

ANHAO XIANG (he/him/his)

Ph.D. Candidate in Computer Science, Colorado School of Mines, Golden, CO 80401

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RESEARCH, TEACHING, SERVICE HIGHLIGHTS

- Conducted research on privacy and security in mobile and web applications, with publications in top-tier venues including ACM CCS and IEEE/ACM ICSE.
- Served as a teaching assistant for cybersecurity courses and developed lab exercises on password storage and strength.
- Mentored high school and undergraduate students in privacy and security research projects.

EDUCATION AND CERTIFICATION

Ph.D. in Computer Science, Colorado School of Mines (MINES), USA, GPA:3.9/4.0	Expected: 12/2025
Research interest: Security and Privacy, Privacy Regulatory Compliance, App Security Analysis, Human-Computer Interaction	
M.S. in Computer Science, New Mexico Institute of Mining and Technology (NMT), USA, GPA:3.8/4.0	12/2021
Thesis: Design of Advanced Device Authentication Schemes For Smart Grid	
B.S. in Computer Science, New Mexico Institute of Mining and Technology (NMT), USA, GPA:3.3/4.0	05/2020
Graduate Certificate in Cybersecurity , NMT	12/2021
Offensive Security Certified Professional (OSCP) , OffSec	04/2021
Security+ SY0-601 , CompTIA (expired, currently renewing)	07/2021

WORK EXPERIENCE

Teaching Assistant/Research Assistant , Colorado School of Mines (MINES)	01/2022-Present
<ul style="list-style-type: none">• Conducting research on addressing privacy and security problems in mobile and web applications.• Developed a password storage via secret-sharing lab for the Information Security and Privacy course.• Developed a password strength lab for the Information Security and Privacy course.• TA for courses: Information Security and Privacy, Introduction to Cryptography/Theory of Cryptography	
Teaching Assistant/Research Assistant , New Mexico Institute of Mining and Technology (NMT)	08/2019-12/2021
<ul style="list-style-type: none">• Conducted research on developing authentication protocols for IoT devices.• TA for courses: Introduction to Database Systems, Introduction to Computer Network.	
Web Developer Intern , XiaoYuan Technology Inc., HangZhou, China	05/2018-08/2018
<ul style="list-style-type: none">• Worked as a full-stack web developer at a startup, participated in developing a cryptocurrency trading platform.	

HIGHLIGHTED RESEARCH PROJECTS

- **Analyzing the feasibility of adopting CSP on The Web (accepted at IEEE/ACM ICSE 2025, second author)**
Content Security Policy (CSP) is a key security mechanism designed to mitigate injection attacks like XSS. In this project, we developed an automated crawling tool to assess adoption of Google's four nonce-based CSP solutions across the top 10K websites. Our analysis demonstrated that most websites could feasibly adopt nonce-based CSPs. We further analyzed adoption challenges, and provided recommendations to help developers strengthen their websites against injection attacks.
- **Exploring additional dimensions on the Adoption of CSP (to appear in IEEE S&P Magazine 2025, first author)**
This article builds on the ICSE 2025 study by exploring additional dimensions, particularly developers' perspectives on the adoption of nonce-based CSP solutions, and the applicability of these solutions to websites with diverse architectures and development frameworks. We also explored the LLMs' support for adopting nonce-based CSP solutions.
- **Analyzing the GDPR compliance of mobile apps' privacy policies (accepted at ACM CCS 2023, first author)**
In this project, we investigated the GDPR compliance of mobile apps' privacy policies. We designed the NLP framework PolicyChecker by taking a rule and semantic role based approach. Using PolicyChecker, we conducted the first large-scale analysis of mobile app privacy policies and found that 99.3% violated at least one requirement. Our analysis further revealed root causes related to developers' limited understanding of GDPR and the widespread reliance on policy generators.
- **Investigating health data sharing risks (under review in ACM HEALTH, first author)**
- **Investigating the effectiveness of privacy transparency methods of mobile applications (under review in ACM TOPS, first author)**

PUBLICATIONS

[1] Mengxia Ren, **Anhao Xiang**, and Chuan Yue. “Analyzing the Feasibility of Adopting Google’s Nonce-Based CSP Solutions on Websites” in *IEEE/ACM International Conference on Software Engineering (ICSE)*, 2025.

