DIVYAANK TIWARI

(On F1 Visa)
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EDUCATION

Stony Brook University, Stony Brook, NY, USA August 2023 - December 2024
Master of Science in Computer Science *GPA - 4/4*
Courses: Analysis of Algorithms, Operating Systems, Decentralized Data Management

Sardar Patel Institute of Technology, Mumbai, MH, India August 2016 - June 2020
Bachelor of Engineering in Computer Engineering *GPA - 9.22/10*

TECHNICAL SKILLS

Languages	Java (3 years), Python (3 years), SQL (3 years), Shell Scripting (bash/ksh) (3 years), C (2 years), JavaScript (2 years), HTML5 (2 years), CSS3 (1 year), Scala (1 year), C++ (6 months), Go (6 months)
OS	Linux (Oracle Enterprise Linux and Ubuntu) (5 years)
Databases	Oracle (12c/19c) (1.5 years), SQL Server 2019 (1 year)
Frameworks	Apache Ignite (1 year), Spring Boot (1 year), gRPC (6 months), ReactJS (6 months)
DevOps	Docker (3 years), Kubernetes (AKS) (1 year), CI/CD (1 year), Azure Application Insights (1 year), Azure DevOps (1 year)
Developer Tools	Git (5 years), Splunk (2 years), VisualVM (1 year), JFR (1 year), Akamai (1 year), Oracle Enterprise Manager (1 year)
Miscellaneous	Distributed Systems (3 years), Microservices (3 years), REST APIs (3 years), Distributed Caching (1 year)

RESEARCH EXPERIENCE

File systems and Storage Lab (FSL) **Stony Brook, NY, USA**
Research Assistant *September 2023 - Present*

- Advised by Prof. Erez Zadok, working under Yifei Liu on leveraging Model Checking techniques for detecting bugs in Linux file systems.
- Submitted a patch to the Linux Kernel for a potential fix in the Journaled File System.

PROFESSIONAL EXPERIENCE

MSCI Inc. **Mumbai, MH, India**
Associate Quantitative Developer (SDE - II) *September 2022 - August 2023*

- Improved average response time for Exposure API by a staggering 400% by implementing a gRPC interface.
- Implemented a Recursive Descent Parser to transform gRPC objects to custom domain objects.
- Developed a batch-processing utility that compares two XML files (1-10 GB), and generates comparison reports.
- Implemented an Apache Ignite-based cache for the Exposure API that backs the in-memory, Caffeine cache.
- Performed extensive performance engineering to optimize Ignite cache operations and reduce memory-footprints.

- Responsible for 5-fold and 60-fold decrease in API response time for Fixed Income and Equity Assets respectively.
- Added Exposure computation support for Contract for Difference and Equity Index Derivatives.

MSCI Inc. **Mumbai, MH, India**
Associate Site Reliability Engineer (SDE - II) *January 2022 - August 2022*
Analyst Site Reliability Engineer (SDE - I) *June 2020 - December 2021*

- Promoted from an Analyst to an Associate, an year before the traditional duration!
- Entrusted with the stability of Index applications and infrastructure as the Lead SRE for Asia-Pacific shift.
- Resolved Akamai Content Delivery Network and Web Application Firewall-related issues as the SRE Point-of-Contact.
- Responsible for preventing Service Level Agreement breaches in Index calculation and distribution batch jobs.
- Developed an application for aggregation of performance metrics from the distributed Index calculation service.
- Developed an 'EU Benchmark Regulations' compliance portal for tracking all Index Applications and Databases.
- Created Splunk dashboards by using data from Index calculation service logs for detecting database bottlenecks.

Siemens **Pune, MH, India**
Data Science Intern *January 2020 - June 2020*

- Developed a Time Series model (Mean Absolute Percentage Error: 7.17%) for product sales prediction.
- Assisted in the migration of SCM Team's reporting platform to ThoughtSpot by designing database schemas.
- Modelled Product-delivery data present in SAP HANA as a Knowledge Graph using Amazon Neptune.

PROJECTS

Model Checking Journaled File System | *C, Model Checking, Linux Kernel Debugging*

- Used Metis, a differential-testing model-checking framework, to identify regressions in the Linux-based Journaled File System (JFS) by leveraging ext4 as the reference file system and conducting efficient state-space exploration.
- Investigated kernel hang bugs in JFS using debugging techniques like logging, assertions, function tracing and submitted a Linux Kernel patch for the same.

Programming Language Interpreter | *Golang*

- Designed an interpreter for a toy programming language, which supports Closures, Macros and REPL.
- Implemented the language parser using Pratt Parsing, a modification of Recursive Descent Algorithm.

EXTRA-CURRICULAR ACTIVITIES

- Teaching Assistant for the Semester-I course, 'ES11: Structured Programming Approach' (2019) at Sardar Patel Institute of Technology.
- Conducted 5 workshops titled, 'Python Fundamentals for Data Science' for the Semester-III course, 'MA203: Probability and Statistics' (2022) at Sardar Patel Institute of Technology.