

# Sai Anuroop Kesanapalli

J N Tata Scholar | USC Viterbi | IISc | IIT Dharwad

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## EDUCATION

**M.S., University of Southern California**

August 2022 - May 2024 (Exp.)

Major: Computer Science

CGPA: 3.83/4

**B. Tech., Indian Institute of Technology Dharwad**

July 2017 - June 2021

Major: Computer Science and Engineering

CPI: 8.86/10

## INTERESTS

MLOps, Edge-GPU Performance Characterization, Statistical Machine Learning, Deep Learning Theory, Natural Language Processing, Federated Learning, and Operating Systems.

## SKILLS

**Languages** Python, C++, C, Bash, HTML

**Libraries** PyTorch, NumPy, pandas, scikit-learn, NLTK, Matplotlib, CSS

**Tools** Git, L<sup>A</sup>T<sub>E</sub>X, MATLAB, GDB

**OS** Linux, Linux4Tegra, macOS, Weenix OS

## WORK EXPERIENCE

1 YEAR 3 MONTHS

**MACHINE LEARNING SOFTWARE INTERN (Full-time)**

**DeGirum Corp., Santa Clara**

*Summer Internship*

May 2023 - August 2023

Developed an ONNX OCR pipeline with pre and post-processor modules compatible with edge-hardware [OCR Deep Dive]. Worked on a NumPy-only implementation of vision-based PyTorch operators such as Conv2D, MaxPool, among others, and published as a PyPI package [beaverpy].

**PROJECT ASSOCIATE - I (Full-time)**

**Indian Institute of Science, Bangalore**

*Advisor: Prof. Yogesh Simmhan*

August 2021 - July 2022

Worked on performance characterization of Nvidia Jetson edge-accelerators on deep learning workloads, and also on a Federated Learning project involving dataset condensation as a subroutine [1, 2, 3].

## RESEARCH EXPERIENCE

1 YEAR 10 MONTHS

**COURSE PRODUCER (Part-time)**

**University of Southern California, Los Angeles**

*Advisor: Prof. Vatsal Sharan*

August 2023 - Present

Course Producer for CSCI 699: Theory of Machine Learning, a doctoral-level course, offered in Fall 2023, and CSCI 567: Machine Learning, offered in Spring 2024. I assist in grading homeworks, and help with scribing lectures into L<sup>A</sup>T<sub>E</sub>X.

**RESEARCH ASSISTANT (Part-time)**

**University of Southern California, Los Angeles**

*Advisor: Prof. Vatsal Sharan*

March 2023 - August 2023

Contributed to an open source project [Tensor Toolbox] on tensor decomposition methods, and worked on a faster C++ implementation of a random forest based anomaly-detection algorithm [PIDForest].

**UNDERGRADUATE RESEARCHER (B. Tech. Project)**

**Indian Institute of Technology Dharwad**

*Advisor: Prof. B. N. Bharath*

August 2020 - June 2021

Worked on Federated Algorithms with Bayesian [4] [Code | Slides] and Exponential Weighted Average [Report | Code] approaches.

## PUBLICATIONS

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1. Prashanthi S. K, **Sai Anuroop Kesanapalli**, and Yogesh Simmhan. "Characterizing the Performance of Accelerated Jetson Edge Devices for Training Deep Learning Models". In: *Proc. ACM Meas. Anal. Comput. Syst.* 6, 3, Article 44 (December 2022). 2022. doi: [10.1145/3570604](https://doi.org/10.1145/3570604).
2. Prashanthi S. K, Aakash Khochare, **Sai Anuroop Kesanapalli**, Rahul Bhope, and Yogesh Simmhan. "Don't Miss the Train: A Case for Systems Research into Training on the Edge". In: *2022 IEEE International Parallel and Distributed Processing Symposium Workshops (IPDPSW)*. 2022, pp. 985–986. doi: [10.1109/IPDPSW55747.2022.00157](https://doi.org/10.1109/IPDPSW55747.2022.00157).
3. Prashanthi S. K, **Sai Anuroop Kesanapalli**, Aakash Khochare, and Yogesh Simmhan. "Characterizing the Performance of Deep Learning Workloads on Accelerated Edge Computing Devices". In: *28th IEEE International Conference on High Performance Computing, Data & Analytics Student Research Symposium (HiPC SRS)*. 2021, [Poster].
4. **Sai Anuroop Kesanapalli** and B. N. Bharath. "Federated Algorithm with Bayesian Approach: Omni-Fedge". In: *ICASSP 2021 - 2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. 2021, pp. 3075–3079. doi: [10.1109/ICASSP39728.2021.9413571](https://doi.org/10.1109/ICASSP39728.2021.9413571).

## PROJECTS

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|   |  |
|---|--|
| Leveraging static analysis for evaluating code-generation models    | <a href="#">[Slides]</a>   <a href="#">Report</a>   <a href="#">Code</a> |
| Implemented Procs, VFS, and VM kernel modules of Weenix OS          | <a href="#">[CS 402, USC]</a>  |
| beaverpy: An implementation of PyTorch operators using only NumPy   | <a href="#">[Code]</a>   |
| Forward-Forward: Is it time to bid adieu to BackProp?               | <a href="#">[Slides]</a>   <a href="#">Code</a>                          |
| Presentation on the Implicit Bias of SGD                            | <a href="#">[Slides]</a>   |
| Notes on Rethinking Classic Learning Theory in Deep Neural Networks | <a href="#">[Notes]</a>  |
| Store Sales - Time Series Forecasting                               | <a href="#">[Report]</a>   <a href="#">Code</a>                          |
| Heterogeneity-Aware Hashing   | <a href="#">[Slides]</a>   <a href="#">Report</a>   <a href="#">Code</a> |
| Credit Card Fraud Detection   | <a href="#">[Poster]</a>   <a href="#">Report</a>   <a href="#">Code</a> |
| Implementation of Immediate Files in Minix OS                       | <a href="#">[Report]</a>   <a href="#">Code</a>                          |
| Processor Simulator for ToyRISC                                     | <a href="#">[Code]</a>   |

## AWARDS & ACHIEVEMENTS

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- 2023 Awarded **J N Tata Endowment Scholarship** for the higher education of Indians, for the year 2023-24.
- 2023 Awarded **Travel Grant** by **Tata Education and Development Trust** for studies abroad.
- 2023 Awarded **NSF Travel Grant** for attending SIGMETRICS, co-located with ACM FCRC 2023, Orlando, FL.
- 2017 IIT JEE (Advanced) **All India Rank 8682** among ~160,000 candidates.
- 2016 **Telangana State Rank 1** among ~700,000 candidates in first year and under top ten ranks in second year TSBIE Intermediate Public Examination.
- 2014 Received **Certificate of Merit** from CBSE Delhi, for outstanding performance and for obtaining Grade **A1** in all the five subjects in Secondary School Examination.
- 2014 Recipient of Meritorious Student, School Topper and Star of Stars awards at St. Michael's School, Secunderabad.

