

Ramakrishnan Sundara Raman

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I am a PhD candidate with 5+ years of experience in computer security and networking research. My expertise lies in building empirical methods to detect, analyze and prevent large-scale security and privacy threats to Internet users. My research involves longitudinally measuring Internet censorship and connection tampering at global scale, and examining the technologies that enable tampering. I am a lead researcher for the [Censored Planet Observatory](#), and I am the recipient of a FOCI Rising Star Award, an OTF Information Controls Fellowship, and an IRTF Applied Networking Research Prize.

Education

- 2018 – Present 📖 **PhD Candidate, University of Michigan** in Computer Science and Engineering
Advisor: Prof. Roya Ensafi
Thesis title: Global, Longitudinal, and Data-Driven Investigation of Network Restrictions
CGPA: 3.95 out of 4
- 2013 – 2017 📖 **Bachelor of Technology, Vellore Institute of Technology** in Computer Science and Engineering
Project Title: Measuring Last-Mile Internet Reliability During Severe Weather
CGPA: 9.69 out of 10
Rank in CSE: 2 out of 648

Conference Publications

- **Modeling and Detecting Internet Censorship Events**
E. Tsai, **R. Sundara Raman**, A. Prakash, R. Ensafi
Network and Distributed System Security Symposium (NDSS), February 2024
- **Global, Passive Detection of Connection Tampering** 🔗
R. Sundara Raman, L.H. Merino, K. Bock, M. Fayed, D. Levin, N. Sullivan, L. Valenta
ACM SIGCOMM, September 2023
- **Network Responses to Russia's Invasion of Ukraine in 2022: A Cautionary Tale for Internet Freedom** 🔗
R. Ramesh*, **R. Sundara Raman***, A. Virkud, A. Dirksen, A. Huremagic, D. Fifield, D. Rodenburg, R. Hynes, D. Madory, R. Ensafi
USENIX Security Symposium, August 2023
- **CERTainty: Detecting DNS Manipulation using TLS Certificates** 🔗
E. Tsai, D. Kumar, **R. Sundara Raman**, G. Li, Y. Eiger, R. Ensafi
Privacy Enhancing Technologies Symposium (PETS), July 2023
- **Network Measurement Methods for Locating and Examining Censorship Devices** 🔗
R. Sundara Raman*, M. Wang*, J. Dalek, J. Mayer, and R. Ensafi
ACM Conference on emerging Networking EXperiments and Technologies (CoNEXT), December 2022
🏆 IRTF Applied Networking Research Prize
- **A Large-scale Investigation into Geodifferences in Mobile Apps** 🔗
R. Kumar, A. Virkud, **R. Sundara Raman**, A. Prakash, and R. Ensafi
USENIX Security Symposium, August 2022
- **Lost in Transmission: Investigating Filtering of COVID-19 Websites** 🔗
A. Vyas, **R. Sundara Raman**, N. Ceccio, P. Lutscher, and R. Ensafi
Financial Cryptography and Data Security (FC), March 2021
- **Censored Planet: An Internet-wide, Longitudinal Censorship Observatory** 🔗
R. Sundara Raman, P. Shenoy, K. Kohls, and R. Ensafi
ACM Conference on Computer and Communications Security (CCS), November 2020
- **Investigating Large Scale HTTPS Interception in Kazakhstan** 🔗
R. Sundara Raman, L. Evdokimov, E. Wustrow, A. Halderman, and R. Ensafi
ACM Internet Measurement Conference (IMC), October 2020
🏆 Best Paper Award Nominee

*Both authors contributed equally to this research

- **Measuring the Deployment of Network Censorship Filters at Global Scale** [🔗](#)
R. Sundara Raman, A. Stoll, J. Dalek, R. Ramesh, W. Scott, R. Ensafi
Network and Distributed System Security Symposium (NDSS), February 2020
- **Decentralized Control: A Case Study of Russia** [🔗](#)
R. Ramesh, **R. Sundara Raman**, M. Bernhard, V. Ongkowijaya, L. Evdokimov, A. Edmundson, S. Sprecher, M. Ikram, R. Ensafi
Network and Distributed System Security Symposium (NDSS), February 2020
🏆 CSAW'20 Applied Research Competition North America Top 10 Paper

