RAJ SHAH

rajshah@gatech.edu | (470) 452-9783 | linkedin.com/in/qraj | github.com/RajShah-1 | Atlanta, GA

EDUCATION

Georgia Institute of Technology Aug 2024 – Present
Master of Science in Computer Science

Indian Institute of Technology Bhubaneswar | GPA: 3.99/4 (Rank: 1/850) Jul 2018 – May 2022
Bachelor of Technology in Computer Science (Highest GPA amongst all undergraduates)

Skills

- **Programming Languages:** Java, Python, C/C++, JavaScript, TypeScript.
- **Tools and Technologies:** Apache Kafka, Spring Boot, HTML/CSS, React, Redux, Node.js, MongoDB, PostgreSQL, Flask, PyTorch, OpenCV, Git/GitHub, Shell Script, MATLAB, AWS EC2, Maven.
- **Relevant Courses:** Operating Systems, Database Systems, Advanced Algorithms, Computer Networks, Machine Learning.

EXPERIENCE

The D. E. Shaw Group (Middleware team) | Hyderabad, India
Senior Member Technical Jan 2024 – Jul 2024

- Enhanced uptime of the in-house data store by improving the handling of partial transaction log files and by adding integrity checks against the replicated data stores at the time of recovery, resulting in a 30% decrease in ops efforts.
- **Boosted trading middleware performance by 40%** by optimizing cryptography implementation with OpenSSL and Java Native Interface, **eliminating garbage generation**.
- Led the design and development of the intern evaluation portal and a UI overhaul of the monitoring tool.
- Guided and mentored two summer interns through the completion of the internship.
- Played a key role in talent acquisition by conducting interviews for over 10 candidates during hiring drives.

Member Technical Jun 2022 – Jan 2024

- Engineered a Kafka Application Recovery Protocol, **cutting the start-up time of stateful Kafka applications by up to 93%**.
- Co-presented Kafka Application Recovery Protocol at GIDS, Bengaluru, 2024 (*session recording*).
- Created a Slack bot that allows users to run custom scripts with user credentials through Slack commands, **earning Runner-up at Infinity Hacks 2022**, a company-wide 24-hour hackathon among 350 participants
- Set up system infra such as load balancers, CNAMEs, Kerberos, and CRONs for 15+ services.

Software Developer Intern May 2021 – Jul 2021

- Developed an all-in-one monitoring and debugging tool for Kafka users in the firm, providing a convenient way of analyzing topics, metrics, brokers, and consumer groups of Kafka clusters.
- Integrated this tool with the Kafka REST Proxy to allow users to view messages on authorized topics in real-time.

Cacti Legal Services LLP | Remote
Software Developer Intern May 2020 – Jul 2020

- Improved user experience by fixing concurrency bugs in the backend of the compliance tool developed for PWC.
- Built various endpoints for COVID-19-specific compliance rules and integrated them with the UI of the tool.

PROJECTS

Age and Gender estimation from CCTV footage | Computer Vision, Machine Learning, PyTorch, OpenCV

- Devised an end-to-end pipeline for age and gender estimation achieving 92% accuracy, earning bronze at Inter IIT Tech Meet.
- Employed centroid-based face tracking and late fusion on frame-level estimates to strengthen the inference in CCTV footage. Used generative models to enrich facial features.

Augmented Tree Gradient Coding | AWS, OpenMPI, Distributed Computing

- Achieved a **24% reduction in the training time** over traditional Tree Gradient Coding methods by factoring in the communication delays and partial straggling behavior of computing workers.
- Implemented distributed machine learning setup using AWS EC2 machines to validate the improvements.

Publications

- **R. Shah**, U. Tiwari and A. Thomas, **"Tree Gradient Coding Considering Communication Delays and Partial Stragglers,"** ICC 2024 - IEEE International Conference on Communications, Denver, CO, 2024, doi: 10.1109/ICC51166.2024.10622617.
- E. Bhattacharya, U. Tiwari, **R. Shah** and A. Thomas, "***Improved Tree Gradient Coding with Non-uniform Computation Load***," ICC 2021 - IEEE International Conference on Communications, Montreal, QC, 2021, doi: 10.1109/ICC42927.2021.9500717.