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 '22***).
- **Yunang Chen**, Amrita Roy Chowdhury, Ruizhe Wang, Andrei Sabelfeld, Rahul Chatterjee, and Earlence Fernandes. "Data Privacy in Trigger-Action Systems". In: *2021 IEEE Symposium on Security and Privacy* (***IEEE S&P '21***).

Under Submission

- **Yunang Chen***, Yue Gao*, Rahul Chatterjee, Kassem Fawaz, and Earlence Fernandes. "Security Analysis of the Slack App Model".

Professional Activities

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

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 Earlence Fernandes

Projects:

- 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.
- Analyze the permission model of third-party app in online team-based communication 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.
- 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*