

# MUHAMMAD IBRAHIM

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[Google Scholar](#) ◊ [Homepage](#) ◊ [LinkedIn](#)

## EDUCATION

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<b>Purdue University</b> Ph.D. in Computer Science Thesis: <i>Analyzing secure and attested communication in mobile devices</i>	<i>2019 - 2024</i>
<b>LUMS School of Sciences and Engineering</b> B.Sc. in Computer Science	<i>2015 - 2019</i>

## RESEARCH INTERESTS

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My research focuses on the security of mobile systems and IoT devices, with a particular emphasis on analyzing mobile apps, which serve as the key conduit for numerous communication channels. I also explore the interactions between end-users and developers, seeking to enhance the security of mobile devices by gaining deeper insights into these dynamics.

## RESEARCH EXPERIENCE

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<b>Research Assistant</b> <i>Supervisor: Dr. Antonio Bianchi</i>	<i>Aug 2019 - Present</i> <i>Purdue University</i>
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- Developed tools and techniques to scale and automate the analysis of millions of apps
- Received the **Google ASPIRE** Award in 2021, 2022, and 2023 for collaboration with Google
- Performed **reverse engineering** using Frida, Jadx, Soot, Ghidra, WireShark, apktool
- Conducted research on **Android app attestation** and tampering techniques
- Studied interaction between mobile devices, smartwatches and **IoT devices**
- Analyzed Android **radio frequency** protocols including Bluetooth, NFC, ANT, WiFi
- Performed security analysis of **LLMs** in the context of mobile devices
- Earned multiple confidential **bug bounties** and discovered CVE-2023-33768

## PUBLICATIONS

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- 2024 Doguhan Yeke, **Muhammad Ibrahim**, Habiba Farrukh, Abdullah Imran, Antonio Bianchi, Guliz Seray Tuncay, Z. Berkay Celik  
“Wear’s my Data? Understanding the Cross-Device Runtime Permission Model in Wearables”  
*In Proceedings of the 45th IEEE Symposium on Security and Privacy (S&P Oakland)*
- 2023 **Muhammad Ibrahim**, Andrea Continella, Antonio Bianchi  
“AoT - Attack on Things: A security analysis of IoT firmware updates”  
*In Proceedings of the IEEE 8th European Symposium on Security and Privacy (Euro S&P)*
- 2022 Abdullah Imran, Habiba Farrukh, **Muhammad Ibrahim**, Z. Berkay Celik, Antonio Bianchi  
“SARA: Secure Android Remote Authorization”  
*In Proceedings of the 31st USENIX Security Symposium (USENIX Security)*
- 2021 **Muhammad Ibrahim**, Abdullah Imran, Antonio Bianchi  
“SafetyNOT: On the usage of the SafetyNet attestation API in Android”  
*In Proceedings of the 19th Annual International Conference on Mobile Systems, Applications, and Services (MobiSys)*

## TEACHING EXPERIENCE

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### Teaching Assistant

*Supervisor: Dr. Naveed Arshad*

*Jan 2019 - June 2019*

*LUMS*

- TA for CS-200 - Computational Problem Solving
- Supervised C++ programming labs and assignments for classes of over 200 students

### Teaching Assistant

*Supervisor: Zaid Saeed Khan*

*July 2018 - Dec 2018*

*LUMS*

- TA for CS-100 - Introduction to Programming
- Supervised C++ programming labs and assignments for classes of over 200 students

## TALKS AND PRESENTATIONS

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- 2024 Presentation at CyberAuto Challenge 2024 (Warren, MI)
- 2024 Paper presentation at the 45th IEEE S&P (San Francisco, CA)
- 2023 Paper presentation at the 8th IEEE European S&P (Delft, Netherlands)
- 2023 Presentation at CyberTruck Challenge 2023 (Warren, MI)
- 2023 Poster presentation at MITRE eCTF Award Ceremony (McLean, VA)
- 2022 Speaker at Google ASPIRE Research Seminar (Virtual)
- 2021 Paper presentation at the 19th ACM MobiSys (Virtual)

## LEADERSHIP, DIVERSITY, AND OUTREACH ACTIVITIES

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### President

*CS Graduate Student Government*

*2023 - 2024*

*Purdue University*

- Led a team of 20 officers, managing the needs and activities of 500 graduate students
- Increased funding and introduced new training programs, workshops, and events
- Revitalized branding through redesigned promotional materials, T-shirts and official logo
- Organized logistical arrangements for the CS remote campus in Indianapolis

### Social Activities Coordinator

*CS Graduate Student Government*

*2022 - 2023*

*Purdue University*

- Organized social events fostering community engagement and collaboration
- Managed budgeting, logistics, business transactions, and vendor negotiations

### Event Head

*Science Promotion Society*

*2016 - 2017*

*LUMS*

- Organized a national programming event
- Coordinated a team of 10 people managing a competition of 200 people
- Designed and conducted engaging programming exercises
- Achieved Immense Contribution Award

### Senior Trainer

*Boxing Team*

*2017 - 2018*

*LUMS*

- Led training sessions, exercise routines and conditioning programs
- Designed promotional material for boxing matches and training sessions

## PROFESSIONAL SERVICES

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### External Reviewer

- Research in Attacks, Intrusions and Defenses (RAID 2023)
- IEEE Security and Privacy (S&P 2024)

### Artifact Evaluation Committee

- EuroSys (2023)
- Workshop On Offensive Technologies (2023)

## AWARDS AND HONORS

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Winner, Idaho National Laboratory CTF CyberAuto	<i>2024</i>
Google ASPIRE Award	<i>2021, 2022, 2023</i>
<a href="#">CVE-2023-33768</a>	<i>2023</i>
Travel Grant, European Security and Privacy 2023	<i>2023</i>
Winner, NXP DevKit for CyberTruck 2023	<i>2023</i>
Best Poster, MITRE Embedded Capture The Flag 2023	<i>2023</i>
Best Sound FX, MindStorm Studios Game Jam Pakistan 2018	<i>2018</i>
Color Award, LUMS Boxing Team 2018	<i>2018</i>
Immense Contribution Award, LUMS Science Promotion Society 2017	<i>2017</i>
Confidential Bug Bounties	

## MENTORING EXPERIENCE

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Fall 2024	Joshua Shinkle	Ph.D. CS, Purdue University
Spring 2023	Sonal Naik	B.Sc. CS, Purdue University
Spring 2022	Everett Johnson	B.Sc. CS, Purdue University