

Srikar Chundury

srikarchundury.github.io — +1 984-810-6666 — schundu3@ncsu.edu — Raleigh, NC

Education

Ph.D. in Computer Science

North Carolina State University, Raleigh, NC

Aug 2022 – May 2027

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

PES University, Bangalore, India

Aug 2015 – May 2019

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

Mentor: Dr. Frank Mueller

Sept 2022 – Present

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

Mentor: Dr. In-Saeng Suh

May 2024 – August 2024

Graduate Research Intern

HQC-QC Integration with slurm. Tested a realworld QAOA problem on NWQ-Sim and TN-QVM via QFw.

Oak Ridge National Laboratory, Tennessee

Mentor: Dr. In-Saeng Suh

May 2023 – July 2023

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

Manager: Kathy Lim

August 2021 – July 2022

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

Manager: Kumar Narsipur

August 2019 – July 2021

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

Manager: Kathy Lim

January 2019 – June 2019

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

Mentor: Chandrasekhar Buduguru

December 2018 – January 2019, June 2019 – August 2019

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

Mentor: Prasun Ratn

May 2018 – July 2018

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.