DIVYAANK TIWARI

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EDUCATION

Stony Brook University — **Stony Brook, NY, USA**
Incoming MS in Computer Science candidate — *August 2023 -*

Sardar Patel Institute of Technology — **Mumbai, MH, India**
BE in Computer Engineering (CGPA - 9.22/10) — *August 2016 - June 2020*

PROFESSIONAL EXPERIENCE

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

- Developed a Proof-of-Concept, gRPC interface for the Cloud-native, Microservice-based, Exposure API, which improved the average response time by 5-70x across different instruments when compared with the corresponding REST-based requests.
- Implemented a Recursive Descent Parser to transform gRPC objects to custom domain objects.
- Developed a Kubernetes-native utility that leverages XSLT, MD5 and colordiff to sort, hash and compare arbitrarily large batches of huge (>1 GB) XML files, and generates elaborate comparison and summary statistics reports.
- Implemented a Apache Ignite-based cache for the Exposure API, that backs the Caffeine-based in-memory cache and performed extensive performance engineering and analysis to optimize cache operations and reduce memory-footprints.
- Improved API response time by 5x for non-Equity Instruments and by 60x for Equity-based Instruments.
- Implemented logic for Exposure computation of instruments like Contract for Difference, Equity Futures Option, Equity Index Option and Equity Index Futures Option.

Associate Site Reliability Engineer (SDE - II) — **January 2022 - August 2022**
MSCI — *Mumbai, MH, India*

- Appointed as the Lead SRE for APAC shift, entrusted with the stability of Index applications and infrastructure across all environments.
- Appointed as the SRE SPOC for resolving Akamai Content Delivery Network and Web Application Firewall-related issues.

Analyst Site Reliability Engineer (SDE - I) — **June 2020 - December 2021**
MSCI — *Mumbai, MH, India*

- Monitored Index calculation and distribution batch jobs to prevent SLA breaches caused by infrastructure bottlenecks or application regressions.
- Designed 'application-infra-stats' utility to extract performance metrics from production instances of the SOA-based Index calculation service.
- Onboarded database read-write logs of Index calculation service instances onto Splunk and created dashboards to help in the detection of database bottlenecks and regressions.
- Created shell scripts for the weekly archival of application logs across all Test and Production servers to prevent OutOfMemoryError exceptions in applications.
- Promoted to an Associate, an year before the traditional duration.

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

- Developed a Proof-of-Concept Time Series model, with a Mean Absolute Percentage Error of 7.17%, for predicting sales of 50 products over the next year.
- Designed database schemas to help with the migration of Supply-Chain Team's reporting platform from Excel to ThoughtSpot.
- Leveraged Amazon Neptune for modelling Product-delivery data present in SAP HANA as a Knowledge Graph.

PROJECTS

XML Content Validation | *Java, bash, XSLT, colordiff, Docker*

- Co-developed a batch processing utility that takes a pair of files, one produced via a legacy data-store and other via a new data-store, containing similar XML-encoded portfolio data, and generates elaborate difference reports.
- Leveraged XSLT to pre-process and sort files based on the underlying XML format.
- Used MD5 for hashing file contents and eliminating comparisons between similar files.
- Leveraged colordiff and explored its various command-line flags to efficiently generate visually-appealing, HTML-based comparison reports for end-users.

application-infra-stats | *Python, bash, SQL*

- Co-developed a Python utility to collect and analyze, metrics for 20 Index Calculation service production instances; during the daily execution of the global End-of-Day Index calculation batch job.
- Implemented logic to hop across all production servers and parse OSWatcher logs to gather process-level statistics such as Virtual Memory , CPU and Memory usage as well as server-level statistics such as load-average and logical number of CPUs.
- Created custom database queries for fetching Index-level insights such as the number and type of indexes calculated across all servers.
- Designed interactive Power BI visualizations from collected data to enable greater observability for all stakeholders.

Monkey Interpreter | *Golang*

- Worked through Thorsten Ball's, 'Writing an Interpreter in Go' book and designed an interpreter for the Monkey language that supports Closures, Macros and REPL.
- Implemented the parser using Pratt Parsing and Recursive Descent Algorithm.

TECHNICAL SKILLS

Languages	Scala, Java, Python, Shell Scripting (bash/ksh), SQL, C#, C, Go
Operating System	Linux (Oracle Enterprise Linux and Ubuntu)
Databases	Oracle (12c/19c), SQL Server 2019
Web Technologies	JavaScript, HTML5, CSS3, ReactJS, ASP.NET Framework
Cloud & DevOps	Docker, Kubernetes (AKS), Application Insights, Azure DevOps
Software Tools	Git, VisualVM, JFR, Akamai, Splunk, Oracle Enterprise Manager

EXTRA-CURRICULAR ACTIVITIES

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