

Saurabh Raje

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EDUCATION

BITS PILANI

BE IN COMPUTER SCIENCE
May 2019 | Pilani, India

DELHI PUBLIC SCHOOL

July 2015 | Gurgaon, India

LINKS

Github:// [smr97](#)

LinkedIn:// [saurabhmraje](#)

COURSEWORK

UNDERGRADUATE

Parallel Computing
Neural Networks and Fuzzy Logic
Operating Systems
Compiler construction
Data Structures and Algorithms
Database Systems
Object Oriented Programming
Principles of Programming Languages
Computer Networks

SKILLS

PROGRAMMING LANGUAGES

Rust • Java • Python • C • C++

ML FRAMEWORKS

Tensorflow • Pytorch • Caffe

HPC FRAMEWORKS

OpenMPI • OpenMP • CUDA

HUMAN LANGUAGES

Marathi • Hindi • English • French

AWARDS

2018 1st Best Poster, IBM Research

2018 1st Hack.Bangalore, Mercedes-Benz

EXPERIENCE

ETH ZURICH | SCIENTIFIC ASSISTANT

March 2019 - Present | Zurich, Switzerland

- Extending the DACE domain specific language for **deep learning**.
- Built a Tensorflow graph parser for DACE.
- Using data centric graph transformations of DACE to optimize training of ResNet-50.

IBM RESEARCH | RESEARCH INTERN

May 2018 - August 2018 | Delhi, India

- Worked on training **deep neural networks** under memory constraints.
- Implemented activation checkpointing and variable batch sizing for GoogleNet.
- Developed a scalable optimization algorithm for **Tensor Tucker Decomposition**.

INRIA | RESEARCH INTERN

September 2018 - February 2019 | Grenoble, France

- Worked on a new parallelization library (Rayon Adaptive) for the **Rust** language.
- This automatically parallelizes functional code using adaptive task splitting.
- Rayon Adaptive nearly doubled the speedup for the existing parallel sort in Rust.
- Also enhanced the Rayon Logs library for visualisation of parallel iterator runs.

UST GLOBAL | SOFTWARE ENGINEERING INTERN

May 2017 - July 2017 | Trivandrum, India

- Developed a decentralised malware detection engine.
- Trained a **deep belief network** to classify EXE files.
- Used the **Ethereum** network for decentralised consensus among the learners.
- This project was presented to cyber crime branch of Kerala Police.

PROJECTS

PEDESTRIAN DETECTION SYSTEM | MERCEDES BENZ RESEARCH

- Developed a **fuzzy clustering** and **CNN** based model for pedestrian detection and localisation.
- Won the Mercedes-Benz hackathon for **autonomous driving**.
- Was invited by Daimler to present this at the **Mobile World Congress**.

ON BOARD COMPUTER FOR A NANOSATELLITE | TEAM ANANT

- Led a student nanosatellite development team to build an on-board computer.
- Wrote a scheduler for running various mission critical modules.
- Worked on writing device drivers for the Linux kernel.
- The satellite is scheduled for **launch by ISRO** in 2020.

PUBLICATIONS

- [1] V. Badami, T. Goyal, S. Sharma, S. Raje, and K. Aggarwal. In-loop simulation of attitude control of a nanosatellite. *IEEE Aerospace Conference*, 2019.
- [2] V. Chakaravarthy, S. Pandian, S. Raje, and Y. Sabharwal. On optimizing distributed non-negative tucker decomposition. *ACM International Conference on Supercomputing*, 2019, conditionally accepted.
- [3] S. Raje, A. Goel, S. Sharma, K. Aggarwal, D. Mantri, and T. Kumar. Development of on board computer for a nanosatellite. *International Astronautical Congress*, 2017.
- [4] S. Raje, S. Vadera, N. Wilson, and R. Panigrahi. Decentralised firewall for malware detection. *International Conference on Advances in Computing, Communication and Control (ICAC3)*, 2017.