

# Piyush Kumar

Assistant Professor  
CSE, IIT Delhi

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## Research Interests

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I work at the intersection of systems, network, security and privacy. Specifically, I develop frameworks, perform large-scale measurements, and build systems for deploying and facilitating the use of privacy-enhancing technologies to safeguard users' privacy.

## Positions

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- **Assistant Professor, Indian Institute of Technology (IIT)**, Delhi [September 2025–now]
- **Postdoctoral Researcher, University of Michigan**, Ann Arbor, US [October 2023–July 2025]  
Hosted by: **Roya Ensafi**, Morris Wellman Associate Professor, University of Michigan
- **Postdoctoral Researcher, COSIC, KU Leuven**, Belgium [October 2021–September 2023]  
Hosted by: **Claudia Diaz**. Associate Professor, KU Leuven and Chief Scientist, Nym Technologies

## Education

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- **PhD** in Computer Science (CGPA: 10/10), **IIIT Delhi**, India [2016-2021]  
Thesis Title: *Building Performant, Privacy-Enhancing, and Blocking-Resistant Communication Systems*  
Advisor: Sambuddho Chakravarty, Associate Professor and Head of Department  
Committee: Amir Houmansadr (UMass), Michalis Polychronakis (Stony Brook), and Kent Seamons (BYU)
- **M. Tech** in Computer Science (CGPA: 9.6/10), **IIIT Delhi**, India [2016-2018]
- **B. Tech** in Electronics & Communication (83.5% out of 100), **GGSIPIU**, Delhi, India [2012-2016]

## Awards

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- **Outstanding reviewer** for PETS 2024.
- **FOCI Rising Star award** 2024. Awarded to “recognize the efforts of young and promising researchers who are contributing significantly to the advancement of the field through their innovative work and ideas”.
- **Outstanding reviewer** for PETS 2023.
- **Doctoral dissertation award** for the PhD thesis (similar to summa cum laude).

## Publications

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- [1] MVPN-Audit: An Investigative Framework for the Security & Privacy Audit of Mobile VPNs  
Wayne Wang, Aaron Ortwein, Enrique Sobrados, Robert Stanley, Afsah Anwar, Piyush Kumar Sharma, and Roya Ensafi  
Network and Distributed Systems Security Symposium (**NDSS**) 2026
- [2] Blocking Resistant Communication for Traffic Filtering using Push Notification  
Piyush Kumar Sharma, Diwen Xue, Cecylia Bocovich, Aaron Ortwein, Harry and Roya Ensafi  
Privacy Enhancing Technologies Symposium (**PETS**) 2025 [Acceptance rate: **19.00%** (26/147)]

- [3] LAMP: Lightweight Approaches for Latency Minimization in Mixnets with Practical Deployment Considerations  
Mahdi Rahimi, Piyush Kumar Sharma and Claudia Diaz.  
Network and Distributed Systems Security Symposium (**NDSS**) 2025 [Acceptance rate: **15.04%** (150/997)]
- [4] The Discriminative Power of Cross-layer RTTs in Fingerprinting Proxy Traffic  
Diwen Xue, Robert Stanley, Piyush Kumar Sharma and Roya Ensafi  
Network and Distributed Systems Security Symposium (**NDSS**) 2025 [Acceptance rate: **15.04%** (150/997)]
- [5] Is Custom Congestion Control a Bad Idea for Anti-Splintering Tools?  
Wayne Wang, Diwen Xue, Piyush Kumar Sharma, Ayush Mishra and Roya Ensafi  
Free and Open Communication Over the Internet (**FOCI**) co-located with **PETS** 2025
- [6] LARMix: Latency-Aware Routing in Mix Networks  
Mahdi Rahimi, Piyush Kumar Sharma and Claudia Diaz  
Network and Distributed Systems Security Symposium (**NDSS**) 2024 [Acceptance rate: **20.20%** (140/694)]
- [7] PTPerf: On the Performance Evaluation of Tor Pluggable Transports  
Zeya Umayya, Dhruv Malik, Devashish Gosain and Piyush Kumar Sharma  
ACM Internet Measurements Conference (**IMC**) 2023 [Acceptance rate: **25.87%** (52/201)]
- [8] On the Anonymity of Peer-To-Peer Network Anonymity Schemes Used by Cryptocurrencies  
Piyush Kumar Sharma, Devashish Gosain and Claudia Diaz  
Network and Distributed Systems Security Symposium (**NDSS**) 2023 [Acceptance rate: **16.20%** (94/581)]
- [9] Hades: Practical Partitioning Attack on Cryptocurrencies (Poster)  
Vinay Shetty, Piyush Kumar Sharma, and Devashish Gosain  
Network and Distributed Systems Security Symposium (**NDSS**) 2023
- [10] Dolphin: A Cellular Voice Bases Internet Shutdown Resistance System  
Piyush Kumar Sharma, Rishi Sharma, Kartikey Singh, Mukulika Maity and Sambuddho Chakravarty  
Privacy Enhancing Technologies Symposium (**PETS**) 2023 [Acceptance rate: **21.85%** (123/563)]
- [11] Camoufler: Accessing The Censored Web By Utilizing Instant Messaging Channels  
Piyush Kumar Sharma, Devashish Gosain and Sambuddho Chakravarty  
ACM Asia Conf. Computer and Communication Security (**AsiaCCS**) 2021 [Acceptance rate: **19.33%** (70/362)]
- [12] SiegeBreaker: An SDN Based Practical Decoy Routing System  
Piyush Kumar Sharma, Devashish Gosain, Himanshu Sagar, Chaitanya Kumar, Aneesh Dogra, Vinayak Naik, H.B. Acharya and Sambuddho Chakravarty  
Privacy Enhancing Technologies Symposium (**PETS**) 2020 [Acceptance rate: **23.01%** (78/339)]
- [13] The Road Not Taken: Re-thinking The Feasibility of Anonymous Voice Calling Over Tor  
Piyush Kumar Sharma, Shashwat Chaudhary, Nikhil Hassija, Mukulika Maity, Sambuddho Chakravarty  
Privacy Enhancing Technologies Symposium (**PETS**) 2020 [Acceptance rate: **23.01%** (78/339)]
- [14] Maginot Lines and Tourniquets: On the Defendability of National Cyberspace  
Devashish Gosain, Madhur Rawat, Piyush Kumar Sharma, H.B. Acharya  
Local Computer Network (**LCN**) Symposium 2020
- [15] Where The Light Gets In: Analyzing Web Censorship Mechanisms in India  
Tarun Kumar Yadav, Akshat Sinha, Devashish Gosain, Piyush Kumar Sharma and Sambuddho Chakravarty  
ACM Internet Measurement Conference (**IMC**) 2018 [Acceptance rate: **24.70%** (43/174)]

