NEHA JAWALKAR

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RESEARCH INTEREST

My research interest lies in building scalable, efficient, and *cryptographically secure* systems.

EDUCATION

Indian Institute of Science, Bangalore **Aug 2020 - Current**
Ph.D. *in Computer Science* *GPA: 9.8/10*

Indian Institute of Science, Bangalore **Aug 2018 - Jun 2020**
Master of Technology (Distinction) *in Computer Science* *GPA: 8.8/10*

Birla Institute of Technology and Science, Pilani (Pilani campus) **Aug 2011 - May 2015**
Bachelor of Engineering (Hons.) *in Computer Science* *GPA: 8.19/10*

PUBLICATIONS

PETS'24 **SIGMA: Secure GPT Inference with Function Secret Sharing** [paper][20-min talk]
Neha Jawalkar, Kanav Gupta, Ananta Mukherjee, Nishanth Chandran, Divya Gupta, Ashish Panwar, Rahul Sharma
In Proceedings of 24th Privacy Enhancing Technologies Symposium

S&P'24 **Orca: FSS-based Secure Training and Inference with GPUs** [paper]
Neha Jawalkar, Kanav Gupta, Arkaprava Basu, Nishanth Chandran, Divya Gupta, Rahul Sharma
In Proceedings of 45th IEEE Symposium on Security and Privacy

PKC'24 **Succinct Verification of Compressed Sigma Protocols in the Updatable SRS setting** [paper]
Moumita Dutta, Chaya Ganesh, and **Neha Jawalkar**
In Proceedings of 22nd IACR Public-Key Cryptography

MICRO'22 **Designing Virtual Memory System of MCM GPUs** [paper][10-min talk]
Neha Jawalkar, Pratheek B., Arkaprava Basu
In Proceedings of 55th ACM/IEEE International Symposium on Microarchitecture

HPCA'21 **Improving GPU Multi-tenancy with Page Walk Stealing** [paper][7-min talk]
Neha Jawalkar, Pratheek B., Arkaprava Basu
In Proceedings of 27th IEEE International Symposium on High-Performance Computer Architecture
Best Paper Nominee

PROFESSIONAL EXPERIENCE

EzPC, Microsoft Research **May 2023 - Aug 2023**
Research Intern *Bangalore, India*

Built a GPU-accelerated system for secure inference of Large Language Models (LLMs) using protocols based on Function Secret Sharing (FSS) [PETS'24].

EzPC, Microsoft Research **May 2022 - Aug 2022**
Research Intern *Bangalore, India*

Built a GPU-accelerated system for the secure training and inference of Convolutional Neural Networks (CNNs) using protocols based on Function Secret Sharing (FSS) [S&P'24].

PreCog, Indraprastha Institute of Information Technology, Delhi **Jun 2016 - Oct 2017**
Research Associate, advised by Dr. Ponnurangam Kumaraguru *Delhi, India*

Developed a large-scale real-time social media analytics tool deployed at 60+ state and national government agencies. This project was funded by the Department of Electronics and Information Technology (DEITy), Government of India.

Housing **Jul 2015 - Nov 2015**
Software Developer *Mumbai, India*

Worked on building a scalable notification engine using Celery, Redis and RabbitMQ.

PayPal **Fall 2014**
Software Development Intern *Chennai, India*

Was a part of the Money Management team. Contributed to PayPal's payment infrastructure by writing and testing a REST service using Spring and Hibernate.

TALKS

Matchmaker: Fast Secure Inference across Deployment Scenarios **March 2025**
The 11^{th} Theory and Practice of Multi-Party Computation Workshop (TPMPC 2025) *Bangalore, India*

SIGMA: Secure GPT Inference with Function Secret Sharing **June 2024**
The 10^{th} Theory and Practice of Multi-Party Computation Workshop (TPMPC 2024) *Darmstadt, Germany*

SIGMA: Secure GPT Inference with Function Secret Sharing **March 2024**
Bangalore Crypto Day *Bangalore, India*

Orca: FSS-based Secure Training and Inference with GPUs **May 2024**
45th IEEE Symposium on Security and Privacy *San Francisco, California*

Orca: FSS-based Secure Training and Inference with GPUs **June 2023**
The 9^{th} Theory and Practice of Multi-Party Computation Workshop (TPMPC 2023) *Aarhus, Denmark*

AWARDS

- Awarded the Microsoft Research India PhD Award *July 2024*
- Awarded the Google PhD Fellowship *Nov 2023*
- Awarded the Prime Minister's Research Fellowship *Oct 2021*
- AIR 27 (CS) (out of 107,893 students), GATE 2018 *Feb 2018*

POSITIONS OF RESPONSIBILITY

Teaching Assistant	Secure Computation: Part II (NPTEL)
Teaching Assistant	Cryptography and Network Security (NPTEL)
Core Organizer	Summer School on Privacy and Security in Online Social Media at the International Institute of Information Technology, Hyderabad
Convener	SlipdIISc (IISc's Ultimate Frisbee Club)
Teaching Assistant	Computational Methods in Optimization (IISc Bangalore)
Teaching Assistant	Privacy and Security in Online Social Media (NPTEL)
Teaching Assistant	Design and Analysis of Algorithms (BITS Pilani)

TECHNICAL SKILLS

High level-Languages	Python, C/C++, Go, CUDA, OpenCL, Java, Ruby, JavaScript, R, MATLAB
Backend Technologies	TensorFlow, Apache Storm, Celery, RabbitMQ, MongoDB, Redis, MPI, OpenMP, Apache Hadoop
Simulators	gem5, GPGPU-Sim, MGPUSim