Sandeep **Kumar**

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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, 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, Chandrashekar 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 *Bangalore, Karnataka*
SENIOR RESEARCH SCIENTIST *March 2022 –*
- Working on developing methods and tools for a better synergy between the hardware and the software.

Intel Labs *Bangalore, Karnataka*
GRADUATE RESEARCH INTERN *July 2020- Jan 2021*
- Worked on enabling page table pages migration in Linux.

Indian Institute of Science *Bangalore, Karnataka*
RESEARCH ASSOCIATE *Sept 2014- July 2017*
- Worked on auto tuning of Hadoop Map-reduce using Stochastic algorithms and Human gait analysis.

Dell R&D *Bangalore, India*
SOFTWARE DEVELOPMENT ENGINEER *Jul 2013-Jun 2014*
- Responsible for BIOS configuration and system management tools.

Education

Indian Institute of Technology Delhi *New Delhi, India*
DOCTOR OF PHILOSOPHY *Jul. 2017 - 2024*
- Advised by Prof. S. R. Sarangi

Indian Institute of Science *Bangalore, India*
MASTER OF ENGINEERING IN COMPUTER SCIENCE *Jul. 2011 - Aug. 2013*
- Advised by Prof. K. Gopinath

Guru Gobind Singh Indraprastha Univeristy *New Delhi, India*
BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE *Jul. 2007 - Aug. 2011*

Interests & Activities

Goodreads profile:
READING BOOKS
`https://goodreads.com/sandeep007734`

Strava profile:
RUNNING, CYCLING, AND HIKING
`https://www.strava.com/athletes/sandeep007734`

References

Professor *srsarangi@cse.iitd.ac.in*
PROF. SMRUTI R. SARANGI *Department of Computer Science*
Indian Institute of Technology Delhi, New Delhi, India

Professor *gopi@iisc.ac.in*
PROF. K. GOPINATH *Computer Science and Automation*
Indian Institute of Science, Bangalore, India