

# Ramakrishnan Sundara Raman

PhD Candidate, University of Michigan

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## Research Interests

My research interests lie in the area of Internet security and privacy, with a focus on using Internet measurement methods to detect, analyze and prevent threats to Internet users' security and privacy.

## Education

**PHD CANDIDATE | AUGUST 2018 - PRESENT | UNIVERSITY OF MICHIGAN, ANN ARBOR, USA | SECURITY AND PRIVACY**

**Focus:** Network Security and Privacy, Internet Measurement

**Advisor:** Dr. Roya Ensafi

**Expected Graduation Date:** December 2023

My primary research interests surround Internet Security and Privacy. In particular, I am interested in using Internet measurement methods to detect, analyze and prevent large-scale threats to Internet users' security and privacy. My research involves measuring Internet censorship and network interference at global scale, and examining the technologies that enable censorship and surveillance. I lead work on the Censored Planet Observatory (<https://censoredplanet.org>), which is a platform for measuring various types of network interference continuously around the world. I am the recipient of an OTF Information Controls Fellowship and an IRTF Applied Networking Research Prize.

**CGPA: 3.95**

**BACHELOR OF TECHNOLOGY | JUNE 2013 - MAY 2017 | VELLORE INSTITUTE OF TECHNOLOGY, VELLORE, INDIA | COMPUTER SCIENCE AND ENGINEERING**

**Rank in branch:** 2 out of 648

**CGPA: 9.69**

## Work Experience

**RESEARCH INTERN | JULY 2022 - SEPTEMBER 2022 | CLOUDFLARE INC., NEW YORK, USA**

I interned with the Cloudflare research team in Summer 2022, where I worked on detecting large-scale traffic tampering from an operator's point of view.

**Website:** <https://research.cloudflare.com/outreach/academic-programs/interns/ram-sundararaman/>

**OTF SENIOR ICFP FELLOW IN INFORMATION CONTROLS | NOVEMBER 2021 - JUNE 2022 | THE CITIZEN LAB, UNIVERSITY OF TORONTO**

My project with the Citizen Lab focused on locating and examining network censorship devices and their deployments in different countries.

**Website:** <https://www.opentech.fund/about/people/ramakrishnan-sundara-raman/>

**GRADUATE STUDENT INSTRUCTOR - EECS 588 | AUGUST 2020 - DECEMBER 2020 | UNIVERSITY OF MICHIGAN, ANN ARBOR, USA**

I worked as the lead graduate student instructor for EECS 588 - the graduate level computer and network security course in the department. My responsibilities included helping with designing the course and assessments, leading classes in the absence of the instructor, holding office hours, helping students with their course projects, and grading.

**Website:** <https://www.eecs.umich.edu/courses/eecs588/>

**RESEARCH ASSISTANT | AUGUST 2018 - PRESENT | UNIVERSITY OF MICHIGAN, ANN ARBOR, USA**

I work as a graduate student research assistant advised by Prof. Roya Ensafi, and my research focuses on problems in Internet Security and Privacy.

## **ASSOCIATE CONSULTANT | MICROSOFT GLOBAL DELIVERY | JULY 24, 2017 - May 31, 2018**

I worked in the Business Applications domain to build Enterprise Systems that can deliver value to large organizations around the world.

## **RESEARCH INTERN | MARCH 2017 - JULY 2017 | UNIVERSITY OF MARYLAND, COLLEGE PARK, USA | SYSTEMS AND NETWORKING**

**Focus:** Internet Measurement

**Advisor:** Dr. Neil Spring

As an undergraduate research scholar, I worked in the Systems and Networking lab on a project that involved measuring last-mile residential Internet outages in areas affected by severe weather conditions. I worked with the ThunderPing tool, which uses several distributed vantage points to ping residential IP addresses. My goals at UMD were twofold: to develop a real-time system for detecting and visualizing Internet outages and to categorize detected outages by their potential cause, such as network and power outages. I designed and built a web-based visualization that uses ThunderPing's probes to detect and display residential outages in real time. My group and I also worked on detecting instances of correlated outages, such as those caused by network and power failure, in the data we had collected.

**Poster presented at ACM Internet Measurement Conference 2017: "Measuring Last-Mile Internet Reliability During Severe Weather"**

## **INTERN | MICROSOFT GLOBAL DELIVERY | MAY 30, 2016 – JULY 22, 2016**

During my summer internship, I worked as a data analytics consultant. The internship involved a team effort to integrate data analytics into Microsoft's project management tool. The tool was built on ASP.NET and Microsoft's Power BI tool was utilized to make interactive reports that provided valuable insight to the users.