Workshop Publications

- **Advancing the Art of Censorship Data Analysis** [🔗](#)
R. Sundara Raman, A. Virkud, S. Laplante, V. Fortuna, R. Ensafi
Free and Open Communications on the Internet (FOCI), February 2023
- **A Multi-Perspective View of Internet Censorship in Myanmar** [🔗](#)
R. Padmanabhan, A. Filastò, M. Xynou, **R. Sundara Raman**, K. Middleton, M. Zhang, D. Madory, M. Roberts, and A. Dainotti
Free and Open Communications on the Internet (FOCI), August 2021






Awards

Research	📖	FOCI'23 Rising Star Award 🔗 July 2023
	📖	IRTF Applied Networking Research Prize (ANRP) 2023 🔗 January 2023
	📖	HotPETs 2022 Best Talk Award 🔗 July 2022
	📖	University of Michigan CSE Graduate Student Honors Runners Up Award 🔗 November 2020
	📖	ACM IMC 2020 Best Paper Award Nominee October 2020
Fellowships & Grants	📖	Rackham Predoctoral Fellowship 🔗 March 2023
	📖	OTF Information Controls Fellowship (ICFP) 🔗 November 2021
	📖	Travel Grants—ACM IMC 2022, USENIX Security 2020, and Citizen Lab Summer Institute 2019
Teaching & Service	📖	North Campus Deans' MLK Spirit Award 2023 🔗 January 2023
	📖	University of Michigan CSE GSI Honorable Mention Award 🔗 August 2021

Teaching

March 2023	📖	Guest Lecturer, CS 4973, Northeastern University Topic: Censorship and Circumvention
January 2023	📖	Substitute Instructor, EECS 588, University of Michigan Topic: Computer and Network Security
March 2022	📖	Guest Lecturer, EECS 588, University of Michigan Topic: Censorship and Circumvention
August 2020 – December 2020	📖	Graduate Student Instructor (GSI), EECS 588, University of Michigan Topic: Computer and Network Security 🏆 GSI Honorable Mention Award

Work Experience

- July 2022 – September 2022  **Research Intern, Cloudflare Inc.**
- Designed a large network monitoring system that identifies anomalous network events such as connection tampering attacks in large-scale network traffic at the rate of millions of packets per second.
 - Developed network data analysis methods and tools for detecting large-scale traffic tampering passively from an operator's point of view.
 - Built production dashboards and reports showcasing significant network events such as the effects of the protests in Iran on Internet traffic.
- November 2021 – July 2022  **OTF Senior ICFP Fellow in Information Controls, The Citizen Lab**
- Researched novel measurement methods for locating and examining network devices that performed surveillance and censorship.
 - Collaborated with the expert team at [the Citizen Lab](#), a research group focused on network forensics.
 - Published several open-source tools and fingerprint datasets for identifying censorship devices.
- July 2017 – May 2018  **Associate Consultant, Microsoft**
- Contributed to large enterprise systems for business applications that can deliver value to large organizations around the world.
- March 2017 – July 2017  **Research Intern, University of Maryland**
- Advisor:** Prof. Neil Spring
- Facilitated a measurement platform and analysis tools that identifies last-mile residential Internet outages in areas affected by severe weather conditions in real-time.
 - Poster presented at ACM Internet Measurement Conference 2017: "Measuring Last-Mile Internet Reliability During Severe Weather"
- May 2016 – July 2016  **Intern, Microsoft**
- Integrated data analytics into Microsoft's project management tool, built on ASP.NET. Microsoft's Power BI tool was utilized to make interactive reports that provided valuable insight to the users.

Mentoring






- **Undergraduate Students:** Nadav Oren (2023), Apurva Virkud (2020 - 2022), Anjali Vyas (2020 - 2021), Rose Ceccio (2020 - 2021), Prerana Shenoy (2019 - 2020)
- **Graduate Students:** Kevin Wang (2023), Elisa Tsai (2020 - 2023)

Talks

- **Invited Talk: Network Measurement Methods for Locating and Examining Network Censorship Devices** 
IETF 118, November 2023
- **Conference Talk: Global, Passive Detection of Connection Tampering** 
ACM SIGCOMM, September 2023
- **Conference Talk: Network Responses to Russia's Invasion of Ukraine in 2022: A Cautionary Tale for Internet Freedom**
Usenix Security Symposium, August 2023
- **Workshop Talk: Advancing the Art of Censorship Data Analysis**
Free and Open Communications on the Internet (FOCI), February 2023
- **Lightning Talk: Exploring Internet censorship through the Censored Planet Dashboard**
Open Technology Fund (OTF), January 2023
- **Conference Talk: Network Measurement Methods for Locating and Examining Network Censorship Devices**
Conference on emerging Networking EXperiments and Technologies (CoNEXT 2022), December 2022
- **Workshop Talk: Improving Usability of Internet Censorship Data through a Censorship Dashboard**
15th Workshop on Hot Topics in Privacy Enhancing Technologies (HotPETs), July 2022
 Best Talk Award

