Chandrika Mukherjee

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EDUCATION

Ph.D. Student in Computer Science Oct 2023 - Present

- **Purdue University, USA**
- Advisor: Professor Z. Berkay Celik
- Research Area: Human-Centered Security and Privacy of Emerging Mobile Systems.
- GPA: 3.83/4.00

M.S. in Computer Science Aug 2021 - Dec 2023

- **Purdue University, USA**
- GPA: 3.83/4.00

B.Tech in Computer Science and Engineering Aug 2015 - Jun 2019

- **NIT Durgapur, India**
- GPA: 9.16/10.00

RESEARCH AND PROFESSIONAL EXPERIENCE

Graduate Research Assistant Oct 2023 - Present
Purdue University, USA

- My research interests broadly lie in the area of **human-centered security and privacy**, primarily investigating this area in the context of emerging mobile systems, such as extended reality (XR) systems. By combining user-centered data collection (e.g., human-subject studies) with **qualitative** and **quantitative** methods, I investigate how end-users and developers understand, experience, and manage security, privacy, and trust in immersive environments. Additionally, through **system design, signal processing, formal methods, and machine learning** my research seeks to detect and mitigate attacks that exploit XR interaction modalities and sensor data, and to provide usable defenses for end-users.

Systems and Infrastructure SWE PhD Intern May 2025 - August 2025
Meta, Seattle, USA

- Developed an AI agent to automatically analyze application stack traces and track data flows between defined sources and sinks to detect unintended data propagation.

Software Engineering Intern May 2022 - August 2022
Meta, NYC, USA

- Developed internal UI tools to visualize how data flows between different software components.

Software Engineer July 2019 - August 2021
HSBC, Pune, India

- Full-stack developer for a credit monitoring tool, used by relationship managers.

Undergraduate Research Assistant Apr 2017 - May 2019
NIT Durgapur, India

- Designed an offline crisis-mapping system using crowdsourced GIS data and a four-tier hybrid ad hoc network architecture to support post-disaster communication.

Undergraduate Research Intern May 2018 - July 2018
IIT Kharagpur, India

- Designed a tool that encodes `.mp4` to `.svc`, transfers video via peer-to-peer communication, and decodes back to `.mp4` to enable adaptive bitrate streaming and reduce server load.

SKILLS

Research Methods: HCI systems research, mixed-methods user studies, semi-structured interviews, survey design, machine learning, and formal methods

Programming Languages: C++, Python, React, C#, Java, C, Javascript, HTML, CSS, PHP, GraphQL, SQL, Shell

XR Tecnologies:
SDKs: Unity, MRTK, A-Frame
Devices: Meta Quest, Microsoft HoloLens

Software Development: Web applications, Android mobile apps, immersive standalone XR applications, and WebXR applications; agile software development; agentic workflows

MENTORING & TEACHING EXPERIENCE

Research Advising

Chan-Nhu Pham	B.S., Computer Science, Purdue University	2025-Current
Aishwarya Devi	M.S., Computer Science, Purdue University	2025-Current

Guest Lecturer

- CS 361 Great Issues In Computer Science, Purdue University — Spring 2025
  Topic: Introduction to XR and Its Associated Security & Privacy Issues

Graduate Teaching Assistant

- CSCI 495 Explorations In Applied Computing, Purdue University — Fall 2025
- CS 182 Foundations Of Computer Science, Purdue University — Fall 2024
- EPICS and VIP (Service-Learning/Research Design Program for Undergraduates), Purdue University — Fall 2022, Spring 2023, Fall 2023
- ENGR 133 First Year Engineering (Introduction to Programming with Python, MATLAB, and Excel), Purdue University — Summer 2023

PUBLICATIONS

Conference Publications

C3 Seonghun Son, **Chandrika Mukherjee**, Reham Mohamed, Berk Gulmezoglu, and Z. Berkay Celik. **Side-channel Inference of User Activities in AR/VR Using GPU Profiling**. *Proceedings of the Network and Distributed System Security (NDSS) Symposium, 2026 (to appear).*

C2 **Chandrika Mukherjee**, Reham Mohamed, Arjun Arunasalam, Habiba Farrukh, and Z. Berkay Celik. **Demo: UI Based Attacks in WebXR**. *Proceedings of the ACM International Conference on Mobile Systems, Applications, and Services (MobiSys), 2025.*

C1 **Chandrika Mukherjee**, Reham Mohamed, Arjun Arunasalam, Habiba Farrukh, and Z. Berkay Celik. **Shadowed Realities: An Investigation of UI Attacks in WebXR**. *Proceedings of the USENIX Security Symposium, 2025.* ***Honorable Mention Award*** *(Acceptance Rate: 17.1%).*

Workshop Publications

W2 **Chandrika Mukherjee**, Arjun Arunasalam, Habiba Farrukh, Reham Mohamed, and Z. Berkay Celik. **Towards Secure User Interaction in WebXR**. *Human-Centered Sensing, Modeling, and Intelligent Systems (HumanSys), in Proceedings of the ACM SenSys, 2025.*

W1 Partha Sarathi Paul, **Chandrika Mukherjee**, Bishakh Chandra Ghosh, Sudipta Pandit, Sujoy Saha, and Subrata Nandi. **On designing a fast-deployable 'localized'GIS platform for using 'offline'during post-disaster situation**. *Emergency Response Technologies and Services (EmeRTeS), in Proceedings of the International Conference on Distributed Computing and Networking (ICDCN), 2019.*

AWARDS AND HONORS

- Honorable Mention Award (Top 6%) at USENIX Security (2025)
- Faculty Choice Best Poster Award at Midwest Security Workshop (2025)
- USENIX Security Student Travel Grant (2025)
- SIGBED Student Travel Grant at CPS-IoT Week (2025)
- Purdue Women in Science Program (WISP) Travel Grant (2025)
- Meta Bug Bounty Award for collaborative work on "GPU-based Side-Channel Vulnerabilities in XR" (2025)
- Graduation with Distinction (Bachelor of Technology) (2019)

PROFESSIONAL ACTIVITIES

External Reviewer

- IEEE Conference on Virtual Reality and 3D User Interfaces (IEEE VR), 2026
- USENIX Security Symposium, 2025

REFERENCES

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