

HARSHA SHARMA

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EDUCATION

Indian Institute of Technology Roorkee, Roorkee

July 2016 - Present

Bachelor of Technology, Engineering Physics

Maheshwari Girls Public School, Jaipur

2014-2016

Senior Secondary Education, CBSE.

Percentage: 95.2

INTERNSHIPS

Technical University of Munich, Munich

14th May, 2018 - 27th July, 2018

Project: Checkpoint and restore mechanism in genode and L4 fiasco microkernel [Report]

- Reverse engineering and debugging for comparing capability map in Genode and capability space in kernel before checkpointing and after restoring states.
- Implemented custom IRQ session for signal handler session in Genode.
- Worked on checkpointing and restoring missing IRQ capabilities.

Google Summer of Code Student Developer

14th May, 2018 - 14th August 2018

Project - Netfilter (Linux Kernel Network Firewalling)

- Worked on implementing fine-grained connection tracking timeout policies in nftables which allow updating timeout values for different layer 4 protocol states.
- Addition, deletion and listing of connection tracking timeout objects and assigning timeout policy via nftables rule.

Linux Kernel Intern in Outreachy

5th Dec 2017 - 5th March 2018

Project - Nftables

- 4 interns selected worldwide in Linux-kernel organisation.
- Implemented unique u64 handles for tables, chains and all objects for easy lookup and deletion.
- Improving test infrastructure and major bug fixes.

PROJECTS

Compiler-MEDA

20th August 2018 - Present

PROF. SUDIP ROY, CS DEPT., IITR

- Compiler which can generate actuation sequences from biological protocols (from Biocoder, developed by Microsoft Research India) for application specific micro-electrode dot array (MEDA) architecture based DMF chips.

Nano Photonic Non-volatile Memory

15th May 2017 - 15th July 2017

PROF. RAJESH KUMAR, PHYSICS DEPT., IITR

- Worked on designing and analysis of nano photonic non volatile memory using GeSbTe.
- Aimed at optimizing memory architecture to find most efficient waveguide configuration.

Backdoor, <https://backdoor.sdslabs.co>

July 2017 - September 2017

SDSLabs, IITR

- Information security platform for practice and organizing regular internationally-well known CTF contests.
- Written in PHP based on MVC architecture and uses Memcache for caching.

Beast, Automated Containerized Challenge Deployment
SDSLabs, IITR

October 2017

- Docker based tool to automate deployment of challenge containers spawned individually for each user.
- Used for deploying web, binary and miscellaneous challenges for Backdoor platform.

ACTIVITIES

Presented work on implementing connection tracking timeout policies in **NFWS18** (Netfilter Conference), Berlin.

Speaker at **How to crack GSOC and Outreachy** talk in IIT Roorkee.

Executive member of **Software Development Section , IIT Roorkee**

Member of official **Choreography and Dance Section , IIT Roorkee**

Voluntary work with **National Service Scheme , IIT Roorkee** for one year

SKILLS

- C • C++ • Python • Fortran • GDB • IDA • Autotools • Parsers • Cmake • Vim • Matlab
- Linux Kernel Development • Genode Framework • L4 Fiasco Microkernel • Llm
- PHP • Mysql • HTML • CSS

FIELD OF INTEREST

- Real-time Operating Systems
- Computer Architecture
- Compiler Design
- Network Security

REFERENCES

Prof. Dr. Uwe Baumgarten

Associate Professor, Chair of Operating Systems,
Technical University of Munich, Munich, Germany

Email: baumgaru@tum.de

Prof. Pablo Neira Ayuso

Professor, University of Seville, Seville, Spain

Head of Netfilter Organisation

Email: pablo@netfilter.org

Prof. Sudip Roy

Professor, Computer Science Dept., IIT Roorkee, Roorkee, India

Email: sudiproj.fcs@iitr.ac.in