- **Tech Demo: Exploring Internet censorship with the Censored Planet Dashboard** 
RightsCon 2022, June 2022
- **Symposium Talk: Censored Planet: An Internet-wide, Longitudinal Censorship Observatory**
The 5th Annual Data for Public Good Symposium, March 2022
- **Invited Talk: Censored Planet Community Webinar 2021** 
Censored Planet, October 2021
- **Invited Talk: Censored Planet: An Internet-wide Longitudinal Observatory**
NDSS DNS Privacy Workshop (DNSPriv), February 2021
- **Conference Talk: Censored Planet: An Internet-wide Longitudinal Observatory** 
ACM Conference on Computer and Communications Security (CCS), November 2020
- **Conference Talk: Investigating Large Scale HTTPS Interception in Kazakhstan** 
ACM Internet Measurement Conference (IMC), October 2020
- **Invited Talk: Censored Planet: Measuring Internet censorship remotely** 
OONI Internet Measurement Village (IMV), June 2020
- **Conference Talk: Measuring the Deployment of Network Censorship Filters at Global Scale** 
Network and Distributed System Security Symposium (NDSS), February 2020



Reports and Blogposts

- **Measuring Connection Tampering Around the World**
Internet Society Pulse Blog, October 2023
 <https://pulse.internetsociety.org/blog/measuring-connection-tampering-around-the-world>
- **Making Censorship Data More User Friendly**
Internet Society Pulse Blog, May 2023
 <https://pulse.internetsociety.org/blog/making-censorship-data-more-user-friendly>
- **Profiling Internet Censors: Methods to Measure and Locate Censorship Devices**
Open Technology Fund (OTF), December 2022
 <https://www.opentech.fund/news/profiling-internet-censors-methods-to-measure-and-locate-censorship-devices/>
- **An analysis of a large-scale HTTPS interception**
APNIC Blog, February 2021
 <https://blog.apnic.net/2021/02/15/an-analysis-of-a-large-scale-https-interception/>
- **US Government and military websites are geoblocked from Hong Kong and China**
Censored Planet, August 2020
 <https://censoredplanet.org/hongkong>

Posters

- **Censored Planet: An Internet-wide, Longitudinal Censorship Observatory**
Midwest Security Workshop, April 2019
- **Measuring Last Mile Internet Reliability During Severe Weather**
ACM Internet Measurement Conference (IMC), November 2017

Certifications

- **2023 Rackham-CRLT Preparing Future Faculty Seminar** 
University of Michigan, June 2023
- **Introduction to Data Science in Python** 
University of Michigan Coursera, June 2023

Service

Chairing	📌 Session Chair at FOCI'21 🔗
Reviewing	📌 TPC Member, IEEE Symposium on Security and Privacy (S&P) 2024 🔗
External Reviewing	📌 TPC Member, Free and Open Communications on the Internet (FOCI) 2024 🔗
	📌 Reviewer, 6th International Conference on Computer Science and Application Engineering (CSAE) 2022
	📌 TPC Member, ACM SIGCOMM 2021 Workshop on Free and Open Communications on the Internet (FOCI) 🔗
	📌 USENIX Security Symposium 2022
	📌 ACM Internet Measurement Conference (IMC) 2021
	📌 USENIX Security Symposium 2021
	📌 ACM Internet Measurement Conference (IMC) 2020
	📌 IEEE Symposium on Security and Privacy (S&P) 2020
	📌 Privacy Enhancing Technology Symposium (PETS) 2020
	📌 USENIX Security Symposium 2019
Leadership	📌 IEEE Symposium on Security and Privacy (S&P) 2019
	📌 Outreach Chair at CSEG, UM CSE graduate student organization June 2020 – May 2022 My responsibilities included arranging and managing outreach events throughout the year that aimed at spreading knowledge about computer science research in various schools, colleges and groups. I also participated as the DEI committee student representative of CSEG in early 2022.
	🏆 Deans' MLK Spirit Award 2023
	📌 Administrator of the Security Reading Group (SECRIT) in UM CSE June 2019 – June 2021