

Shinan Liu

CS PH.D. STUDENT IN COMPUTER SCIENCE

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“Becoming a hacker, poet and practical idealist.”

Education

The University of Chicago

PH.D. STUDENT IN COMPUTER SCIENCE

Illinois, USA

Sep. 2019 - PRESENT

- Advisor: Prof. Nick Feamster (ACM Fellow, MIT Tech Review 35 under 35)
- Google Scholar citations: 237; h-index: 5
- Topics: Networking, Security, Measurement, Explainable AI
- Defended my M.S. thesis and got M.S. within Ph.D.

University of Electronic Science and Technology of China

B.S. IN INFORMATION SECURITY@YINGCAI HONORS COLLEGE

Sichuan, P.R. China

Sep. 2015 - June 2019

- GPA 3.79/4.0; Rank 6/125; TOEFL 103(S25); GRE V152 Q170 AW3.5;

Experience

FedML Inc. (Prof. Salman Avestimehr and Dr. Chaoyang He)

RESEARCH INTERN

Los Angeles, CA, USA

June 2022 - Aug. 2022

- Designed an end-to-end MLOps pipeline that monitors model performance, and helps explaining and mitigating drifts.
- Built a serving framework that helps model optimization, and deployment.

Secure Localization Team, Virginia Tech (Prof. Yaling Yang and Prof. Gang Wang)

LEADER

Blacksburg, USA

January 2019 - April 2019

- Lead a group of 9 excellent researchers from Virginia Tech, Microsoft Research, Facebook and UESTC.
- Designed innovative methods for defending GPS spoofing attacks and published in USENIX Security 2021.

NISL, Tsinghua University(Prof. Jianwei Zhuge and Prof. Haixin Duan)

RESEARCH ASSISTANT

Beijing, P.R. China

April 2018 - August 2018

- Designed a course in Wireless Security.
- Taught developers from China Mobile Wireless and mobile security at Huawei Hangzhou Research Center.

Microsoft Research Asia(Dr. Yuanhao Shu)

SHORT-TERM RESEARCH INTERN

Beijing, P.R. China

Sep. 2017

- Designed and implemented a User Study focusing GPS spoofing attack in road navigation scenario. It consists of an interview, a questionnaire and a driving simulation.
- Developed a driving simulator based on Android and video game Euro Truck Simulator II. This system simulates the actual GPS spoofing attack in Budapest when using mobile navigators.

Dominity Security Co., Ltd.

FOUNDER/CEO

Chengdu, P.R. China

Aug. 2017

- Found Dominity Security Co., Ltd. with 14 excellent peers and serve as CEO.
- Had an investment intention with Shanghai Newgen VC on 2 million yuan.
- Applied for 3 invention patents and got 2 utility patents, all of which were successfully documented.

Publication

PREPRINTS

[Pr1] LEAF: Navigating Concept Drift in Cellular Networks

arXiv (In submission)

SHINAN LIU, FRANCESCO BRONZINO, PAUL SCHMITT, ARJUN NITIN BHAGOJI, NICK FEAMSTER, HECTOR GARCIA CRESPO, TIMOTHY COYLE, BRIAN WARD <https://arxiv.org/abs/2109.03011>

Oct., 2022

[Pr2] Synthesising Computer Vision and Network Traffic using Active Learning

Under revision

SHINAN LIU, TARUN MANGLA, TED SHAOWANG, JINJIN ZHAO, SANJAY KRISHNAN, NICK FEAMSTER

May, 2022

CONFERENCE

[C1] Stars can tell: A Robust Method to Defend against GPS Spoofing Attacks Using Off-the-shelf Chipset

SHINAN LIU*, XIANG CHENG*, HANCHAO YANG, YUANCHAO SHU, XIAORAN WENG, PING GUO, KEXIONG (CURTIS) ZENG, GANG WANG, YALING YANG 30th USENIX Security Symposium (USENIX Security'21)

Vancouver, B.C., Canada

Aug. 11-13, 2021

[C2] Characterizing Service Provider Response to the COVID-19 Pandemic in the United States

SHINAN LIU, PAUL SCHMITT, FRANCESCO BRONZINO, NICK FEAMSTER. The Passive and Active Measurement Conference 2021 (PAM'21)

Virtual, USA

March, 2021

[C3] Mapping the Digital Divide: Before, During, and After COVID-19

FRANCESCO BRONZINO, NICK FEAMSTER, SHINAN LIU, JAMES SAXON, PAUL SCHMITT. The 48th Research Conference on Communication, Information and Internet Policy (TPRC'18)

Virtual, USA

March, 2021

[C4] All Your GPS Are Belong To Us: Towards Stealthy Manipulation of Road Navigation Systems

KEXIONG (CURTIS) ZENG, SHINAN LIU, YUANCHAO SHU, DONG WANG, HAOYU LI, YANZHI DOU, GANG WANG AND YALING YANG. 27th USENIX Security Symposium (USENIX Security'18)

