Ruizhe Wang

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EDUCATION

University of Waterloo
M.Math in Computer Sciences — *Sep. 2022 - Aug. 2024*
- **Advisor**: Meng Xu, N. Asokan

University of Wisconsin-Madison
B.S. in Computer Sciences (honor) and Mathematics; ***GPA: 4.0/4.0*** — *Sep. 2019 - Dec. 2021*
- **Advisor**: Earlence Fernandes

Beijing Institute of Technology
The Internet of Things Engineering (honor); ***GPA: 91.5/100 (1/31)*** — *Sep. 2017 - June 2019*

RELEVANT EXPERIENCES

Research Assistant, UWaterloo — *Sep. 2022 – Present*
- Conduct research about memory security

Visiting Scholar, MPI-SWS — *May 2022 – Sep. 2022*
- Conduct research about human factor security under the supervision of Dr. Elissa Redmiles.

Research Assistant, UW-Madison Security and Privacy (Mad S&P) — *Nov. 2019 – Dec. 2021*
- Conduct research about the Cyber-Physical System (CPS) Security.

Software Development Engineer Intern, Last Mile, Amazon LLC. — *May. 2020 – Aug. 2020*
- Co-Implemented a serverless application to increase Amazon package delivery efficiency by automatically providing rescue plans for delayed packages using Typescript and Java.
- Deployed the application on AWS and created four RESTful APIs using Google Guice and AWS CDK
- Fully tested the service with Mockito and JUnit and created AWS Metrics dashboards and thresholds that can automatically fire alarms.

Artifact Evaluation PC, ACM MobiSys — *2023*

External Reviewer, IEEE Internet of Things Journal (IoT-J) — *2021*

PUBLICATIONS

Ruizhe Wang, Meng Xu, and N. Asokan. SeMalloc: Semantics-Informed Memory Allocator. In *Proceedings of the 2024 ACM Conference on Computer and Communications Security (CCS)*, Salt Lake City, UT, October 2024.

Ruizhe Wang, Meng Xu, and N. Asokan. S2malloc: Statistically Secure Allocator for Use-After-Free Protection And More. In *Proceedings of the 2024 Conference on Detection of Intrusions and Malware & Vulnerability Assessment (DIMVA)*, Lausanne, Switzerland, July 2024.

Angelica Goetzen*, Ruizhe Wang*, Elissa M. Redmiles, Savvas Zannettou, and Oshrat Ayalon. Likes and fragments: Examining perceptions of time spent on tiktok. *arXiv preprint*, 2023.

Yunang Chen, Amrita Roy Chowdhury, Ruizhe Wang, Andrei Sabelfeld, Rahul Chatterjee, and Earlence Fernandes. Data privacy in trigger-action iot systems. *IEEE Symposium on Security and Privacy (Oakland)*, 2021.

Yuzhe Ma, Jon Sharp, Ruizhe Wang, Earlence Fernandes, and Xiaojin Zhu. Sequential attacks on kalman filter-based forward collision warning systems. *The Thirty-Fifth AAAI Conference on Artificial Intelligence (AAAI)*, 2020.

SELECTED RESEARCH PROJECTS

Adversarial Attacks on Kalman Filter Based Autopilot System *Apr. 2020 – Mar. 2021*

- Co-Proposed a Model Predictive Control algorithm to compute the optimization approach to compromise a Machine-Human Hybrid Forward Collision Warning System by causing the Kalman Filter give false state estimations.
- Evaluated the attack on CARLA driving simulator and designed two dangerous situation that could cause collisions after attack.

Data Privacy in Trigger-Action Platforms *Sep. 2019 – Apr. 2020*

- Co-Proposed a protocol in Trigger-Action Platforms (TAPs) using Garbled Circuits that can avoid leaking sensitive information when the trigger or the platform is compromised.
- Evaluated the efficiency of the new protocol on the rules of popular commercial TAPS (IFTTT & Zapier) using Python Flask. Showed that more than 90% of the top-500 frequency rules are supported while the latency and throughput reduced less than 60%.

HONORS & AWARDS

Contest Awards

2021	**4th Place (4/90)**, ACM ICPC NCNA Regional Contest	*Madison, WI*
2018	**3rd Place (3/369)**, Freshman Programming Contest at BIT	*Beijing, China*
2017	**2nd Prize (10%)**, Lssec Techall BIT Programming Contest	*Beijing, China*

Honors

2022	**David R. Cheriton Scholarship ($20000 CAD)**, UWaterloo	*Waterloo, ON*
2020	**Honorable Mention**, Computing Research Association (CRA) Outstanding Undergraduate Researcher Award	*Madison, WI*
2020	**DeWitt Scholarship ($8000)**, Department of Computer Sciences, UW-Madison	*Madison, WI*
All Sems.	**Dean's List**, College of L&S, UW-Madison	*Madison, WI*
2018	**First-Class Academic Excellence Scholarship(10%)**, BIT	*Beijing, China*

OTHER EXPERIENCES

Volunteer Translator, Coursera *Mar. 2020 – Present*

Volunteer Instructor, Charity Primary School *Mar. 2019 – Mar. 2019*

MISCELLANEOUS

- **Languages**: Python, Java, C/C++, JavaScript/TypeScript, SQL, Matlab, nesC
- **Frameworks/Tools**: Flask, PyTorch, Google Guice, React, Mockito, JUnit, Lombok
- **Relevant Courses**: Operation Systems, Computer Networks, Linear Optimization, Real Analysis, Topology, Information Security, Cryptography, Combinatorics, Numerical Algebra, Algorithms & Computing Theory