Chenkai (Nicholas) Wang

Mobile: +1 (256) 414-2048
Email: me@nicho1as.wang
Website: nicholas.wang

Education

2021-	**M.S.** in Computer Science, UIUC
2017-2021	**B.S.** in Geography & Geographic Information Science, UIUC **B.S.** Minor in Computer Science, UIUC

Research Interests

Computer Security, Networking, Embedded Systems, Operating Systems

Publications

2022	**Chenkai Wang**, Gang Wang, "Revisiting Email Forwarding Security under the Authenticated Received Chain Protocol", *Proceedings of The ACM Web Conference (WWW'22)*

Appointments

2023.1-	Research Assistant in Computer Science, UIUC
2022.1-2022.12	Teaching Assistant: CS461 Computer Security I, UIUC
2020-2021	Undergrad Research Assistant, UIUC
2018	Course Assistant: CS125 Intro to Computer Sci., UIUC
2016-2019	Embbeded Firmware Developer, Hefei Tuocheng Mould Technology Co.,Ltd ** Full-time in every May to August from 2016 to 2019*

Experiences

AUTHENTICATED-RECEIVED CHAIN & EMAIL FORWARDING SECURITY

I led this project cooperating with Dr. Gang Wang from September 2020 to October 2021. Results have been published in *Proceedings of The ACM Web Conference (WWW'22)*. On August 2023, **Mozilla Core Services** bug bounty program awarded $1,000 USD for the Firefox Relay vulnerability.

- Analyzed Email security issues with Email fowarding as the entry point

- Implemented Authenticated-Received Chain and experiment utilities

- Performed real-world controlled experiements against multiple major Email service providers and open-source implementations

- Discovered vulnerabilities of real-world services by Apple, Mozilla and Zoho, disclosed and got responses

HIGH TRUST PATIENT OUTREACH WITH OSF HEALTHCARE

I am leading this ongoing project starting Feburary 2022 and did majority of the work, collaborated with Jonathan Handler, Nicholas Heuermann, Roopa Foulger from OSF Healthcare and Dr. Gang Wang.

- Explore options that provides usable solution that adds authenticity to exisiting text messaging systems to prevent spoofing and scams
- Develop a few schemes that potentially provides such capability
- Design user studies to testify

OPERATION BGP AUTONOMOUS SYSTEMS AS142130, AS142282

I am the sole operator of AS142130 and AS142282 network, which I used for my homelab network and provide myself IPv6 access, as well as running experimental technologies.

- Design, implement and deploy the tunnal-based, software-defined overlay network
- Appear in multiple Internet Exchanges and private peering sites
- Provide IPv6 transit to one downstream network
- Stable operation since 2020

B23.WTF TRACKING-REMOVAL SERVICE

I am the sole author and maintainer of this project. It removes tracking parameters from `https://b23.tv/[location]` short URLs generated by bilibili apps.

- Linux single-threaded epoll() HTTP server with 0 dependencies in C
- HTTP query module invoked with pthread multithreading
- In December 2022, 90k total requests and 3k unique visitors over previous 30 days, statistics by Cloudflare

PROJECT V (FORMERLY V2RAY)

I provide multiple community services as listed below for this open-source anti-censorship network utility project with over 60k stars on GitHub.

- Maintain the security infrastructure and protocols for internal collaborations
- Involve in new protocols' design and suggestions
- Manage documentation translations

Skills

I am nowadays familiar with the networking stack, general Linux environments (excluding kernel space). Most of my development are in C, C++ and Python now, but I do program with PHP and little JavaScript. I have been a daily user of Arch Linux and an AUR package maintainer for 5 years.

I have general understanding to Arduino, STM32, as well as embedded systems in general. I understand the concept of real-time operating system.

I am able to speak English, and a native speaker of Chinese Mandarin.

I am a FAA-licensed private pilot.