Mohit Kumar Jangid

PhD Candidate
Department of Computer Science and Engineering
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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: "Towards Stretching Boundaries Of Formal Methods 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.

- CISPA 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. AutoHotkey

Research References

Dr. Zhiqiang Lin, Professor (advisor)

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

zlin@cse.ohio-state.edu

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

zhangyq3@sustech.edu.cn

Webpage: `https://yinqian.org`

Dr. Srinivasan Parthasarathy, Professor

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

srini@cse.ohio-state.edu

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

Dr. Manoj Singh Gaur, Director (advisor)

Indian Institute of Technology, Jammu

director@iitjammu.ac.in

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

jordan-debruin.1@osu.edu

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