

Dr. Sandeep Kumar

RESEARCH SCIENTIST @ INTEL, BENGALURU, INDIA

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Professional Summary

Systems researcher with expertise in memory management for large-scale AI/ML applications, including distributed DNN training and inference optimization. Currently working on efficient memory management for Large Language Models (LLMs) and Retrieval-Augmented Generation (RAG) systems. Skilled in performance modeling, system optimization, and building scalable infrastructure for memory-intensive workloads.

Also responsible for mentoring and leading a small research team at Intel across multiple areas, including virtualization and the development of solutions for emerging memory technologies such as CXL.

Selected Publications

1. *TierScape: Harnessing Multiple Compressed Tiers to Tame Server Memory TCO*
Sandeep Kumar, Aravinda Prasad, and Sreenivas Subramoney. In **EuroSys**, 2026.
2. *TierTrain: Proactive Memory Tiering for CPU-Based DNN Training*
Sathvik Swaminathan, **Sandeep Kumar**, Aravinda Prasad, and Sreenivas Subramoney. In **ISMM**, Seoul, South Korea, 2025.
3. *A Tug-of-War between Static and Dynamic Memory in Intel SGX*
Sandeep Kumar, Abhisek Panda, Advait Nerlikar and Smruti R. Sarangi. In **VLSID, Bangalore, India**, 2024.
4. *Telescope: Telemetry for Gargantuan Memory Footprint Applications*
Alan Nair, **Sandeep Kumar**, Aravinda Prasad, Ying Huang, Andy Rudoff, Sreenivas Subramoney. In **USENIX ATC, USA**, 2024.
5. *Enabling Migration of Large SGX Enclaves in a Data Center*
Sandeep Kumar, Abhisek Panda, Smruti R. Sarangi. In **arXiv**, 2024.
6. *Perspector: Benchmarking Benchmark Suites*
Sandeep Kumar, Abhisek Panda, Smruti R. Sarangi. In **DATE**, Antwerp, Belgium, 2023.
7. *SecureLease: Maintaining Execution Control in The Wild using Intel SGX*
Sandeep Kumar, Abhisek Panda, and Smruti R. Sarangi. In **Middleware**, Quebec City, Canada, 2022.
8. *SGXGauge: A Comprehensive Benchmark Suite for Intel SGX*
Sandeep Kumar, Abhisek Panda, and Smruti R. Sarangi. In **ISPASS**, Singapore, 2022.
9. *SecureFS: A Secure File System for Intel SGX*
Sandeep Kumar and Smruti R. Sarangi. In **RAID**, Spain, 2021.
10. *Page Table Management for Heterogeneous Memory Systems*
Sandeep Kumar, Aravinda Prasad, Smruti R. Sarangi, and Sreenivas Subramoney. In **ISMM**, Canada, 2021.
11. *F-LaaS: A Control-Flow-Attack Immune License-as-a-Service Model*
Sandeep Kumar, Diksha Moolchandani, Takatsugu Ono, and Smruti Sarangi. In **IEEE SCC**, Milan, Italy, 2019.
12. *Scalable Performance Tuning of Hadoop MapReduce: A Noisy Gradient Approach*
Sandeep Kumar, Sindhu Padakandla, Chandrashekhar L, Priyank Parihar, Gopinath K, and Shalabh Bhatnagar. In **IEEE Cloud**, Hawaii, USA, 2017.

Complete list here: <https://sandeep007734.github.io/publications/>

Patents

1. Context-aware memory tiering for machine learning training
Sathvik Swaminathan, Sandeep Kumar, Aravinda Prasad, and Sreenivas Subramoney
2. Methods and apparatus to profile page tables for memory management.
Aravinda Prasad, Sandeep Kumar, Sreenivas Subramoney, and Andy Rudoff

Education

Indian Institute of Technology Delhi

DOCTOR OF PHILOSOPHY

- Advised by Prof. S. R. Sarangi

New Delhi, India

Jul. 2017 - Jun 2024

Indian Institute of Science

MASTER OF ENGINEERING IN COMPUTER SCIENCE

- Advised by Prof. K. Gopinath

Bangalore, India

Jul. 2011 - Aug. 2013

Guru Gobind Singh Indraprastha University

BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE

New Delhi, India

Jul. 2007 - Aug. 2011

Work Experience

Intel Labs

RESEARCH SCIENTIST

Bangalore, Karnataka

March 2022 – Current

Intel Labs

GRADUATE RESEARCH INTERN

Bangalore, Karnataka

July 2020- Jan 2021

Indian Institute of Science

RESEARCH ASSOCIATE

Bangalore, Karnataka

Sept 2014- July 2017

Dell R&D

SOFTWARE DEVELOPMENT ENGINEER

Bangalore, India

Jul 2013-Jun 2014

Interests & Activities

Reading

<https://goodreads.com/sandeep007734>

Goodreads Profile

Running, Cycling, Hiking

<https://www.strava.com/athletes/3569697>

Strava Profile

References

Prof. Smruti R. Sarangi

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Prof. K. Gopinath

PROFESSOR, COMPUTER SCIENCE AND AUTOMATION

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