ABHINAYA S B

Human-Centered Security & Privacy Researcher
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Professional Summary

- 6+ years of cumulative experience in Security, Privacy & Online Safety Research, ML, NLP, and Software Development.

- Expertise in designing and conducting **qualitative** and **quantitative studies** to investigate security, privacy and online safety threats that arise in emerging tech, including VR systems and voice assistants. Multiple publications at top-tier security and privacy conferences (USENIX Security, IEEE Security & Privacy, PETS).

- Research leveraging **NLP**, text-based and multi-modal **LLMs** to combat **online harassment** and study **scams** at scale.

Employment & Experience

1. **Research Experience:** Graduate Research Assistant, NC State University   May 2023 - Present
   Led the design of two qualitative **interview-based studies** to investigate (i) VR-based harassment and safety controls from the perspective of VR users and developers, (ii) VR users' privacy expectations, concerns and behavior. Conducted another qualitative study exploring parents' perceptions of their children's use of VR technology. Current work involves (i) **building systems using state-of-the-art LLMs, Audio LLMs and Vision LLMs** to detect VR safety risks through linguistic, paralinguistic and visual inputs, (ii) qualitative methods and LLMs to study scambaiting at scale.

2. **Teaching Experience:** Graduate Teaching Assistant, NC State University

   - CSC 433 Privacy in the Digital Age   Jan 2023 - May 2023

   - CSC 326 Software Engineering   Aug 2022 - Dec 2022

3. **Industry Experience**

   (a) **Engineer, Qualcomm India Pvt. Ltd.**   Dec 2020 - Jun 2022
       Designed a prototype to optimize memory resource for concurrent workloads on the AI-processor; added support for testing across 2 simulators, 1 emulator, 2 Linux and 1 Windows based platforms.

   (b) **Associate Engineer, Qualcomm India Pvt. Ltd.**   Jul 2019 - Nov 2020
       Developed a suite of tests and support tools for Qualcomm's AI-processor, that identified 5 critical HW issues; presented work at internal conferences, Qbuzz (India) and ML Summit (international) with 3K+ total attendees.

   (c) **Interim Engineering Intern, Qualcomm India Pvt. Ltd.**   May 2018 - Jul 2018
       Analyzed Google's Pixel Visual Core based image capture to derive architectural insights.

Education

North Carolina State University (NCSU), Raleigh, USA   **Aug 2022 - Present**
PhD in Computer Science; *Advised by Dr. Anupam Das (WSPR lab)*   CGPA: 4.00/4.00
National Institute of Technology, Tiruchirappalli, India   **Jul 2015 - May 2019**
Bachelor of Technology (Honours) in Computer Science and Engineering   CGPA: 9.74/10.00

Publications

Peer-Reviewed Conference Publications

1. "What are they gonna do with my data?": Privacy Expectations, Concerns, and Behaviors in Virtual Reality
   Abhinaya S.B., Abhishri Agrawal, Yaxing Yao, Yixin Zou, Anupam Das
   Privacy Enhancing Technologies Symposium (PETS), Jul 2025.   [**paper**]

2. Analyzing Ad Prevalence, Characteristics, and Compliance in Alexa Skills
   Aafaq Sabir, Abhinaya S.B., Dilawer Ahmed, Anupam Das
   IEEE Symposium on Security and Privacy, May 2025. (Acceptance Rate: 14.8%) [**paper**]

3. Enabling Developers, Protecting Users: Investigating Harassment & Safety in VR
   Abhinaya S.B., Aafaq Sabir, Anupam Das
   USENIX Security Symposium, Aug 2024. (Acceptance Rate: 18.3%) [**paper**]

4. Understanding Parents' Perceptions and Practices Toward Children's Security and Privacy in Virtual Reality
   Jiaxun Cao, Abhinaya S.B., Anupam Das, Pardis Emami-Naeini
   IEEE Symposium on Security and Privacy, May 2024. (Acceptance Rate: 17.8%) [**paper**]

5. A Question Answering and Quiz Generation Chatbot for Education
   A S Sreelakshmi, Abhinaya S.B., Aishwarya Nair, S Jaya Nirmala
   Grace Hopper Celebration India (GHCI), Nov 2019. [**paper**]