Baltimore, MD, USA

Aug. 15-17, 2018

WORKSHOP

[W1] A Practical GPS Location Spoofing Attack in Road Navigation Scenario

KEXIONG (CURTIS) ZENG, YUANCHAO SHU, SHINAN LIU, YANZHI DOU AND YALING YANG. 18th ACM Workshop on Mobile Computing Systems and Applications (Hotmobile'17)

Sonoma, CA, USA

Feb. 21-22, 2017

JOURNAL

[J1] Investigations on the local structures of Cu²⁺ at various BaO concentrations in 59B2O3-10K2O-(30x)ZnO-xBaO-1CuO glasses

Jiarui Jin, Shaoyi Wu, Jian Hong, SHINAN LIU, Minxian Song, Baohua Teng, Minghe Wu. Philosophical Magazine, 97:31, 2858-2870

London, UK

July 2017

POSTER

[Po1] Security Analysis of Multi-Sensor Fusion based Localization in Autonomous Vehicles

JUNJIE SHEN, JUN YEON WON, SHINAN LIU, QI ALFRED CHEN, ALEXANDER VEIDENBAUM. Network & Distributed System Security Symposium NDSS'19 DISTINGUISHED POSTER PRESENTATION

San Diego, CA, USA

Feb. 24-27, 2019

PATENT

[Pa1] A Secure Method and Device to Deliver Satellite Signals

SHINAN LIU, XIN ZHOU, XIBO YANG, RUI KANG, GAOXIANG WU, HAO DU, RUI KANG, SHENGZHI QIN, SAI XU. National Institution of Intellectual Property, P. R. China.

Chengdu, P.R.China

March, 2020

[Pa2] A Satellite Signal Classification and Detection Method and Device

SHENGZHI QIN, XIBO YANG, SAI XU, XIN ZHOU, RUI KANG, SHINAN LIU, GAOXIANG WU, HAO DU. National Institution of Intellectual Property, P. R. China, ZL 2017 1 0478901.

Chengdu, P.R.China

Dec., 2019

[Pa3] A Wireless Signal Classification and Detection Method and Device

RUI KANG, SHINAN LIU, XIN ZHOU, HAO DU, XIBO YANG, SAI XU, SHENGZHI QIN, GAOXIANG WU. National Institution of Intellectual Property, P. R. China, ZL 2017 2 1275895.5

Chengdu, P.R.China

July, 2018

[Pa4] A Software-Defined Wireless Signal Reception Device and System

Chengdu, P.R.China

HAO DU, RUI KANG, GAOXIANG WU, SAI XU, **SHINAN LIU**, SHENGZHI QIN, XIBO YANG, XIN ZHOU. *National Institution of Intellectual Property, P. R. China, ZL 2017 2 1090307.0*

March, 2018

Honors & Awards

2019	Daniels Fellowship , UChicago CS department fellowship	Chicago, USA
2019	NDSS'19 Distinguished Poster Presentation Award , The only team who received this award	San Diego, USA
2019	Best Undergrad Thesis , 1 out of 12 Students in UESTC	Sichuan, P.R.China
2018	Excellent Graduate of Sichuan Province , Top 1% Student of the University	Sichuan, P.R.China
2018	Network Security Scholarship , 1 of 66 Undergraduate Students Who Won this National Award	Beijing, P.R.China
2017	Highest Prize , 10th National University Students Information Security Competition	Xian, P.R.China

Activity

TEACHING

Data clinics

Chicago, USA

MENTOR.

Winter quarter, 2022

- Mentored MS students in UChicago to build a broken trend detection pipeline.

CS15400 Introduction to Computer System

Chicago, USA

TEACHING ASSISTANT.

Fall quarter, 2020

- Taught in project / lab sessions, prepare homeworks and hold TA hours.

CS23400 Mobile Computing

Chicago, USA

TEACHING ASSISTANT.

Winter quarter, 2020

- Ran lab sessions and held TA hours.

Introduction to IoT security

Hangzhou, P.R.China

INVITEE OF HUAWEI HANGZHOU RESEARCH INSTITUTE

April, 2018

- Taught developers of Chinese Mobile IoT security and e-crime basics.
- Ran labs to reproduce existing cellular attacks.

Introduction to wireless security

Shanghai, P.R.China

INVITEE OF BLUEWHALECTF INC.

Aug., 2018

- Taught general public the basics of wireless security in GSM/LTE networks and GPS security.

ACADEMIC SERVICES

2020	Committee Member , IAG (International Association of Geodesy) GNSS Interference and Spoofing	Chicago, USA
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REVIEWER

2022	1 paper , Computer Networks	Chicago, USA
2020	1 paper , IEEE Transactions on Intelligent Transportation Systems	Chicago, USA
2017	2 papers , IEEE Conference on Computer Communications (INFOCOM)	Chengdu, P.R.China