SAIM RAZA
Personal Website – rsaim.info |Phone: +1-201.562.0000 | Email: saim.raza@nyu.edu | LinkedIn | GitHub | StackOverflow

TECHNICAL SKILLS – Backend/Full Stack Engineer
Languages: Core Python (Expert), JavaScript, Java, C++, HTML, CSS, TypeScript, MATLAB, Bash, Tcl, SML NJ
Tools & Frameworks: Git, Linux, Docker, AWS, Kubernetes, SQL, GCP, PostgreSQL, MongoDB, Django, Flask, ReactJS, Node.js, AngularJS, Express.js, Next.js, NumPy/Pandas, TensorFlow, PyTorch, Scikit-learn, NginX, JQuery, Grafana/InfluxDB, DynamoDB

WORK EXPERIENCE

Full-Time

The D. E. Shaw Group, *Tech Lead (Trading Infrastructure, Front Office R&D)* (5+ Years) 2016 - 2021

- Spearheaded the development and management of **infrastructure for algorithmic and discretionary trading** for 16 trading and dev teams
- Developed a high-performance **library for serialization of 'exotic' Python objects** such as lambdas and user-defined classes. The custom-built solution outperformed existing open-source alternatives like dill and cloudpickle by a factor of **100x**.
- Created and presented a talk on Parallel Computing and Serialization / Pickling (YouTube) at the national Python conference, PyCon India 2020
- Led a team of **4 developers** in the creation of polyglot software to migrate ~30 repositories containing **~2.5 million lines of code** to Python 3.8
- Developed a robust library for **file-locking** on Unix systems to enable **concurrency over a single file** among various Python processes and threads.
- Developed a **web-framework** based on **Tornado**, **Web2Py**, **Nginx**, and asynchronous task queues using **Celery** to optimize the performance by 40%
- Architected a comprehensive **framework** for **performance and regression monitoring** of thousands of APIs, libraries and unit tests.
- Engineered a high-performance **non-linear optimizer** utilizing HSL/IPOPT to achieve a remarkable **3x acceleration in simulation run-time**
- Developed **CAP (Consistency, Availability and Partition Tolerance)** principles, and async capabilities using Trollius in a data analytics engine.
- Introduced multi-processing in the Python Unittest framework resulting in a **10x performance** improvement for running distributed tests.

Internships/Co-ops

Citi, *Software Engineering Intern (Capstone project)* (3 Months) May 2023 – Aug 2023

- Work on an **Global Markets Trading Open World Competition** platform for fixed income market making (a.k.a., SKIM)
- Design and develop trading bots leveraging reinforcement learning, algorithms execution, and meta-ML.
- Develop a reliable environment (a.k.a., Robothon) to support 24x7 competitions focused on the development and deployment of trading bots

Skillet.ai, *Senior Software Engineering Intern* (4 Months) Jan 2023 – May 2023

- Worked extensively on **REST** API design based on various **Web3 protocols**. Leveraged The Graph for indexing and querying Ethereum Blockchain.
- Built **microservices architecture** using GCP Cloud Functions, Google Kubernetes Engine (GKE), Datastore, MongoDB, NodeJS, ReactJs, GraphQL
- Ensured **99% SLA** by building observability using Jaeger, Zipkin, and Sentry.io. Increased resiliency by **load-testing** using K6, and Datadog.

National Aeronautics and Space Administration (NASA), *Software Engineering Intern* (3 Months) Oct 2022 – Dec 2022

- Worked on storing and efficient **parallel I/O** of Petabytes of N-dim typed arrays in cloud-optimized **Zarr** on **The OSN** using S3 RESTful interface
- Created **backend frameworks/UI** to assist in various research projects at NYU and Lamont Doherty Earth Observatory, Columbia University

LiveRamp Holdings Inc, *Senior Software Engineering Intern* (3 Months) May 2022 – Aug 2022

- Created a **Django app** and scripts in Bash, Ruby, Python to help ingest **80+ PBs of data** from billions of **concurrent requests** per day.
- Developed and deployed staging/production **CI/CD pipelines** on using Jenkins, Spinnaker, Terraform, Next.js, NodeJS, Flask Apps.
- Reduced the **issue resolution time by 50%** by automatically finding assignees for JIRA issues by deploying a **machine learning model** (Google AI)

Defence Research and Development Organisation (DRDO), *Computer Vision Researcher (ML/AI)* (1 Year) 2015 - 2016

- Spearheaded a novel computer vision algorithm for object tracking in videos which outperformed 8 state-of-art algorithms and achieved mean-center location error of 6.791 and F-measure of 0.78. We fused 4 visual cues and used context-sensitive reliability to achieve high accuracy
- Research Publication: Walia, G.S.; Raza, S.; Gupta, A.; Asthana, R.; Singh, K. A novel approach of multi-stage tracking for precise localization of target in video sequences. Expert Systems with Applications (ESWAA) Int. J. 2017, 78, 208–224 (Impact Factor – 4.292)

EDUCATION

New York University (NYU), Courant Institute of Mathematical Sciences, NY, USA **Sep 2021 – Aug 2023**
Master of Science in Computer Science (MS CS) GPA: 3.815/4

Delhi Technological University, Delhi, India **Jul 2012 - May 2016**
Bachelor of Technology (B. Tech) in Mathematics & Computing Engineering GPA: 8/10

COURSEWORK:
Data Structure and Algorithms, Operating Systems, Database Management Systems, Object Oriented Programming, Data Communication & Networks, Programming Languages, Data Analytics and Visualization, DevOps and Agile Methodologies, Cloud and Machine Learning, Predictive Analysis

AWARDS/ Open Source Contributions/Other Projects

- JeevanStambh Foundation – developer and maintainer of the website of the NGO working in various areas of relief management
- Pyflyby: A set of productivity tools for Python. Actively worked on development, maintenance, improvements, and production releases to PyPi.
- **Best Paper Award**, 2018 in the Department of Applied Mathematics at Delhi Technological University.
- Won second prize in the **hackathon** High On Code, 2017 and 2018 at DE Shaw & Co

Career Timeline

Saim Raza