Peer-Reviewed Journal Publications

1. Unveiling Users' Security and Privacy Concerns Regarding Smart Home IoT Products from Online Reviews
   Taufiq Islam Protick, Aafaq Sabir, Abhinaya S.B., Aiden Bartlett, Anupam Das
   ACM Journal on Computing and Sustainable Societies, Aug 2024. [**paper**]

2. A Survey of Techniques for improving Security of GPUs
   Sparsh Mittal, Abhinaya S.B., Manish Reddy, Irfan Ali
   Journal of Hardware and Systems Security, Sep 2018. [**paper**]

Posters

1. Virtual Adventures, Real Challenges: Analyzing Harassment Controls in VR
   Abhinaya S.B., Aafaq Sabir, Anupam Das
   USENIX Security Symposium, Aug 2023. [**poster**]

2. Protego Totalum! Mitigating Harassment in Virtual Reality
   Abhinaya S.B., Aafaq Sabir, Anupam Das
   Graduate Student Research Symposium, NC State University, Apr 2023. [**abstract**]

Skills

Programming	Python, C++, C, Java, Tensorflow, HTML/CSS, Javascript
Tools	*ollama, vllm*, MongoDB, Dedoose, Android Studio, MATLAB, Trace32, Zotero, LaTeX
Methods	Survey Design, Interview Design, Qualitative & Quantitative Analysis, Prompt Engineering

Invited Talks & Lectures

- **Towards Better Privacy & Safety for VR Users**
  Invited Talk, Triangle Area Privacy and Security Day (TAPS), Duke University — Oct 2024

- **Human-Centered Security & Privacy Research for Virtual Reality**
  Classroom lecture, CSC 801: Seminar in Computer Science, North Carolina State University — Sep 2024

- **Panel discussion for early-stage PhD students**
  Panelist, CSC 801: Seminar in Computer Science, North Carolina State University — Sep 2024

- **Enabling Users, Protecting Developers: Investigating Harassment and Safety in Virtual Reality**
  Conference presentation, 33rd USENIX Security Symposium, Philadelphia, PA, USA — Aug 2024

- **Enabling Users, Protecting Developers: Investigating Harassment and Safety in Virtual Reality**
  Invited talk, 3rd annual North Carolina Cybersecurity Symposium — Feb 2024

Awards & Honors

- **PETS'25 Travel Stipend:** Awarded 650 USD to attend Privacy Enhancing Technologies Symposium in Jul 2025
- **USENIX Security'24 Diversity Grant:** Awarded 625 USD to attend USENIX Security Symposium in Aug 2024
- **Graduate Merit Award:** Awarded 3000 USD by the College of Engineering, NCSU in Mar 2024
- **RSA Security Scholar:** Selected as a Security Scholar to attend the RSA conference, in Nov 2023
- **USENIX Security'23 Diversity Grant:** Awarded 850 USD to attend USENIX Security Symposium in Aug 2023
- **GREPSEC Scholar:** Awarded 970 USD to attend the GREPSEC VI workshop in Aug 2023
- **Graduate Enhancement Award:** Awarded 2850 USD by the College of Engineering, NCSU in Apr 2023
- **North Carolina State University Graduate Fellowship:** Awarded 4000 USD by NCSU in Feb 2022

Service

- External Reviewer: ACSAC'23, CCS'23, IEEE S&P'24, PETS'24, CHI'24, CSCW'24, USEC'24, S&P'25
- Artifact Evaluation Committee: USENIX Security'23, USENIX Security'24, USENIX Security'25

Leadership

- Interview Prep Nights Committee, Women in Computer Science (WiCS), NCSU — Jul 2023 - May 2024
- Vice President, Public Relations, Qonverse Toastmasters Club, Bangalore — Jul 2021 - Dec 2021
- Secretary, Qonverse Toastmasters Club, Bangalore — Jan 2022 - Jun 2022

Mentoring

- Abhishri Agrawal, UNC-Chapel Hill
- Dinesh Karnati, North Carolina State University
- Tarun Puvvala, North Carolina School of Science and Mathematics
- Noah Chang, North Carolina School of Science and Mathematics