Sakshi Sindhwal

M.Tech CSE
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Education

- **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

- **Memory Checkpointing feature using eBPF** *[2024]*
  C, Python, eBPF, Operating Systems
  – 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 , Java, Distributed Systems
  – 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 , used Kubernetes and deployed the three microservices as load balanced services.
- **System call Sandbox for an Application** *[2024]*
  LLVM, C , eBPF, Computer Systems Security
  – Analyzed source-level C programs and emitted a policy of acceptable library calls generated by the program.
  – 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.
- **Optimizing Performance of Dilated Convolution** *[2023]*
  C++, pthreads, Perf, SIMD, CUDA, Computer Architecture
  – 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.
- **LLM Inference Optimization at High Performance Computing Lab.** *[2024-25]*
  M.Tech Project
  – The primary objective is to reduce the inference latency of large language models by minimizing the memory overhead associated with KV caches and reducing the KV cache copy overhead mainly on CPUs.

Experience

- **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*
  Software Engineer 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

Programming Languages: C, C++, Python

Tools/Technologies: Perf, Linux, Docker, Kubernetes, Git , LLVM , eBPF

Relevant Coursework: Systems for Machine Learning , Principles of Distributed Software, High Performance Computer Architecture, Operating Systems, Data Structures and Algorithms

Achievements

- Secured All India Rank 90 in GATE 2023 (Computer Science).