# Mohit Kumar Jangid

PhD in Cybersecurity

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# Research Interests

Automated Formal Verification, System Security and Privacy, Trusted Execution Environment, Cryptography, Protocol Design, and Network Security

# Education

#### 2017 - 2024 Ph.D. in Cybersecurity

The Ohio State University, Columbus, Ohio, USA GPA 3.74/4

Thesis: "Exploring Potential and Challenges of Symbolic Formal Verification in Security and Privacy"

Advisors: Dr. Zhiqiang Lin and Dr. Yinqian Zhang

Note: Intially admitted for Masters Program (2017-2019) which was coverted to PhD in 2019

#### 2009 – 2013 Bachelor of Technology, Computer Engineering

Malaviya National Institute of Technology, Jaipur, India CGPA 7.8/10

Thesis Project: Implemented DNS Poisoning using Port Exhaustion Technique over a vulnerable server supported by multi-threaded SSL-secured FTP and Shell-login server and client.

Advisor: Dr. Manoj Singh Gaur

#### Awards and Honors

- 2024 Graduate Student Research Award, Department of Computer Science and Engineering, The Ohio State University.
- 2019 Sesquicentennial Student Scholar Leadership Program and the Scholarship, The Ohio State University.
- 2013 Spot Award for hard work and excellent automation of the project at MAQ Software, India.
- 2012 Pioneering implementation of Linux Device Driver during the internship at the Defense Research and Development Organization, India.
- 2006 1st position in Cluster Level Computer Science and Intel Exhibition, India.

# **Publications**

2025 Christopher Ellis, Yue Zhang, **Mohit Kumar Jangid**, Shixuan Zhao, Zhiqiang Lin. "Deanonymizing Device Identities via Side-channel Attacks in Exclusive-use IoTs & Mitigation" *To appear in the Network and Distributed System Security (NDSS) Symposium*PDF

2023 **Mohit Kumar Jangid**, Yue Zhang (co-first-author), and Zhiqiang Lin. "Extrapolating Formal Analysis to Uncover Attacks in Bluetooth Passkey Entry Pairing." *In Network and Distributed Systems Security (NDSS) Symposium*.

PDF Artifact Talk

2022 **Mohit Kumar Jangid**, Zhiqiang Lin. "Towards a TEE-based V2V Protocol for Connected and Autonomous Vehicles" In Workshop on *Automotive and Autonomous Vehicle Security (AutoSec)*.

PDF Artifact Talk

2021 **Mohit Kumar Jangid**, Guoxing Chen, Yinqian Zhang, Zhiqiang Lin. "Towards Formal Verification of State Continuity for Enclave Programs". *In 30th USENIX Security Symposium (USENIX Security 21)*,

PDF Artifact Talk

#### **Grant Contribution**

2023 "Advancing Security and Privacy of Bluetooth IoT via Formal Life Cycle Analysis and Modelling", National Security Agency (NSA), Science of Security, USA.

Co-wrote the grant proposal with PI: Zhiqiang Lin, The Ohio State University Budget: \$500,000

# Other Research Experiences

Summer 2022 Research Intern, CISPA Helmholtz Center for Information Security, Germany

Supervised by: Dr. Cas Cremers (cremers@cispa.de)

 Investigated the internal mechanics of the Tamarin-Prover and developed ideas to improve the formal technique.

Summer 2012 Research Intern, Defense Research and Development Organization, India

Supervised by: K Bhaskar (bhaskar.k@rcilab.in)

 Developed Linux device driver and an application program to configure, monitor, and analyze the 4-channel 1553B Military Standard PCI (65569i) card.

# Teaching Experience

Fall 2023 CSE 2421: Systems I: Introduction to Low-Level Programming and Computer Organization

The Ohio State University, Columbus, Ohio, USA

Role: Instructor, Logistics: 37 Undergraduate students, 4 Credit Hours, 1 Grader

# Student Organization Leadership

- 2023 2024 Global Ambassador, Office of International Affairs at The Ohio State University.
  - Facilitated three global engagement nights to discuss cultures and traditions from around the world.
  - Coordinated four cultural tours to educate and engage international students.
- 2022 2023 Student Leadership Advocate, Office of Student Life at The Ohio State University.
  - Facilitated five workshops on leadership topics for student organization leaders and university students.
  - Designed icebreaker activities and meaningful reflections to encourage participants to take on leadership roles.
- 2021 2022 **Treasurer**, SKY (Sudarshan Kriya Yoga by Art of Living) Mediation student organization at The Ohio State University.
  - Organized multiple 3-day happiness retreats designed by the Art of Living organization.
  - Managed funding and logistics for team-building activities, happiness retreats, and operational resources.
- 2020 2021 **University Liaison**, International Friendship student organization at The Ohio State University.
  - Coordinated multicultural festivals, including Diwali, Chinese Lunar New Year, and Eid, specifically for international students.
  - O Collaborated with university departments to diversify and promote cultural events.

#### Other Professional Services

- Mar 2024 **Group Leader**, International Buck-I-Serv Service Trip to Guatemala, Office of Student Life Student at The Ohio State University.
- Mar 2023 **Emcee**, Holi Festival at The Ohio State University organized by International Friendship, USA.
- Dec 2020 Emcee, Vision Conference organized by Bridges Internationals, USA.
- Mar 2011 **Coordinator**, *ALOHA* Technical Festival, Creative Art Society, Malaviya National Institute of Technology, Jaipur, India.

