

Sandeep Kumar

RESEARCH SCIENTIST @ INTEL LABS, BENGALURU, INDIA

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☎ (+91) 8277361995 | ✉ sandeep007734@gmail.com | 🏠 sandeep007734.github.io | 📄 sandeep007734 | 📺 sandeep007734

Research Interest

Operating Systems, Architecture, Security, Distributed and Parallel Systems.

Selected Publications

1. *Hardware-Assisted Mechanisms to Enforce Control Flow Integrity: A Comprehensive Survey.*
Sandeep Kumar, Diksha Moolchandani, Smruti R. Sarangi, Journal of Systems Architecture (JSA)
2. *SecureLease: Maintaining Execution Control in The Wild using Intel SGX.*
Sandeep Kumar, Abhisek Panda, and Smruti R. Sarangi. In **Middleware** 2022, Quebec City, Canada.
3. *SGXGauge: A Comprehensive Benchmark Suite for Intel SGX.*
Sandeep Kumar, Abhisek Panda, and Smruti R. Sarangi.. In **ISPASS**, Singapore, 2022.
4. *SecureFS: A Secure File System for Intel SGX.*
Sandeep Kumar and Smruti R. Sarangi. In **RAID**, Spain, 2021.
5. *Page Table Management for Heterogeneous Memory Systems.*
Sandeep Kumar, Aravinda Prasad, Smruti R. Sarangi, and Sreenivas Subramoney. In **ISMM**, Canada, 2021.
6. *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.
7. *Towards a Portable Human Gait Analysis & Monitoring System .*
Sandeep Kumar, Poorna Talkad Sukumar, K. Gopinath, Dr. Jayanth Sampath, Laura Rocchi, and Suyameendra Kulkarni..In **IEEE ICSigSys**, Bali, Indonesia, 2018.
8. *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.

Patent

1. Methods and apparatus to profile page tables for memory management. (Patent Pending)
Aravinda Prasad, **Sandeep Kumar**, Sreenivas Subramoney, Andy Rudoff

Education

Indian Institute of Technology Delhi

DOCTOR OF PHILOSOPHY

- Advised by Prof. S. R. Sarangi

New Delhi, India

Jul. 2017 -

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 Univeristy

BACHELOR OF TECHNOLOGY IN COMPUTER SCIENCE

New Delhi, India

Jul. 2007 - Aug. 2011

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 improving the kernel support for Intel Optane DC NVMM.

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, DCC (Dell Command Configure) and OMCI (Open Manage Client Instrumentation) respectively

Bangalore, India

Jul 2013-Jun 2014

Selected Projects

Toy C Compiler

COURSE PROJECT FOR COMPILER DESIGN

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- Implemented a Toy C Compiler using Flex Bison and LLVM as part of the Compiler Course Work. It contains LLVM IR code generation and implementation of some basic optimizations.

Distributed Computing

COURSE PROJECT

- Wrote Distributed Programs to solve TSP (Travelling sales man problem), ABP (Alpha Beta pruning search) and MST (Minimum spanning tree) using rpcgen in C++ and showed a speed up of factor 9, 6 and 2.5 respectively when the number of servers went up from 1 to 6.

Interests & Activities

Reading books

Goodreads profile:

<https://goodreads.com/sandeep007734>

Running, Cycling, and Hiking

Strava profile:

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

References

Prof. Smruti R. Sarangi

Professor

srsarangi@cse.iitd.ac.in

Department of Computer Science

Indian Institute of Technology Delhi, New Delhi, India

Prof. K. Gopinath

Professor

gopi@iisc.ac.in

Computer Science and Automation

Indian Institute of Science, Bangalore, India