SUDHANSHU KULKARNI

Software Developer

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I am a passionate **Software Developer** with a perfect blend of research-oriented and application-oriented portfolio. 3+ years of experience facilitating clean & efficient software, currently exploring the realms of HPC and Quantum Computing; *with a cup of coffee, of course.*

Education

May 2024 — **MS - COMPUTER SCIENCE, San Francisco State University**
Thesis : *Exploring classical and hybrid classical-quantum approaches for scalable distributed-memory parallel FFT.*
Course Work : High Performance Computing, Quantum Computing, Data Mining, Software Engineering

April 2020 — **BE - COMPUTER ENGINEERING, International Institute of Information Technology (SPPU)**
Capstone : *Satellite data analysis system employing vanilla Neural Networks and Dynamic Time Warping algorithms.*
Course Work : Machine Learning & AI, Data Analytics, Cloud Computing, Cyber Security

Skills

Languages Python, C/C++, Java, CUDA, TypeScript, Javascript, SQL, HTML/CSS, bash.
Frameworks SENSEI, Qiskit, cuQuantum, Frappe, Django, Flask, SvelteJS, NodeJS, MySQL, NoSQL.
Tools Git, Tensorflow, Keras, SciPy/NumPy, MPI, OpenMP, Linux, AWS, GCP, Docker/Kubernetes, nginx, Power BI.

Experience

November '22 - Present — **Graduate Research Assistantship - San Francisco State University**, San Francisco, CA
- Studying the feasibility of performing scalable FFT computations "in situ" on HPC platforms for the purpose of supporting scientific data analysis workloads in exascale NERSC projects like WarpX.
- Collaborations with scientists at Lawrence Berkeley National Laboratory for active research on Perlmutter, an HPE Cray EX supercomputer, achieving at least 10x speedup in computation time compared to traditional methods.

C++ | Python | High-Performance Computing | Massively Parallel | Open Source | Scientific Computing | MPI | Cuda | GPU

May 2023 - August 2023 — **SDE Intern - Amazon Web Services**, Seattle, WA
- Designed and developed an enhanced monitoring agent to be deployed on thousands of live servers worldwide as a part of the AWS CloudFront CDN services' platform team.
- Prototyped a robust and lightweight service to ensure timely capturing and reporting of critical metrics, guaranteed to enhance service reliability by at least 10% after full-fledged deployment on AWS servers across the world.
- Created live dashboards to provide real-time visibility into at least 70% of all the agents running on servers, improving the team's ability to maintain reliability and diagnose potential issues.

Python | Server-side scripting | Dashboarding | Scalable Development | Clean Coding | Unit Tests | Agile

August 2020 - July 2022 — **Software Engineer - ElasticRun**, Pune, IN
- Core developer of in-house ERP system to manage large-scale logistics and B2B eCommerce platform and responsible for at least 20% of the entire development workload of the 'Velocity' segment of the company.
- Worked on heavy Python-based server-side development and business-focused client-side scripting for progressive web apps, in an agile software development environment.
- Contributed to creating an automated testing framework for faster bi-weekly software deployments with Kubernetes and CI/CD pipelines on GitLab, which improved reliability and rate of deployments by ≈15%.

Python | TypeScript | Frappe Framework | PWA | SvelteJS | Full stack | Git | CI/CD | Technical Documentation

March 2018 - July 2018 — **IoT Specialist Intern - SCMIND LLC**, Princeton, NJ
- Low-level development on IoT-enabled supply chain machinery to deliver performance monitoring, breakdown predictions, and sensor-based critical metrics on the Raspberry Pi microprocessor hardware to power the global analytics dashboard on PowerBI via a multi-level cloud-based pipeline.

Python | IoT | Supply Chain | PowerBI | Microsoft Azure | AWS Redshift | Raspberry Pi | Performance Optimized

Notable Experiences

- An integral member of the Early-Career Conference Committee and Review Board for the ISAV workshop at The International Conference for High-Performance Computing, Networking, Storage, and Analysis (SC23), tasked with technical evaluation and assessment of submitted research papers and complimented it with a noteworthy lightning talk on Scalable FFT project research at the conference. Peer Reviewed Abstracts : https://arxiv.org/abs/2402.01843
- Contributor in the Open Source SENSEI Project as a new FFT analysis backed endpoint.
- Prime contributor in a project in Geo-Information System domain to perform multi-class pixel-based image classification on multi-spectral and temporal satellite data. Technical collaborations with scientists from ISRO, NRSC and Geospatial Design Labs, India.