Nikhil Tripathi
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1. Driven, goal-oriented scientific investigator recognized for exploring vulnerabilities in application layer protocols that resulted into appraised publications in various top scientific journals and conferences.

2. 11+ years experience in vulnerability assessment of popular application layer protocols and proposing defense mechanisms. Strong presentation skills built by presenting results at various specialized international conferences.

WORK EXPERIENCE

- Assistant Professor, Computer Science and Engineering Department, Indian Institute of Technology, Dhanbad, December 2024-Present
- Assistant Professor, Computer Science and Engineering Group, Indian Institute of Information Technology, Sri City, September 2021-December 2024
- Assistant Professor, Department of Computer Science and Engineering, Siksha 'O' Anusandhan University, Bhubaneswar, April 2021-August 2021
- Security Researcher (Postdoc), Technical University of Darmstadt (Fraunhofer SIT) Germany, March 2019-February 2021
- Research Assistant, Indian Institute of Technology Indore, June 2018-January 2019

EDUCATION

Doctor of Philosophy, Computer Science and Engineering, July 2014 - January 2019
Indian Institute of Technology Indore, India
CGPA: 8.2/10.

Master of Technology, Information Technology, July 2012 - July 2014
University of Hyderabad, India
CGPA: 9.45/10.

Bachelor of Technology, Computer Science and Engineering, July 2008 - June 2012
Uttar Pradesh Technical University, India
Percentage: 72.22 %

Senior Secondary (Class 12 th), March 2006 - May 2007
ISC
Percentage: 82%

Higher Secondary (Class 10 th), March 2004 - May 2005
ICSE
Percentage: 80.00%

SPONSORED RESEARCH

2. Title: Design and Development of an AI Framework for Detecting State-Sponsored Cyber Attacks Against Critical Government IT Infrastructure
Role: PI

Duration: 2 years (2025-2027)
Status: Ongoing
Amount: 1,998,889/- INR
Agency: IIT (ISM) Dhanbad

1. Title: Secure Drones: Analyze, Deploy and Decide Cryptographic modules in UAVs
Role: Co-PI
Duration: 3 years (2021-2024)
Status: Completed
Amount: 3,700,480/- INR
Agency: C3iHUB, IHUB NTIHAC Foundation, IIT Kanpur

RESEARCH INTERESTS

- Devising DoS/DDoS defense strategies.
- Vulnerability assessment of application layer protocols.
- Implications of vulnerabilities over Internet ecosystem.
- Performance analysis of Named Data Networks

Skills

- Programming/scripting Languages
  - Python, Shell scripting, Core Java, C
- Network Management using Linux
- Raw Socket Programming using Python
- Security configurations in cloud environments like Azure, AWS and Google

PROJECTS

- Working on a project of communication security for drones, funded by IHUB NTIHAC, IIT Kanpur.
- Worked on "Design and Development of a Trusted and Accountable Cloud Cmputing Platform" as a research assistant at IIT Indore.
- Worked on "Novel Application Layer DoS Attacks and Defense Mechanisms" during Ph.D. at IIT Indore.
- Worked on "An ARP-ICMP Probe Packet based Scheme to prevent ARP Poisoning and IP Exhaustion Attacks" during M.Tech at University of Hyderabad.
- Worked on a project entitled "Complete Web Hosting Services (configuration of DNS, WEB and MAIL servers)" as a part of B.Tech Final Year project.

SUMMER TRAINING

- One month summer training on "Network Management using Linux" in July 2010.

PUBLICATIONS

******Updated publication list is available at Google Scholar******

Common Vulnerabilities and Exposures (CVEs)

- **CVE-2018-8956** for a vulnerability disclosed by me in NTP protocol. More details at https://cve.mitre.org/cgi-bin/cvename.cgi?name=CVE-2018-8956