[2] **Anhao Xiang**, Mengxia Ren, Chuan Yue, James Crea, Jack Kingham, and Zachary Samuels “Toward Practical and Scalable Adoption of Nonce-Based Content Security Policy on the Web.” to appear in *IEEE Security & Privacy (S&P)*, September 2025 Issue.

[3] **Anhao Xiang**, Weiping Pei, and Chuan Yue. “PolicyChecker: Analyzing the GDPR Completeness of Mobile Apps’ Privacy Policies.” in proceedings of the *ACM Conference on Computer and Communications Security (CCS)*, 2023.

[4] **Anhao Xiang**, and Jun Zheng. “A Lightweight Anonymous Device Authentication Scheme for Information-Centric Distribution Feeder Microgrid.” *Computers, Materials & Continua*, 2021.

[5] **Anhao Xiang**, and Jun Zheng. “A situation-aware scheme for efficient device authentication in smart grid-enabled home area networks.” *Electronics*, 2020.

Under Review

[6] **Anhao Xiang**, Weiping Pei, and Chuan Yue. “Investigating the Effectiveness of Privacy Transparency Methods of Mobile Applications,” under review in *ACM Transactions on Privacy and Security (TOPS)*, 2025.

[7] **Anhao Xiang**, Weiping Pei, Madelyn Swelstad, Andrew Plute, and Chuan Yue. “Investigating the Health Data Sharing Risks”, under review in *ACM Transactions on Computing for Healthcare (HEALTH)*, 2025.

TEACHING AND STUDENT ADVISING EXPERIENCE

Teaching

- **Lab Developer** for CSCI585 Information Security and Privacy, MINES, Fall 2025.
Developed a password storage via secret-sharing lab for the Information Security and Privacy course.
Developed a password strength lab for the Information Security and Privacy course.
- **Teaching Assistant** of CSCI474/574 Introduction to Cryptography/Theory of Cryptography, MINES, Spring 2023 and Spring 2025.
Assisted the instructor in preparing instructional materials for cryptography labs, graded assignments and assisted students.
- **Teaching Assistant** of CSCI585 Information Security and Privacy, MINES, Fall 2022.
Graded assignments and the final exam, and assisted students with security lab exercises and homework assignments.
- **Teaching Assistant** of Introduction to Database Systems, NMT, Spring 2021.
Graded assignments and the final course project, and assisted students with learning core database concepts.
- **Teaching Assistant** of Introduction to Computer Network, NMT, Fall 2019.
Graded assignments and labs, and assisted students with network concepts and using tools such as Wireshark.

Student Advising

- Help advised undergraduate student Andrew Plute for a project on digital identify verification, Summer and Fall 2025.
- Help advised undergraduate students Madelyn Swelstad and Andrew Plute for a project on mobile app user privacy, Fall 2024 and Spring 2025.
- Help advised undergraduate students Lucas Bowar and Brooke Bowcutt for a project on app privacy policy analysis, Fall 2022.
- Help advised a group of high school students including Andrew Plute, Vincent Nguyen, Alexander Bieniek, etc. in MINES DoD CySP Cyber-REACH 2022 Summer Research Camp.

PROFESSIONAL ACTIVITIES

Proposal Writing

- Contributed to an NSF VINES (Track 2) proposal, planned for submission in September 2025.

Public Presentation

- “Analyzing the Feasibility of Adopting Google’s Nonce-Based CSP Solutions on Websites”, Conference presentation at IEEE/ACM ICSE, May 2025.
- “PolicyChecker: Analyzing the GDPR Completeness of Mobile Apps’ Privacy Policies.”, Conference presentation at ACM CCS 2023, December 2023.
- Poster Presentations at Computing Mines Affiliates Partnership Program (C-MAPP) Award Event in 2024 and 2025.

Invited Guest Talk/Lecture

- Guest talk on Toward Better Security and Privacy for Web and Mobile Users for Mines C4G program high school students, July 2025.

- Guest lectures on SQL Injection Attacks and Defenses in the CSCI 403 Database Management class, MINES, March 2022.

University Service

- Served as an observer (i.e., competition official) for the Mines team in the Rocky Mountain Collegiate Cyber Defense Competition (RMCCDC), March 2025.
- Served as a white-team member (i.e., competition official) for the Mines team in the RMCCDC, March 2022.

Conference Reviewer

- EMNLP 2022, IEEE TPS 2022, CODASPY 2023, IEEE TPS 2023