

Sakshi Sindhwal

M.Tech CSE

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EDUCATION

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| • Indian Institute of Science, Bangalore | 2023-25(current) |
| M.Tech , Computer Science Engineering | CGPA: 8.0 |
| • National Institute of Technology, Uttarakhand | 2017-21 |
| B.Tech , Electronics and Communication Engineering | CGPA: 9.26 |

PROJECTS

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| • Memory Checkpointing feature using eBPF | [2024] |
| C, Python, eBPF, Kernel Programming | |
| – Designed and executed a system to capture and restore process memory states using eBPF. | |
| – Created tracepoint handlers for system calls to intercept and manage memory operations, enhancing process memory tracking and logging. | |
| – Addressed challenges such as excluding stack VMAs during checkpointing and ensured efficient memory write-back using eBPF helpers, resulting in robust state restoration capabilities. | |
| – Devised and integrated data structures for efficient data management between user and kernel space. | |
| • Microservice Implementation for Booking System using Spring | [2024] |
| Docker, Container, Kubernetes, Distributed Systems | |
| – We have implemented a movie booking system organized as a set of three microservices: User, Wallet and Booking each hosting a RESTful APIs to handle HTTP requests. To manage load at runtime , we used Kubernetes and deployed the three microservices as load balanced services. | |
| • Optimizing Performance of Dilated Convolution | [2023] |
| pthreads, perf, SIMD, CUDA | |
| – Applied advanced optimization techniques such as loop unrolling, elimination of redundant computations, strength reduction, and SIMD to enhance the performance of the dilated convolution algorithm. | |
| – Developed and optimized a multi-threaded version using pthreads of the dilated convolution algorithm, leveraging parallel processing. | |
| • Extracting a library call policy generated by a C-program | [2024] |
| LLVM, C Programming, eBPF | |
| – Analyzed source-level C programs and emitted a policy of acceptable library calls generated by the program. | |
| – Developed an LLVM-based tool that takes a C program as input and generates a library call graph. | |
| – Extended the project to detect and terminate processes that invoke library calls outside of the predefined sequence policy, flagging them as potential malicious activity to enhance runtime security and integrity. | |

EXPERIENCE

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| • Cisco | May 2024 - June 2024 |
| Software - Intern | Bangalore |
| – Developed APIs for the ACIA , allowing seamless integration with other modules. Debugged Python test scripts, identifying and resolving key performance issues . | |
| • Capgemini | Aug 2021 - July 2022 |
| Senior Analyst | Mumbai |
| – Worked on various cybersecurity aspects including vulnerability analysis in virtual machines and virtual device drivers, identifying and mitigating vulnerabilities of virtualized environments. | |

TECHNICAL SKILLS AND INTERESTS

Languages: C, C++, Python

Tools/Technologies: Perf, Linux, Docker, Kubernetes, PyTorch, Git , CUDA , LLVM

Coursework: High Performance Computer Architecture, Systems for Machine Learning ,Principles of Distributed Software, Operating Systems, Design and Analysis of Algorithms, Compiler Design

ACHIEVEMENTS

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- Secured All India Rank 90 in GATE 2023 (Computer Science).
 - Samsung Fellowship Awardee (2017-2021) and Jay Pullur Mallika Fellowship Awardee .(2023-2025)
 - Winner in inter-NIT chess tournament and badminton events.