

Mohit Kumar Jangid

PhD Candidate

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Research Interests

Formal Methods, System Security and Privacy, Cryptography

Education

- 2019 – 2024 **Ph.D. Candidate in Cybersecurity**
The Ohio State University, Columbus, Ohio, USA
GPA 3.74/4
Proposed Thesis: "Pushing The Limits Of Formal Verification For Security And Privacy"
Advisors: Dr. Zhiqiang Lin and Dr. Yinqian Zhang
- 2017 – 2019 **Masters in Computer Science accelerated to Ph.D.**
The Ohio State University, Columbus, Ohio, USA
- 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

- 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*.
Artifact Formal Model

- 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)*.

🔗 Artifact Protocol Code

- 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)*,

🔗 Artifact Formal Model

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*: \$250,000

Other Research Experience

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

- 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*

- 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 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.

- 2018 – 2019 **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.
 - 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 2022 **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
- IEEE Symposium on Security and Privacy 2024, 2019
 - Annual Computer Security Applications Conference (ACSAC), 2024
 - IEEE Transactions on Dependable and Secure Computing, 2023
 - Network and Distributed System Security (NDSS), 2023
 - IEEE Transactions on Intelligent Transportation Systems, 2022
 - European Symposium on Research in Computer Security (ESORICS), 2022
 - Automotive and Autonomous Vehicle Security (AutoSec), 2022
 - Detection of Intrusions and Malware, and Vulnerability Assessment (DIMVA), 2019
 - IEEE/ACM International Conference on Automated Software Engineering, 2019
 - ACM Digital Threats: Research and Practice, 2019

Presentation and Talks

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

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

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

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



Towards Formal Verification of State Continuity for Enclave Programs

- 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.**
- 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

Research References

Dr. Zhiqiang Lin, Professor (advisor)

Dept. of Computer Science and Engineering, The Ohio State University, Columbus, Ohio, USA

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Webpage: <https://web.cse.ohio-state.edu/~lin.3021>

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

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

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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

coyan-mcclure.1@osu.edu

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>