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: 3.75/4

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, and Federated Learning

Skills

Languages	Python, C++, C, Bash, HTML
Libraries	PyTorch, NumPy, pandas, scikit-learn, Matplotlib, seaborn, CSS
Tools	Git, LaTeX, MATLAB
OS	Linux, Linux4Tegra, macOS

Industry Experience

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].

Research Experience

2.5 years

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].

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].

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.

Academia Experience

2 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. I assist in grading homeworks, and help with scribing lectures into LaTeX.

Publications

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.
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.
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: OmniFedge". In: *ICASSP 2021 - 2021 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*. 2021, pp. 3075–3079. DOI: 10.1109/ICASSP39728.2021.9413571.

Projects

Forward-Forward: Is it time to bid adieu to BackProp?	[Slides | Code]
Presentation on the Implicit Bias of SGD	[Slides]
Notes on Rethinking Classic Learning Theory in Deep Neural Networks	[Notes]
Store Sales - Time Series Forecasting	[Report | Code]
Heterogeneity-Aware Hashing	[Slides | Report | Code]
Credit Card Fraud Detection	[Poster | Report | Code]
Implementation of Immediate Files in Minix OS	[Report | Code]
Buffer Manager for PF Layer of ToyDB	[Report | Code]
Processor Simulator for ToyRISC	[Code]
TCP Congestion Control	[Report | Code]

Achievements & Awards

2023 Selected for the award of the prestigious **J N Tata Endowment Scholarship** for the higher education of Indians, for the year 2023-24.

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.

Student-Offices held

Mentor, Viterbi Graduate Mentorship Program, USC	2023 - Present
Student Coordinator, Institute Innovation Council, IIT Dharwad	2019 - 2021
Student Mentor, Institute Student Mentorship Programme, IIT Dharwad	2019 - 2020
Outreach Team Lead, Parsec: A Paradigm Shift, IIT Dharwad's Annual Tech Fest	2020
Event Coordinator, Development of Industry-Academia Link (DIAL), IIT Dharwad	2018