

Sandeep Kumar

SENIOR RESEARCH SCIENTIST @ INTEL LABS, BENGALURU, INDIA

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Research Interest

Operating Systems, Architecture, Deep Neural Networks, Large Language Models, and Security.

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, 2025.
4. *Telescope: Telemetry for Gargantuan Memory Footprint Applications.*
Alan Nair, **Sandeep Kumar**, Aravinda Prasad, Ying Huang, Andy Rudoff, Sreenivas Subramoney.
In **USENIX ATC**, Santa Clara, USA, 2024.
5. *Taming Server Memory TCO with Multiple Software-Defined Compressed Tiers.*
Sandeep Kumar, Aravinda Prasad, Sreenivas Subramoney. In **Arxiv**, 2024.
6. *Managing Large Enclaves in a Data Center.*
Sandeep Kumar, Abhisek Panda, Smruti R. Sarangi. In **Arxiv**, 2024.
7. *Perspector: Benchmarking Benchmark Suites .*
Sandeep Kumar, Abhisek Panda, Smruti R. Sarangi. In **DATE**, Antwerp, Belgium, 2023.
8. *Hardware-Assisted Mechanisms to Enforce Control Flow Integrity: A Comprehensive Survey.*
Sandeep Kumar, Diksha Moolchandani, Smruti R. Sarangi. In **Journal of Systems Architecture (JSA)**
9. *SecureLease: Maintaining Execution Control in The Wild using Intel SGX.*
Sandeep Kumar, Abhisek Panda, and Smruti R. Sarangi. In **Middleware**, Quebec City, Canada, 2022.
10. *SGXGauge: A Comprehensive Benchmark Suite for Intel SGX.*
Sandeep Kumar, Abhisek Panda, and Smruti R. Sarangi.. In **ISPASS**, Singapore, 2022.
11. *SecureFS: A Secure File System for Intel SGX.*
Sandeep Kumar and Smruti R. Sarangi. In **RAID**, Spain, 2021.
12. *Radiant: Page Table Management for Heterogeneous Memory Systems.*
Sandeep Kumar, Aravinda Prasad, Smruti R. Sarangi, and Sreenivas Subramoney. In **ISMM**, Canada, 2021.
13. *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.
14. *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.

Patents

1. CONTEXT-AWARE MEMORY TIERING FOR MACHINE LEARNING TRAINING (Submitted)
Sathvik Swaminathan, Sandeep Kumar, Aravinda Prasad, Sreenivas Subramoney
2. METHODS AND APPARATUS TO PROFILE PAGE TABLES FOR MEMORY MANAGEMENT (Patent Granted)
Aravinda Prasad, Sandeep Kumar, Sreenivas Subramoney

Work Experience

Intel Labs

RESEARCH SCIENTIST

Bangalore, Karnataka

March 2022 -

- Working on developing methods and tools for a better synergy between the hardware and the software.

Intel Labs

GRADUATE RESEARCH INTERN

Bangalore, Karnataka

July 2020- Jan 2021

- Worked on enabling page table pages migration in Linux.

Indian Institute of Science

RESEARCH ASSOCIATE

Bangalore, Karnataka

Sept 2014- July 2017

- Worked on auto tuning of Hadoop Map-reduce using Stochastic algorithms and Human gait analysis.

Dell R&D

SOFTWARE DEVELOPMENT ENGINEER

Bangalore, India

- Responsible for BIOS configuration and system management tools.

Jul 2013-Jun 2014

Education

Indian Institute of Technology Delhi

DOCTOR OF PHILOSOPHY

New Delhi, India

Jul. 2017 - 2024

- Advised by Prof. S. R. Sarangi

Indian Institute of Science

MASTER OF ENGINEERING IN COMPUTER SCIENCE

Bangalore, India

Jul. 2011 - Aug. 2013

- Advised by Prof. K. Gopinath

Guru Gobind Singh Indraprastha University

BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE

New Delhi, India

Jul. 2007 - Aug. 2011

Honors & Awards

2018	Research grant , Visit to Kyushu University for research collaboration	Fukuoka, Japan
2017	Scholarship , Visvesvaraya PhD Scheme for Electronics & IT	New Delhi, India
2011	642 Rank in GATE , Graduate Aptitude Test in Engineering Exam(Total Students: 136,027)	New Delhi, India

Interests & Activities

Goodreads profile:

READING BOOKS

<https://goodreads.com/sandeep007734>

Strava profile:

RUNNING, CYCLING, AND HIKING

<https://www.strava.com/athletes/sandeep007734>

References

Prof. Smruti R. Sarangi

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Department of Computer Science

Prof. K. Gopinath

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Indian Institute of Science, Bangalore, India

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Computer Science and Automation