




Yunang Chen

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Research Interests

System Security (*cyber-physical systems, smart home networks, web-based applications and services*), Applied Cryptography (*secure multi-party computation, zero-knowledge proof, attribute-based encryption*), Language-based Security, Access Control and Authorization

Education





- 2019 – now  **University of Wisconsin–Madison**, Madison, WI
Ph.D. in **Computer Science**
Advisors: Rahul Chatterjee, Earlence Fernandes
- 2017 – 2019  **University of Wisconsin–Madison**, Madison, WI
M.S. in **Computer Science**
- 2013 – 2017  **Rensselaer Polytechnic Institute**, Troy, NY
B.S. in **Computer Science** and **Computer System Engineering** (*summa cum laude*)

Publications

Conference Proceedings

- **Yunang Chen**, Mohannad Alhanahnah, Andrei Sabelfeld, Rahul Chatterjee, and Earlence Fernandes. “Practical Data Access Minimization in Trigger-Action Platforms”. In: *31st USENIX Security Symposium (USENIX Security)*. 2022.
- **Yunang Chen***, Yue Gao*, Rahul Chatterjee, Kassem Fawaz, and Earlence Fernandes. “Experimental Security Analysis of the App Model in Business Collaboration Platforms”. In: *31st USENIX Security Symposium (USENIX Security)*. 2022.
- **Yunang Chen**, Amrita Roy Chowdhury, Ruizhe Wang, Andrei Sabelfeld, Rahul Chatterjee, and Earlence Fernandes. “Data Privacy in Trigger-Action Systems”. In: *42nd IEEE Symposium on Security and Privacy (IEEE S&P)*. 2021.

Professional Activities

- 2021 – 2022  **Reviewer**, IEEE Transactions on Dependable and Secure Computing.
- 2020 – 2022  **External Reviewer**, USENIX Security Symposium.
- 2022  **External Reviewer**, Privacy Enhancing Technologies Symposium.
- 2021  **External Reviewer**, IEEE Transactions on Information Forensics and Security.

Poster Presentations

- **Yunang Chen** and Shivaram Venkataraman. “Fault-Tolerant All-Reduce for Distributed Deep Learning” In: *2019 Midwest Machine Learning Symposium*.

Research Experience

2020 – now

- **Security and Privacy Research Group (MadS&P) @ University of Wisconsin-Madison**
Graduate Research Assistant, advised by Rahul Chatterjee and Earlene Fernandes

Projects:

- **Secure trigger-action platforms.** Study the secure and privacy issues in OAuth-based trigger-action platforms (e.g. IFTTT) as well as how to ensure the execution of user's automation rules in these platforms with confidentiality and integrity guarantees but without compromises in expressivity. Involve applying and tailoring cryptographic and language-based techniques.

- **Online collaboration platforms.** Analyze the permission model of third-party app in online team-based collaboration platform (e.g. Slack) in the attacker's perspective — how the OAuth-based designs in the permission model can be exploited to bypass access control and affect user privacy.

- **Oblivious smart home systems.** Build a privacy-preserving smart home integration system that is oblivious of user's interactions with IoT devices, by splitting the trusts among multiple parties to protect both the data and metadata information.

- **Smart home traffic analysis.** Explore how network traffics generated by smart home devices can leak information about user's activities and especially their home automation rules. Involve a user study to collect data from participants' smart home devices.

2016

- **Intelligent Systems Laboratory (ISL) @ Rensselaer Polytechnic Institute**
Undergraduate Research Assistant, advised by Qiang Ji

Projects:

- Apply two-pathway convolutional neural network to predict human eye gaze from third-person perspective photos.

Teaching Experience

2021

- **Guest Lecturer**

- CS 782 – Advanced Computer Security and Privacy

2017 – 2019

- **Graduate Teaching Assistant**

- CS 537 – Introduction to Operating Systems (*Fall '17, Spring '19*)

- CS 540 – Introduction to Artificial Intelligence (*Spring '18, Fall 18', 19'*)

2015

- **Undergraduate Teaching Assistant**

- ENGR 1400 – Engineering Communications

Miscellaneous Experience

2015 – 2016

- Participated as a developer in *Rensselaer Center for Open Source Software*

2014

- Won *Best-RPI Related Award* in *HackRPI* hackathon