# Conference Services

Session chair Automotive and Autonomous Vehicle Security (AutoSec) Workshop, San Diego, California, 2022.

# External Review

- o IEEE Symposium on Security and Privacy 2024, 2019
- o Annual Computer Security Applications Conference (ACSAC), 2024
- o IEEE Transactions on Dependable and Secure Computing, 2023
- Network and Distributed System Security (NDSS), 2023
- o IEEE Transactions on Intelligent Transportation Systems, 2022
- o European Symposium on Research in Computer Security (ESORICS), 2022
- o Automotive and Autonomous Vehicle Security (AutoSec), 2022
- o Detection of Intrusions and Malware, and Vulnerability Assessment (DIMVA), 2019
- o IEEE/ACM International Conference on Automated Software Engineering, 2019
- o ACM Digital Threats: Research and Practice, 2019

# Presentation and Talks

Formalizing Unxplored Privacy Terrain: Allowlist Tracking

o International Computer Science Institute, Berkeley, California, USA, July 2024.

Extrapolating Formal Analysis to Uncover Attacks in Bluetooth Passkey Entry Pairing.

- o CISPA Helmholtz Center for Information Security, Germany, July 2022.
- Network and Distributed System Security (NDSS) Symposium San Diego, California, March 2023.

Towards a TEE-based V2V Protocol for Connected and Autonomous Vehicles

 Automotive and Autonomous Vehicle Security (AutoSec) Workshop, San Diego, California, April 2022.

Towards Formal Verification of State Continuity for Enclave Programs

o 30th USENIX Security Symposium, August 2021.

# Acknowledged Research Contributions

- 2023 Scott W Duxbury, Dana L Haynie "Network embeddedness in illegal online markets: Endogenous sources of prices and profit in anonymous criminal drug trade." Socio-Economic Review.
- 2021 Scott W Duxbury, Dana L Haynie, "Shining a light on the shadows: Endogenous trade structure and the growth of an online illegal market." American Journal of Sociology.
  - Developed an automated data crawler for the darknet trading markets on the Tor network. Python,
     GUI Automation
  - Identified and extracted measures, and built a network graph to analyze and derive strategies to deal with the illegal drug trade.

#### Personal Source Code Release

#### 2016 – 2017 Visualize Graph Algorithm

 Developed a Python platform with GDK-UI, multithreaded interactive functionality to visualize and control the steps of graph algorithms. Python, graph-tools, gdk-threads

#### 2015 – 2017 **Android Automation Tools**

 Developed auto voice response definitions using Google Assistant, Calendar notification UI, Custom news radio, and TED Video downloader, Inspired by personal use case. Tasker, Autoapps, IFTTT

# Industry Experience

#### Summer 2018 Quality Assurance Intern, ANSYS Inc, Canonsburg, Pennsylvania USA.

- Built an object-oriented schematic regression library from scratch for all available TwinBuilder (thermal and physical simulator for machines and automobiles) components. Python
- Designed and implemented an automated validation for create, move, copy-paste, flip, and rotate operations over simulated objects. Python

#### 2013 – 2015 Software Engineer, MAQ Software, India.

- o Designed and automated a testing suite for a terabyte-scaled data warehouse. MYSQL, MSBI
- Designed and integrated SQL Server Analysis Services (Multidimensional Database).
- Developed 20+ modules for full Windows automation and productive work organization. Auto-Hotkey

#### Summer 2011 Developer Intern, Malaviya National Institute of Technology, Jaipur, India

- Designed back-end database and dashboard webpage UI for student and employer recruitment automation system software. HTML CSS
- Developed functionality for student to view and apply for different job opportunities and employer to setup job and qualification information. JavaScript, PHP

#### Research References

#### Dr. Zhiqiang Lin, Professor (advisor)

 ${\small \mbox{ Dept. of Computer Science and Engineering, The Ohio State University, Columbus, Ohio, USA}$ 

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Webpage: https://zhiqlin.github.io

#### Dr. Yinqian Zhang, Professor (co-advisor)

Dept. of Computer Science and Engineering, Southern University of Science and Technology, Shenzhen, China

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Webpage: https://yinqian.org

#### Dr. Srinivasan Parthasarathy, Professor

 $\label{eq:computer_science} \mbox{ Dept. of Computer Science and Engineering, The Ohio State University, Columbus, Ohio, USA$ 

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Webpage: https://web.cse.ohio-state.edu/~parthasarathy.2

#### Dr. Manoj Singh Gaur, Director (advisor)

Indian Institute of Technology, Jammu, India

☑ director@iitjammu.ac.in ☐ +91 191-257-0381 Webpage: https://www.iitjammu.ac.in/director

# Professional and Leadership References

#### Kala Coyan-McClure, Coordinator, Student Leadership Development

Office of Student Life, The Ohio State University, Columbus, Ohio, USA

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Info: https://lead.osu.edu/people/kala-coyan-mcclure

#### Kal Jordan-DeBruin, Global Engagement Program Assistant

Office of International Affairs, The Ohio State University, Columbus, Ohio, USA

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Info: https://oia.osu.edu/directory/kal-jordan-debruin