Journals

- Munmun Swain, Nikhil Tripathi, and Kamalakanta Sethi, "Identifying communication sequence anomalies to detect DoS attacks against MQTT", Computers & Security, Elsevier, Volume 157, 104526, 2025.
- Matta Krishna Kumari, Nikhil Tripathi and Piyush Joshi, "ProxaDyn: A Proximity-Aware Dynamic Caching Approach for Named Data Networks," in IEEE Transactions on Network Science and Engineering, vol. 12, no. 3, pp. 2360-2372.
- Matta Krishna Kumari, Nikhil Tripathi. "Detecting interest flooding attacks in NDN: A probability-based event-driven approach." Computers & Security, Elsevier, Volume 148, 2025, Page(s): 104-124.
- Nikhil Tripathi, "Delays Have Dangerous Ends: Slow HTTP/2 DoS Attacks Into the Wild and Their Real-Time Detection Using Event Sequence Analysis," in IEEE Transactions on Dependable and Secure Computing, vol. 21, no. 3, pp. 1244-1256.
- Nikhil Tripathi, Neminath Hubballi, "Application Layer Denial of Service Attacks and Defense Mechanisms: A Survey", ACM Computing Surveys, ACM, Volume 54(4), 2021, Page(s): 1-33.
- Nikhil Tripathi, Neminath Hubballi, "Preventing Time Synchronization in NTP's Broadcast Mode", Computers & Security, Elsevier, Volume 102, 2021, Page(s): 102-135.
- Nikhil Tripathi, Neminath Hubballi, "Slow Rate Denial of Service Attacks Against HTTP/2 and Detection", Computers & Security, Elsevier, Volume 72, 2018, Page(s): 255-272.
- Nikhil Tripathi, Neminath Hubballi, "Detecting Stealth DHCP Starvation Attack using Machine Learning Approach", Journal of Computer Virology and Hacking Techniques, Springer, Volume 14, 2018, Page(s): 233-244.
- Neminath Hubballi and Nikhil Tripathi, "A Closer Look into DHCP Starvation Attack in Wireless Networks". Computers & Security, Elsevier, Volume 65, Issue C, 2017, Page(s): 387-404.
- Neminath Hubballi and Nikhil Tripathi, "An Event based Technique for Detecting Spoofed IP Packets", Journal of Information Security and Applications, Elsevier, Volume 35, 2017, Page(s): 32-43.

Conferences (Selected)

- Matta Krishna Kumari, Nikhil Tripathi, "An Efficient Content Retrieval and Content Placement Approach for Named Data Networks", 38th International Conference on Information Networking (ICOIN), 2024 (Accepted)
- Nikhil Tripathi, Abhijith Kalayil Shaji, "Defer No Time, Delays have Dangerous Ends: Slow HTTP/2 DoS Attacks into the Wild", 14th International Conference on COMmunication Systems & NETworkS (COMSNETS), 2022 (Accepted)
- Neminath Hubballi, Amey Kiran Patel, Amit Kumar Meena, Nikhil Tripathi, "Cloud Security Service Level Agreements: Representation and Measurement", 38th IEEE International Conference on Computer Communications Workshops (INFOCOM WKSHPS), 2019, pp. 145-150.

- Nikhil Tripathi, Neminath Hubballi and Yogendra Singh, "How Secure are Web Servers? An Empirical Study of Slow HTTP DoS Attacks and Detection," 2016 10th International Conference on Availability, Reliability and Security (ARES), Salzburg (Austria), 2016, pp. 454-463.
- Nikhil Tripathi and Neminath Hubballi, "Exploiting DHCP Server-side IP Address Conflict Detection: A DHCP Starvation Attack". Proceedings of 9th IEEE International Conference on Advanced Networks and Telecommunications Systems (ANTS'15), ISI Kolkata, 2015, Page(s): 1-3 [Published]

Community Work

- TPC member of various conferences
- Reviewer for various journals
- Thesis (MTech/PhD) examiner for a few universities
- Developing course curriculum and question papers for a few universities.

Invited Talks (Selected)

- Delivered various talks on my research at venues such as Fraunhofer SIT, IIT Indore, IIIT Gwalior, IIIT Sri City, etc.

LANGUAGES KNOWN

- English - Read, Write, Speak.
- Hindi - Read, Write, Speak.
- German - A1

PERSONAL DETAILS

- DoB- June 17th, 1991
- PoB- Sangipur, Uttar Pradesh, India
- Marital Status- Married

Detailed Professional References Available Upon Request