes** for large firmware failures by implementing a distributed task-queue architecture.
- Architected and coded a **Python-based** log parsing engine using regex and modular parsers to process **500+ GB** firmware logs; **slashed manual triage time by 53%** and optimized memory consumption by 40% using streaming file-IO.
- Implemented a custom CI/CD dashboard in **Jenkins**, providing real-time visibility into firmware stability and improving team-wide deployment velocity by **25%**.

Software Development Engineer   **Aug 2022 – Mar 2024**
- Defined the architecture using the Azure Architecture Center tool, and converted the legacy Auto Validation Tool from Python 2 to Python 3. This migration helped reduce support issues by **23%** by eliminating outdated dependencies and improving the runtime by **34%**.
- Developed and deployed a full-stack internal web application **(MongoDB, Express, React, TailwindCSS)** to track, classify, and analyze firmware validation failures.

Intern   **Jan 2022 – Aug 2022**
- Built a **modular Single Sign-On (SSO)** service using **Azure AD** and **NodeJS**, streamlining authentication across **6+ internal applications**; reduced developer onboarding time by **30%**.
- Designed a Primary-Replica Architecture in a **NodeJS** tool to delegate tasks among central and subordinate units; increased server utilization by **27%** and improved system availability during peak validation cycles.

ACADEMIC PROJECT AND PAPER

Practical Byzantine Fault Tolerant Banking Application
- Engineered message complexity by implementing a **three-phase agreement** protocol (Pre-prepare, Prepare, and Commit), ensuring system safety and liveness across 3f+1 nodes in **Go.**
- Achieved a throughput of **500+** transactions per second with a **sub-25ms** latency by utilizing asynchronous Go channels for non-blocking request handling.
- Enabled a custom client-side library to handle request re-transmission and view-change notifications, maintaining **100% uptime** during simulated node failures.

Head-Cue
- Pre-processed raw **6-axis IMU** data using **Kalman filters** to reduce signal noise by **30%**, significantly improving feature extraction for the downstream ML model.
- Identified and mitigated a **450ms end-to-end latency** bottleneck between gesture execution and media control by optimizing the feature extraction pipeline
- Built an Android application that mapped recognized head gestures to hands-free media and call controls, improving accessibility and reducing touch dependency.

Object Detection and Navigation for the Visually Impaired
- **Spearheaded** the development of a real-time object detection and localization using CNNs, OpenCV and Darknet, integrating object localization and text-to-speech feedback to assist visually impaired users in real-world navigation scenarios.
- Fine-tuned the YOLO model on a custom dataset of 15+ common navigational obstacles, achieving a **Mean Average Precision (mAP) of 92%** and a real-time inference speed of **30 FPS**.
- Authored and published a paper on the same in IRJMETS journal in July 2022, Volume 4, Issue 7, e-ISSN: 2582-5208