Srikar Chundury

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Education

Ph.D. in Computer Science Aug 2022 – May 2027
North Carolina State University, Raleigh, NC GPA – 3.95/4.0
Relevant Courses: Quantum Computing, Resource-dependent Deep Learning, Graph Theory, Parallel Systems, Efficient Tensor Computation for AI, Real-time AI & Machine Learning Systems.

Bachelor of Technology in Computer Science and Engineering Aug 2015 – May 2019
PES University, Bangalore, India GPA – 9.29/10
Specialization: Systems and Core Computing

Skills

Languages: C++, Python, Go, C, R, SQL, JavaScript, JSX, CSS, HTML, TVM-script
Frameworks/Technologies: Flask, Hadoop, Spark, Redis, PostgreSQL, MariaDB, InfluxDB, MongoDB, Ansible, Jenkins, Docker, Kubernetes, TensorFlow, PyTorch, Horovod, Qiskit, Cirq, Quimb, D-wave, React, LaTeX, Apache TVM.

Achievements

- Best Poster Award at QCUF 2024 for "QFw: A Quantum Framework for Large-scale HPC Ecosystems". Same has also been nominated for best poster at SC'24.
- Research work: "A PEPS Plugin For TNQVM" published in IEEE-QCE, 2023.
- 2 x Bravo Award for exemplary work (Walmart Global Tech), 2022.
- Secured 2nd position in CodeBattle (Hackathon @WalmartLabs, Bangalore), 2019.
- Research work: "Impact Of Software Stack Version On Micro-architecture" published in ACM-ICPE, 2019.
- Secured 1st position in #Code2k17 (Hackathon @PES University), 2017.
- 5 x Prof. CNR Rao Merit Scholarship - includes a fee waiver.
- Award of Excellence (DAV Public School), 2013.

Research & Work Experience

Systems Laboratory, NC State University Sept 2022 – Present
Mentor: Dr. Frank Mueller Graduate Research Assistant
Working on analyzing sparsity of tensor networks in quantum simulations. Co-advised by Dr. Jiajia Li on developing a novel numerical library to leverage sparse patterns to achieve realize digital quantum simulation. Presented my work as posters at QCUF, ORNL and QSim 2023.

Oak Ridge National Laboratory, Tennessee May 2024 – August 2024
Mentor: Dr. In-Saeng Suh Graduate Research Intern
HPC-QC Integration with slurm. Tested a realworld QAOA problem on NWQ-Sim and TN-QVM via QFw.

Oak Ridge National Laboratory, Tennessee May 2023 – July 2023
Mentor: Dr. In-Saeng Suh Graduate Research Intern
Worked on formulating, developing, and improving high-performance tensor network libraries used for quantum simulations, as part of the Quantum Natural Language Processing group.

Walmart Global Tech, Bangalore August 2021 – July 2022
Manager: Kathy Lim Software Development Engineer III
Developed microservices in GoLang and micro frontends in React, and deployed them on Walmart's cloud-native Kubernetes platform.

Walmart Labs, Bangalore August 2019 – July 2021
Manager: Kumar Narsipur Software Development Engineer II
Full-stack development of an internal orchestration web-based tool to automate life cycle management of Walmart's enormous infrastructure (stores, distribution centers, and in-house machines).

Walmart Labs, Bangalore January 2019 – June 2019
Manager: Kathy Lim Software Development Intern
Developed a dynamic task scheduler for application-level function scheduling. Actively being used by Walmart infrastructure teams to schedule maintenance tasks that include patching and provisioning systems.

Agneyas Labs, Bangalore December 2018 – January 2019, June 2019 – August 2019
Mentor: Chandrasekhar Buduguru Internship
Deployed Spark on Kubernetes. Built a pipeline to submit jars via spark-submit and return results back. Built a basic login page for a client's website. Captured time-sensitive edge metrics in InfluxDB. Analyzed this time series using basic visualizations of data after cleaning and preprocessing.

AMD, Bangalore May 2018 – July 2018
Mentor: Prasun Ratn Co-Op
Analyzed performance for various then-latest AMD server processors, and contrasted them with that of intel server processors for kernel-level benchmarks like netperf and string-copy.

Relevant Past Projects

Distributed deep neural network training optimization Sept 2022 – December 2022
Comparative study of Uber's horovod with different synchronous averaging techniques like ring reduce, ring all-reduce, ring grouped-reduce. Experimented with a new averaging technique called asynchronous step-wise reduce.

Program Phase Characterization for Big Data Workloads Jan 2019 – May 2019
Identified micro architecturally different phases in a program and analyze these phases for similarities across other phases to aid design engineers in the performance optimization process. Introduced a new technique that uses Self-Organizing maps. Thus saving a significant amount of time for design engineers who optimize processors for performance uplifts.

Impact Of Software Stack Version On Microarchitecture Aug 2018 – Jan 2019
Demonstrates the micro-architectural differences in their hardware utilization. Results show that Spark v2.2 generates more efficient code compared to Spark v1.3 and hence reduces the total number of page faults by 10%.

Object Classification, Detection and Segmentation (PASCAL VOC2010) June 2018
Built a classifier using regular CNN with Keras. Removed the top layers and replaced them with a 20 layer Softmax to compare confusion matrix metrics. Used Keras under the TensorFlow GPU version with CUDA libraries.

Sameeksha June 2017 - Jan 2019
Problem: Software Version Compatibility - Analyzing the impact of data size, distributed processing, application version on MRU. Mining the microarchitectural data of processors on big data applications like Hadoop and Spark. Comparative phase-wise analysis of Hadoop (map, reduce, shuffle, clear) and stage-wise analysis of spark (RDD stages).

Mouth Tracking Nov 2017
Improving the accuracy of speech-to-text engines by taking into account the video of the audio generator (person speaking). Dlib to track lips- lip segmentation. Used a Bayesian model using a self-generated Audio-Video training dataset to predict sentences.

Terrorist Attack analysis and prediction using GTD Aug 2017 - Dec 2017
Different kinds of visualizations to understand the Global Terrorism Dataset better. ARIMA-based time series analysis to forecast the number of attacks in the following years. Used decision trees, knn, naive bayes classifiers and logistic regression to predict the following: culpable terrorist group (accuracy = 92.34%), victim count (accuracy = 62.26%), extent of property damage (accuracy = 88.65%) and safe return of hostages (accuracy = 93.0%).

Green Bangalore Apr 2017
Determined the greenery of a given place in Bangalore relative to Cubbon park. Used Google Earth to get the satellite imagery of the entire place. The edges of a place have been determined by KML files that were available online on a government site. Used Hadoop for distributed computation of green index of multiple images of a given place at the same time (green index = ratio of green pixels to total pixels). Compared the result with a pre-computed green index of Cubbon park.

Simulation of Sir.Michael Conway's game of life Aug 2016 - Dec 2016
A modified version of the standard game of life where the user can specify the inclusion bit string and the dead state rule. Provided options to switch between user-defined-rule game and standard-rule game. Data Structures used were 2D-array and N-ary tree.