- [16] SiegeBreaker: An SDN Based Practical Decoy Routing System (Work in Progress paper)  
Piyush Kumar Sharma, Chaitanya Kumar, Aneesh Dogra, Vinayak Naik, H.B. Acharya and Sambuddho Chakravarty  
Annual Computer Security Applications Conference (**ACSAC**) 2017

## Ongoing Projects/Under Submission

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- [1] Practically measuring the privacy-utility tradeoffs in payment channel networks  
Satwik Prabhu, Piyush Kumar Sharma, Devashish Gosain and Stefanie Roos  
Status: In progress and to be submitted soon
- [2] Practical partitioning attacks on Bitcoin due to Tor hidden services  
Piyush Kumar Sharma and Devashish Gosain  
Status: In progress

## Teaching Experience

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- Substitute lecturer for Computer & Network Security (EECS 588) at the University of Michigan Fall 2024
- Delivered a **lecture on VPNs** as part of the Privacy Technologies course during at KU Leuven. Fall 2023
- Delivered a **lecture about peer-to-peer networks and their security properties** in the course *Advanced Privacy Technologies* at KU Leuven as part of the masters of cybersecurity program. Winter 2023
- **Managed and taught the complete course** *Privacy Technologies* at ESAT, KU Leuven. Fall 2022
- Co-managed and co-taught the course *Privacy and Big Data* at ESAT, KU Leuven Fall 2022
- Delivered a **four-hour seminar on Privacy courses** as part of the Advanced Masters of Cybersecurity program at KU Leuven in 2022. Fall 2022
- Delivered a **lecture on detailed and systematic overview of various (anti) censorship techniques** for the *Privacy Technologies* course at ESAT, KU Leuven. Fall 2021
- Served as a teaching assistant for different courses during my PhD. The courses included Systems Management, Numerical Methods, Network Security and Security Engineering.
- Served as the course instructor for multiple industrial certifications during my internship/part-time employment at CODEC Networks, including EC-Council's CND, CEH, ECSA and Cisco's CCNA. I taught students as well as corporate professionals for the aforementioned certifications for a duration of a year.

## Invited Talks

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- Presented an invited talk on developing effective solutions for Internet shutdowns. [Splintercon 2023]
- Delivered a **keynote at FOCI 2023** (co-located with PETS 2023) about the motivation and challenges of performing censorship research. [FOCI 2023]
- Presented my work on the analysis of peer-to-peer anonymity schemes used by cryptocurrencies. [Monerokon 2023]
- Delivered a seminar talk about privacy in peer-to-peer networks. [TU Delft 2022]
- Delivered an invited talk on SDN based decoy routing system for the security group. [University of Michigan 2021]

## Academic Service

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- *Program Committee member:* Usenix Security 2026, IEEE S&P 2026, USENIX Security 2025, PETS 2025, Euro S&P 2025, CCS 2024, WWW 2024, PETS 2024, WiSec 2024, FOCI 2024, PETS 2023, ESORICS 2022
- *External Reviewer:* PETS 2022, PETS 2021, ESORICS 2023
- *Session Chair:* Anonymity and Traffic Analysis Track (PETS 2023), Web Cookies Track (PETS 2024)