

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. *TierTrain: Proactive Memory Tiering for CPU-Based DNN Training.*
Sathvik Swaminathan, **Sandeep Kumar**, Aravinda Prasad, and Sreenivas Subramoney.
In **ISMM**, Seoul, South Korea, 2025.
2. *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.
3. *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.
4. *Taming Server Memory TCO with Multiple Software-Defined Compressed Tiers.*
Sandeep Kumar, Aravinda Prasad, Sreenivas Subramoney. In **Arxiv**, 2024.
5. *Managing Large 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. *Hardware-Assisted Mechanisms to Enforce Control Flow Integrity: A Comprehensive Survey.*
Sandeep Kumar, Diksha Moolchandani, Smruti R. Sarangi. In **Journal of Systems Architecture (JSA)**
8. *SecureLease: Maintaining Execution Control in The Wild using Intel SGX.*
Sandeep Kumar, Abhisek Panda, and Smruti R. Sarangi. In **Middleware**, Quebec City, Canada, 2022.
9. *SGXGauge: A Comprehensive Benchmark Suite for Intel SGX.*
Sandeep Kumar, Abhisek Panda, and Smruti R. Sarangi.. In **ISPASS**, Singapore, 2022.
10. *SecureFS: A Secure File System for Intel SGX.*
Sandeep Kumar and Smruti R. Sarangi. In **RAID**, Spain, 2021.
11. *Radiant: Page Table Management for Heterogeneous Memory Systems.*
Sandeep Kumar, Aravinda Prasad, Smruti R. Sarangi, and Sreenivas Subramoney. In **ISMM**, Canada, 2021.
12. *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.
13. *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. Methods and apparatus to profile page tables for memory management. (Patent Granted)
Aravinda Prasad, **Sandeep Kumar**, Sreenivas Subramoney, and Andy Rudoff
2. Method and apparatus for address range filtering in performance monitoring. (Patent Pending)
Aravinda Prasad, **Sandeep Kumar**, Ahmad Yasin, and Sreenivas Subramoney

Work Experience

Intel Labs

RESEARCH SCIENTIST

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

Bangalore, Karnataka

March 2022 -

Intel Labs

GRADUATE RESEARCH INTERN

- Worked on enabling page table pages migration in Linux.

Bangalore, Karnataka

July 2020- Jan 2021

Indian Institute of Science

RESEARCH ASSOCIATE

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

Bangalore, Karnataka

Sept 2014- July 2017

Dell R&D

SOFTWARE DEVELOPMENT ENGINEER

- Responsible for BIOS configuration and system management tools.

Bangalore, India

Jul 2013-Jun 2014

Education

Indian Institute of Technology Delhi

DOCTOR OF PHILOSOPHY

- Advised by Prof. S. R. Sarangi

New Delhi, India

Jul. 2017 - 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

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

PROFESSOR

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Department of Computer Science

Prof. K. Gopinath

PROFESSOR

Indian Institute of Science, Bangalore, India

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Computer Science and Automation