Rutuja Surve

E-mail: rutuja.r.surve@gmail.com | Contact: +91 9960252880 | Hyderabad, India | Google

B.E. (Honors) Computer Science | M.Sc. (Honors) Mathematics | BITS Pilani, India (2012-2017) | CGPA:8.25

Open Source Experience:

MariaDB Foundation | Core Developer (2018-2019)

- Contributed to the development of Reverse Privileges (DENY) for MariaDB, presented at **Percona Live Conference, Europe**, 2018. Drove community contributions and helped on-board new contributors.
- Speaker at MariaDB Developer Unconference, Finland, 2018.

Linux Foundation | Software Development Intern (Open Source) (Aug 2017 – Nov 2017)

Contributed to the OPNFV Bottlenecks Project under the Linux Foundation for their Euphrates release by:

- Designing and developing a monitoring module for stress tests of VNFs in Python using Prometheus for monitoring
- Used CollectD for collecting metrics, Grafana for plotting results and Docker for containerizing. Automated the entire application
- Invited to present at **OPNFV Plugfest Conference 2018**, Valbonne, France

OWASP Foundation | Code Sprint 2017 Intern (Open Source) (Jun 2017 – Jul 2017)

Participated as a Code-Sprint Intern with the Open Web Application Security Project (OWASP), a regular GSoC organization

- Built a Machine Learning web-server log analysis tool using Python libraries Numpy, SciPy, Sci-Kit Learn, K-Modes in Python
- It accepts Web Server (Apache) logs as input and provides output as a determination of requests that are considered 'attacks'
- Used different supervised and unsupervised algorithms like Clustering, Decision Tree, Naive Bayes, etc. for classification

Mozilla | Outreachy Intern (Firefox for Desktop Engineering Intern) (May 2016 – Aug 2016)

Participated as one of the 41 internationally selected interns for **Outreachy,** hosted by Software Freedom Conservancy and GNOME foundation. Made the following open source contributions to Mozilla and presented at 'Mozilla London All Hands Conference, 2016':

- Designed and developed a content-process management tool that can track real time memory usage across each process in the Firefox browser. Worked on both the back-end and front-end in JavaScript, HTML, CSS
- The project helped scale up and tune the number of content processes that Firefox uses, emphasizing on memory measurement
- The tool is accessible by hitting about:performance in the Firefox browser (version 52 onwards)
- It reports the RSS and USS memory performance for all open tabs and is platform-independent

Open Source Organizations with contributions: (2020 – Present)

- **QuantStack (Mamba) Project - Scientific Computing:** Contributed to the Mamba project for implementing a conda-tree like recursive-dependency printing functionality in C++.

- **OpenMined (PSI – Private Set Intersection) Project:** Contributing to the development of PSI cardinality protocol using EDCH and Bloom Filters (Homomorphic encryption) in Python and C++. Project will be used for contact-tracing apps for COVID-19. This project is funded by RAAIS foundation.

- **Google BigQuery – Scientific Computing:** Contributing to the development of BigQuery Stats Util library for implementing UDFs in Python for data analytics on large scale datasets, using Jupyter Notebooks for development.

Industry Experience:

Google | Software Engineer, Trusted Interactions and Platforms (May 2019 - Present)

- Contributing to the development of tools across verticals like shopping, ads, safe browsing and cloud (full stack)
- Implementing a Luggage Pick Up prototype for Google Assistant and GeoAR navigation for airports in Google Maps as a part of 20% contributions

Nutanix India | Member of Techincal Staff (Nov 2018 – May 2019)

- Worked with the Epoch team of Nutanix, a leading cloud computing HCI startup, for the development of a multi-cloud application and monitoring solution
- Worked on development and optimizations of microservices like Alerts for detection of outages and better observability, using Bosun in Golang

Infoworks.io | Software Development Engineer (Jul 2017 – Nov 2018)

- Worked on features in the Data Ingestion and Cloud teams of Infoworks, a Big Data start-up that automates data warehousing on Hadoop
- Designed and developed a data transfer library that uploads files from local file systems and HDFS to each of the three cloud platforms – Google Cloud, Azure and AWS. This supports simple, multipart and resume-able uploads with concurrency.
- Designed Azure ARM Solution templates for supporting Blob and DataLake Storage with Service Principal and encryption for the Infoworks HDInsight cluster
- Contributed to exporting enterprise data to BigQuery on Google Cloud Platform, delivering features using various Google Cloud services like Cloud Storage, Compute Engine, Dataproc as a part of the Enterprise Cloud Bridge project

Nvidia Graphics | Software GPU Intern (Jan 2017 – Jun 2017)

Worked with the Multimedia and Graphics team of NVIDIA and contributed by:

- Boosting the speed of Video encoding by using Computer Vision, Image Processing and Parallel Processing techniques

- Applied complex mathematical algorithm of Discrete Cosine Transform to identify low and high frequency content regions (image segmentation problem) in a series of live-streamed screenshots, to encode them as lossy and loss-less respectively
- Used OpenCV and coded CUDA C++ kernels to achieve super-fast parallel computing on GPU to process a single 1920x1200 pixel desktop screenshot in about twenty microseconds

Amazon | Software Development Intern **(Aug 2016 – Dec 2016)**

Worked with the Media and Shopping Experience team at Amazon for their Book-Series and Video Games page and contributed by:

- Modifying the 'More About the Authors' feature to display multiple author's information for books with multiple authors
- Migrating the source of author images to a globalized data-path endpoint, making it independent of the market-place
- Translating the Book-Series page to Spanish, holding a direct impact on a million plus customers
- Working on a Machine Learning algorithm for fetching 'What Should I Read Next?' recommendations in Ruby on Rails

Research Paper and Publications:

- Research paper titled 'Area Based Routing Protocol for Mobile Wireless Sensor Networks' accepted at International Conference on Information Networking (ICOIN) 2018, Thailand and published in IEEE Xplore

Skills:

Languages: C++, Java, Python, MySQL

Frameworks: OpenCV, Scikit-Learn, Prometheus, Grafana, Castalia, Docker, Hadoop, Hive, Maven/Jenkins/Bazel for build, Google Cloud Platform Services- BigQuery, Cloud Storage, Kubernetes, Azure (Blob Storage/Datalake Storage/ ARM templates), AWS (S3), Jupyter Notebook

Concepts: Version Control (GitHub, Mercurial), Code Review (Gerrit, Critique), Open Source, Scientific Computing, Big Data, Databases

Integrated Development Environment: Intellij Idea, Eclipse, Cider

Awards: Awarded INSPIRE DST scholarship by Govt. of India for pursuing Masters in Pure Sciences (Mathematics) in 2012