

Lumin Shi
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EDUCATION

- **University of Oregon** Eugene, OR
Ph.D., Computer and Information Science 03/2022
M.S., Computer and Information Science 12/2021
- **University of Alabama** Tuscaloosa, AL
B.S., Computer Science, Minor in Mathematics 05/2014

WORK EXPERIENCE

- **Systems Engineer** 03/2022 - Current
Traffic Team, Cloudflare Austin, TX
 - **Responsibility:** Design, implement, and maintain systems that balance the resource loads of Cloudflare data centers in over 100 countries.
- **Research and Teaching Assistant** 09/2014 - 12/2021
Dept. of Computer and Information Science, University of Oregon Eugene, OR
 - **Research:** Worked on multiple network security and system projects (see Research Experience section).
 - **Teaching:** Mentored students from classes such as Computer Networks and Computer & Network Security. Led labs for two web development courses, and delivered many guest lectures.
- **Information Security Graduate Employee** 09/2017 - 06/2020
Information Services, University of Oregon Eugene, OR
 - **Security Tools:** Development and evaluation of security tools for campus network operations. Maintaining a network monitoring system that collects events from multiple sources
- **Visiting Scholar** 06/2019 - 09/2019
Center for Applied Internet Data Analysis (CAIDA), UCSD Supercomputer Center San Diego, CA
 - **Open BGP Monitoring Protocol (OpenBMP):** Designed and developed the second iteration of OpenBMP. A lightweight and high-performance BMP message collection and distribution system written in C++; it implements *draft-ietf-grow-bmp-17*.
- **Web Developer** 09/2012 - 05/2014
Office of Educational Technology, University of Alabama Tuscaloosa, AL
 - **Application Development:** Developed web applications such as a scheduling system for assigning exam proctors and a time clock system for tracking employee working hours.
 - **System Maintenance:** Application performance tuning and bug fixes.

PUBLICATIONS

- **On Capturing DDoS Traffic Footprints on the Internet**
IEEE Transactions on Dependable and Secure Computing (TDSC), 2021
L. Shi, J. Li, M. Zhang, P. Reiher
- **Bridging Missing Gaps in Evaluating DDoS Research**
USENIX Workshop on Cyber Security Experimentation and Test (CSET), 2020
L. Shi, S. Mergendahl, D. Sisodia, J. Li
- **Playing in the Sandbox:**
A Step Towards Sound DDoS Research Through High-Fidelity Evaluation
Extended Abstract, Passive and Active Measurement Conference (PAM), 2020
L. Shi, S. Mergendahl, D. Sisodia, J. Li
- **The Catch22 Attack**
Extended Abstract, Annual Computer Security Applications Conference (ACSAC), 2019
L. Shi, D. Sisodia, M. Zhang, J. Li, A. Dainotti, P. Reiher

- **On Multi-Point, In-Network Filtering of Distributed Denial-of-Service Traffic**
IFIP/IEEE International Symposium on Integrated Network Management, 2019
M. Zhang, L. Shi, D. Sisodia, J. Li, P. Reiher
- **PathFinder: Capturing DDoS Traffic Footprints on the Internet**
IFIP Networking, 2018
L. Shi, M. Zhang, J. Li, P. Reiher
- **Underwater Sensor Network Viewer**
Demo Paper, International Conference on Underwater Networks and Systems, 2015
D. Overlock, L. Shi, X. Hong, M. Kuai

RESEARCH EXPERIENCE

- **DDoS SandBox**: The project aims to bridge several missing gaps in evaluating DDoS research. It is a container-based emulation system that features closed-loop background traffic generation and AS-level topology generation with realistic IP address assignment.
- **The Catch22 Attack**: A study to quantitatively expose the issues in the real-world DDoS defense.
- **WebTell**: A project that utilizes flow-level network traces to infer website visits.
- **PathFinder: Capturing DDoS Traffic Footprints on the Internet**: An on-demand traffic footprint collection system that allows users to reconstruct the autonomous-system-level forwarding path(s) of packets.
- **DrawBridge: Leveraging Software-Defined Networking for DDoS Defense**: An in-line DDoS mitigation system that generates optimal traffic filters and deploys filters at strategic network locations.
- **Underwater Sensor Network Viewer (UWSN)**: A project that determines the feasibility of an underwater acoustic network deployment. The work extends Aqua-Sim (an underwater sensor network simulator).

TECHNICAL SKILLS

- **Programming Languages**: C, C++, Python, Java, JavaScript, PHP, SQL, Bash
- **Development Tools**: Unix tools, Vim/make, Git, Jupyter Notebook, JetBrains IDEs, L^AT_EX
- **System and Network Tools**: Vagrant, Docker, Mininet, eBPF

HONORS / ACTIVITIES

- **Guest Lecturer**: California Polytechnic State University, 2022
- **Awardee**: Phillip Seeley Graduate Fellowship, 2021
- **Reviewer**: IEEE/ACM Transactions on Networking, 2021
- **Attendee**: USENIX Security Symposium, 2020
- **Presenter**: USENIX Workshop on Cyber Security Experimentation and Test (CSET), 2020
- **Presenter**: Passive and Active Measurement Conference (PAM), 2020
- **Presenter**: Annual Computer Security Applications Conference (ACSAC), 2019
- **Travel Grant Awardee**: Annual Computer Security Applications Conference (ACSAC), 2019
- **Attendee**: International Workshop on Darkspace and Unsolicited Traffic Analysis (DUST), 2019
- **Presenter**: DHS S&T Cybersecurity and Innovation Showcase, 2019
- **Honorable Mention**: GENI Experimenter Contest, 2018
- **Volunteer**: GENI Regional Workshop, 2017
- **Outstanding Demo Price (Co-winner)**: Oregon Cyber Security Day, 2017
- **Reviewer**: IEEE Transactions on Dependable and Secure Computing, 2015 & 2017
- **Attendee**: Open Networking Summit (ONS) & The Symposium on SDN Research (SOSR), 2016
- **Web Chair**: Oregon Cyber Security Day, 2015 - 2019
- **Volunteer**: International Symposium on Quality of Service (IWQoS), 2015
- **Student**: Honors College, University of Alabama, 2011 - 2014
- **Cohort**: 100P (NSF sponsored program), 2011 - 2012