

Sagar Bharadwaj

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EDUCATION

National Institute of Technology Karnataka, Surathkal

Surathkal, India

Bachelor of Technology in Computer Science, GPA : 9.41 / 10.00 (Top 5 Percentile)

May 2019

EXPERIENCE

Microsoft Research India

July 2019 – Present

Research Fellow | Dr. Ranjita Bhagwan, Dr. Venkat Padmanabhan, Dr. Saikat Guha

Bangalore, India

- Working on data-driven inter-datacenter network optimization. Savings in the order of tens of millions of dollars.
- Solving large-scale data discovery problems in datalakes of size in the order of petabytes.

Google Summer of Code Student

May 2018 – August 2018

Mozilla Firefox | Nihanth Subramanya

- Implemented a mechanism to prevent multiple downloads from bombarding the Firefox browser.

Intuit India

May 2018 – July 2018

Software Engineering Intern | DevOps Team

Bangalore, India

- Built a data pipeline to consume, store and analyze real time database operational metrics.
- Used open source tools like *Apache Kafka*, *Druid* and *RabbitMQ* to build the project infrastructure from scratch.

Samsung India, R&D

May 2017 – July 2017

Software Engineering Intern | Modem Team

Bangalore, India

- Automated unification of Time and Frequency Division Duplex codebases written for Shannon chipsets.
- Achieved 30% code size reduction using C parser scripts in Perl.

SELECTED PROJECTS

Cost-Aware Networking for First-Party Cloud Applications

Aug 2019 - Present

Dr. Ranjita Bhagwan, Dr. Venkat Padmanabhan

Microsoft Research

- *Motivation*: Close cooperation between first-party applications and network can lead to WAN cost savings.
- Leveraged large deadlines of applications to reduce bandwidth peak and improve network redundancy provisioning. Estimated network capacity savings is around 20%.

Discovering Related Data At Scale

Sep 2019 - Present

Dr. Ranjita Bhagwan, Dr. Saikat Guha

Microsoft Research

- *Motivation*: Automating discovery of related data in a very large datalake.
- Developed a framework to construct graph of related data from metadata and sampled content. Leveraged user query histories as ground truth to learn properties of related data in the datalake.
- The framework can construct the 'relatedness graph' for a datalake of size 4 petabytes in around an hour.

Blockchain-Backed Volunteer Computing Platform

Aug 2018 - May 2019

Dr. K Chandrasekaran | [Project Link](#)

National Institute of Technology Karnataka

- Developed a peer to peer system that acts as a trustless marketplace for buying and selling computation resources.
- Leveraged Blockchain to achieve decentralization and trustlessness.

Virtual Database Administrator (vDBA)

May 2018 - July 2018

DevOps Team

Intuit India

- Large quantities of database telemetry is generated that can be leveraged by database administrators for debugging and maintenance purposes. For example, execution time associated with a query plan.
- Built vDBA: A framework to collect, analyse and visualize large scale telemetry data, specifically database metrics.

EYantra Snakebot

Nov 2017 - Apr 2018

EYantra Team | [Project Link](#) | [Finals Video](#)

Indian Institute of Technology Bombay

- Team of 4 designed, 3D printed and programmed a snake robot for EYantra, a national level robotics competition.
- Programmed the bot and the controller. National finals winners. Competed with 5932 teams.

Handwritten Equation Solver

Oct 2017 - May 2018

IEEE NITK Student Branch | [Project Link](#)

National Institute of Technology Karnataka

- Developed a mobile application to solve handwritten mathematical equations using deep learning algorithms.
- Leveraged *SymPy* as the Math Engine and implemented CNN models for symbol recognition.

Low-rate TCP DoS Attack

Aug 2017 - Dec 2017

Dr. Mohit P Tahiliani | [Project Link](#)

National Institute of Technology Karnataka

- Simulated a Low-rate TCP DoS Attack in ns-3. Achieved by exploiting Retransmission Timeout (RTO) in the congestion control algorithm implemented in TCP Reno.

Parallel Sparse Matrix Vector Multiplication (SpMV)

Aug 2017 - Dec 2017

Dr. Basavaraj Talawar | [Project Link](#)

National Institute of Technology Karnataka

- Implemented a parallel algorithm for Sparse-Matrix-Vector Multiplication (SpMV) in *CUDA*. Our novel algorithm beat the state of the art implementation in the standard *cuSparse* library for certain inputs.

Operating System Simulator

Jan 2017 - Apr 2017

Dr. Shashidhar G Koolagudi | [Project Link](#)

National Institute of Technology Karnataka

- Led a team of 11 students to develop a web application that simulates various functions of an Operating System. Built using the *Django* web framework and uses Python for backend calculations.

PUBLICATIONS

• Discovering Related Data At Scale

Sagar Bharadwaj, Praveen Gupta, Ranjita Bhagwan, Saikat Guha

Under Revision at **International Conference on Very Large Data Bases (VLDB) 2021**

• All in the Family: Cost-Aware Networking for First-Party Cloud Applications

S.Bharadwaj, P.Thakkar, H. Sharma, S.Acharyya, Y. Bansal, R. Bhagwan, V. Kumar, V.N. Padmanabhan, K.Voelbel

Under submission | [Link](#)

• CollabChain: Blockchain-Backed Trustless Web-Based Volunteer Computing Platform

Sagar Bharadwaj, Samvid Dharanikota, Adarsh Honawad, K. Chandrasekaran

Computer Information Systems and Industrial Mgmt (CISIM), 2019. Lecture Notes in Computer Science, Springer | [Link](#)

• SolveIt: An Application for Automated Recognition and Processing of Handwritten Mathematical Equations

Sagar Bharadwaj, Vilas Bhat, Arvind Sai Krishnan

4th IEEE International Conference for Convergence in Technology (I2CT), 2018 | [Link](#)

• Blockchain Research and Applications: A Systematic Mapping Study

Sagar Bharadwaj, Samvid Dharanikota, Adarsh Honawad, K. Chandrasekaran

International Conference on Blockchain Technology (IC-BCT), 2019. Springer | [Link](#)

PATENT SUBMISSION

• Discovering Related Data at Scale

Co-inventors: Ranjita Bhagwan, Saikat Guha, Praveen Gupta | Under review

ACTIVITIES

• Open Source Enthusiast

- Listed as an official contributor to SymPy, a Computer Algebra System (CAS).
- Contributed many patches to Mozilla Firefox.

• Chief Coordinator for IEEE Women in Technology Summit | Coordinated 70+ volunteers from all over India.

• Secretary of Web Club, NITK | Organized series of events around Open Source Software.

• Executive Member of IEEE NITK | Mentored and completed projects spanning many areas of interest for 3 years.

• Computer Science projects head, Technites (a technical fest), NITK.

MISCELLANEOUS

- National Winner of *EYantra*, 2018 | Robotics contest. Competed against 23,728 Students in 5,932 Teams.
- Ranked 2nd in India, 94th globally out of over 3300 teams in IEEEExtreme 2017, a 24 hour coding contest.
- 99.57 percentile in JEE Main (2015) examination among 1.3 million candidates.
- 99.91 percentile in KCET (2015) examination among 153000 candidates.