Sarvesh Ranjan

Integrated Dual Degree
B. Tech. (Computer Science & Engineering)
And M. Tech. (Information Technology)
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Indian Institute of Technology Roorkee

Area(s) of Interest: Deep Learning, Machine Learning, Data Science.

WORK INFORMATION

Engineering Consultant, Cisco Systems, San Jose, CA (Aug 2015 - Present)

Working with OpenStack team in Cisco, San Jose. Current project focusses on creating advanced data science and monitoring services on top of Cisco Zeus. This project involves devising methods for system health checks, monitoring, creating policy based alarms, and data backup systems for failure prevention. This project also involves creating load balanced data storage mechanism for multiple site data center scenarios and aims to perform locality based data replication using erasure codes.

INTERNSHIP INFORMATION

Cisco International Internship Program, Cisco Systems, San Jose, CA (Aug 2014 - Jul 2015)

Worked with OpenStack team under Office of Cloud, CVG for one year in San Jose. Worked on projects in the fields of OpenStack, Machine Learning, NLP and contributed to upstream code of open source projects like Apache Kafka & Storm. Currently an active contributor in Ceilometer and Cinder projects in OpenStack. Worked on following projects:

- Multi-dimensional anomaly detection and disk failure prediction.
- Read and write optimization in Ceph object storage system.
- PlaceWise: A smart (multi-) cloud resource placement recommendation engine and service.
- Cognitive: Machine learning as a service.
- Authentication and security in Apache Kafka pub-sub system.
- Multi node OpenStack cluster deployment and management.
- Designing Elasticsearch, Kibana and Logstash based logs & metrics pipeline and performing policy based cloud monitoring.

Integral part of **Software as a service Cisco product Cisco Zeus**'s development team. Participated in **OpenStack summit, Vancouver** as a speaker and talked about Demystifying Logs in OpenStack Clouds.

Wipro Limited, Bangalore
Reliable Flash Storage System with Erasure Codes (May 2014 - Jul 2014)

This project's aim was to create Erasure codes and improve the performance of data replication and storage methods used by Microsoft Azure. Used Reed-Solomon codes & erasures and decreased the amount of replication needed to create a multi-level, multi-tier block object storage system which is highly scalable and reliable without increasing the cost of storing extra data.

Impetus Infotech India Pvt. Ltd.
Design and Implementation of MapReduce Workflow Optimizer (May 2013 - Jul 2013)
This project's aim was to devise an algorithm for scheduling hadoop jobs in MapReduce frameworks. The algorithm focused on rescheduling hadoop jobs using code realignment and created DAGs to rescheduled the SQL like queries. This algorithm was then implemented in the profiler of Jumbune(TM), product of Impetus Technologies, Inc. This was later used to create task executor.

PROJECTS

Distributed Multi-Dimensional Anomaly Detection & Correlations with Logs (Master's Thesis)
Created novel distributed methods for anomaly detection in multi-dimensional space. Created a system where users can define thresholds and set anomaly parameters which can be used to find anomalous metric(s) and detect the root cause of the anomaly which is useful for failure prediction and failure avoidance. This is also used for root cause analysis by correlating metrics with logs and Image similarity detection.

Demystifying Logs in OpenStack Clouds (OpenStack Summit, Vancouver)
OpenStack services create a big jungle of logs and metrics and provide cloud operators tremendous insights. As part of this project Cisco proprietary systems were created that answers questions about most interesting and actionable logs out of TBs of logs, finds correlated logs and metrics, finds cascading & propagating logs, does root causes of issues, gives early warning signals for potential operational issues, lists typical parameters associated with common event pairs like average time between occurrence, association rules, preceding and successive events. A Django driven application was created to find the logs which were indicators of faults & create sleek visualizations for ease of cluster management.

Brand-specific Social Score: Identifying Brand supporters & detractors through Social Media
The project involved collecting and analyzing social media data using techniques of data mining and machine learning to provide actionable intelligence to marketers. A web application was developed to demonstrate the process and visualize the results.

Webex++ Recommendation Engine
A social platform with functionality of Q&A was created. WebEx++ is a continually improving knowledge base of posts, questions and answers created, edited and organized by everyone who uses it. Equipped with the advanced techniques of Machine Learning and NLP, it is a platform that enables Cisco employees to share their knowledge, questions, ideas and expertise.

Web Server Selection
This project was based on the design of a mathematical model for web service recommendation system for users based on the concepts of artificial intelligence. A mathematical formula was created to automate the process of load balancing & server selection.

SKILLS AND ACHIEVEMENTS

Computer Languages	Python, C++, Java, Javascript, Node.js.
Software Packages	OpenStack, Logstash, Elasticsearch, Kibana, Grafana, Fluentd, InfluxDB, Collectd, Truviso, Apache Kafka, Storm, Hadoop, Hive, Spark, Pig, Zookeeper, Torch, Scikit learn, Django Framework, Matlab, RHEL 7.1.
Academics	• Won HackIT V- Data science hackathon in San Jose, CA. • Certified Cisco Security Ninja White Belt Engineer • Active Technical Contributor OpenStack(Ceilometer, Cinder, Nova). • Winner FY15 Year-End Showcase Cisco International Internship.

REFERENCES

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