Hemanta Sapkota

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Work Experience

University of Nevada, Reno — Graduate Research Assistant, Reno, NV   Aug 2018 — Aug 2021

- Worked in the High-Performance Computing and Networking Lab and conducted research on various Network related topics such as Throughput Optimization, Network Congestion Control and Network Anomaly Detection
- Modeled transfer throughput using Time Series Analysis, DNN and Curve fit to predict the maximum throughput that a particular transfer can get within 3 seconds of the start of the file transfer
- Used Java and Scikit-learn library of Python to develop a model to predict desired concurrency, parallelism and pipelining value and improved performance of file streaming algorithm by 24% on some environment
- Collaborated on Robust Integrity Verification Algorithm (RIVA) to improve performance by dynamic parallelism algorithm to add new checksum and transfer thread which boosted performance by up to 2 times as compared to the original throughput in HPC system

ZTESoft, Nepal — International Product Delivery and Management Engineer, Kathmandu, Nepal   Aug 2017 — July 2018

- Provided support to a Telecom provider called SmartTel, led the Nepali team in ZTESoft - Nepal and supported their billing system & CRM system
- Suggested customers about new features which they might need in their CRM system and incorporated those new features
- Built various daily report generating algorithms using Splunk software by analyzing thousands of new daily users and millions of daily phone call logs generated by SmartTel

Splunk Inc — Software Engineering Intern, Shanghai, China,   Aug 2015 — Jun 2016

- Analyzed Splunk mobile app end-user activity log with millions of records every week using Splunk Processing Language to gain insight from the machine data such as daily active users, new user and old user retention pattern, common mobile device and OS
- Enhanced in-house Paid Time Off (PTO) system (both frontend and backend), with MongoDB, Node.js, Express.js and added new features to support the functionality for intern's use
- Worked on User Interface for data visualization of dashboard of main Splunk product using Backbone.js

Education

University of Nevada, Reno — Master's in Computer Science   Aug 2018 — Aug 2021
Fudan University, Shanghai — Bachelor's in Software Engineering   Sept 2012 — July 2016

Publications

- Charyyev, Batyr, et al. "Towards securing data transfers against silent data corruption." 2019 19th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing (CCGRID). IEEE, 2019.
- Sapkota, Hemanta, Md Arifuzzaman, and Engin Arslan. "Sample Transfer Optimization with Adaptive Deep Neural Network." 2019 IEEE/ACM Innovating the Network for Data-Intensive Science (INDIS). IEEE, 2019.
- Sapkota, Hemanta, Bahadir A. Pehlivan, and Engin Arslan. "Time series analysis for efficient sample transfers." Proceedings of the ACM Workshop on Systems and Network Telemetry and Analytics. 2019.
- Sapkota, Hemanta, and Engin Arslan. "Reliable Wide-Area Data Transfers for Streaming Workflows." IEEE Transactions on Parallel and Distributed Systems. 2021 (Submitted)

Projects

Real-time genetic optimization of large file transfers — Class Project, UNR   Aug 2019 — Feb 2020

- Built a multithreaded file transfer algorithm using both Python and Java from scratch, which had client and server-side features. After sending the signal to servers to initiate the transfer, client queries for periodic throughput data back from the servers
- Utilized throughput data returned from the servers and Genetic Algorithm to try to predict the optimal concurrency value and improved the throughput by up to 30% compared to Historical Analysis and Real-time Probing (HARP)

Skills

Experienced in: Python, Java, HTML5/CSS, JavaScript, MySQL, Jupyter, Git, Pandas, NumPy
Conversant with: C++, PHP, Scikit-learn, SciPy, MongoDB, Express.js, Node.js, Backbone.js, Splunk