## **INTERN | OSI CONSULTING PRIVATE LIMITED | JUNE 2015**

My summer internship involved training in PL/SQL and Oracle Software with qualified internal employees. Multiple projects and assignments were completed during the period of internship.

## **Publications**

### **[10] 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

### **[9] 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

### **[8] Network Measurement Methods for Locating and Examining Censorship Devices**

**R. Sundara Raman**, M. Wang, J. Dalek, J. Mayer, and R. Ensafi  
Conference on emerging Networking EXperiments and Technologies (CoNEXT), December 2022  
🏆 IRTF Applied Networking Research Prize

### **[7] 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

### **[6] 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

ACM SIGCOMM 2021 Workshop on Free and Open Communications on the Internet (FOCI), August 2021

**[5] 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.

**[4] 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.

**[3] 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

**[2] 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.

**[1] 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

## Talks

**[11] Lightning Talk: Exploring Internet censorship through the Censored Planet Dashboard**

OTF Summit, 2023

**[10] Conference Talk: Network Measurement Methods for Locating and Examining Network Censorship Devices**

Conference on emerging Networking EXperiments and Technologies (CoNEXT 2022), December 2022

**[9] 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

**[8] Tech Demo: Exploring Internet censorship with the Censored Planet Dashboard**

RightsCon 2022, June 2022

<https://www.rightscon.org/program/>

<https://youtu.be/j1sLWAm0nMA>

**[7] Symposium Talk: Censored Planet: An Internet-wide, Longitudinal Censorship Observatory**

The 5th Annual Data for Public Good Symposium, March 2022

<https://midas.umich.edu/2022-d4pg/research-talks/#research-talks>

**[6] Invited Talk: Censored Planet Community Webinar 2021**

Censored Planet, October 2021

[https://youtu.be/v5G\\_nUUzVv8](https://youtu.be/v5G_nUUzVv8)

**[5] Workshop Talk: Censored Planet: An Internet-wide Longitudinal Observatory**

NDSS DNS Privacy Workshop (DNSPriv), February 2021

**[4] Conference Talk: Censored Planet: An Internet-wide Longitudinal Observatory**

ACM Conference on Computer and Communications Security (CCS), November 2020

<https://youtu.be/8dwZdNkJ508>

**[3] Conference Talk: Investigating Large Scale HTTPS Interception in Kazakhstan**

ACM Internet Measurement Conference (IMC), October 2020

<https://youtu.be/RoYWsfNOCr4>

**[2] Invited Talk: Censored Planet: Measuring Internet censorship remotely**

OONI Internet Measurement Village (IMV), June 2020

<https://youtu.be/5lgnvR42cMQ>

**[1] Conference Talk: Measuring the Deployment of Network Censorship Filters at Global Scale**

Network and Distributed System Security Symposium (NDSS), February 2020

<https://youtu.be/R8VIHOWakQk>

## Posters

**[2] Censored Planet: An Internet-wide, Longitudinal Censorship Observatory**

Midwest Security Workshop, April 2019

**[1] Measuring Last Mile Internet Reliability During Severe Weather**

ACM Internet Measurement Conference, November 2017

## Awards

**[10] North Campus Deans' MLK Spirit Award 2023**

January 2023

<https://culture.engin.umich.edu/2023-nominees-recipient/>

**[9] IRTF Applied Networking Research Prize (ANRP) 2023**

January 2023

<https://irtf.org/anrp/>

**[8] ACM IMC 2022 Travel Grant**

October 2022

**[7] HotPETs 2022 Best Talk Award**

July 2022

[https://twitter.com/PET\\_Symposium/status/1547872277198356480?s=20&t=Zm2ymVsT1JmHgD7kiOsQgw](https://twitter.com/PET_Symposium/status/1547872277198356480?s=20&t=Zm2ymVsT1JmHgD7kiOsQgw)

**[6] OTF Information Controls Fellowship (ICFP) Award**

November 2021

<https://www.opentech.fund/about/people/ramakrishnan-sundara-raman/>

**[5] University of Michigan CSE GSI Honorable Mention Award**

August 2021

**[4] University of Michigan CSE Graduate Student Honors Runners Up Award**

November 2020

<https://cse.engin.umich.edu/stories/2020-cse-graduate-student-honors-competition-highlights-outstanding-research>

**[3] ACM IMC 2020 Best Paper Award Nominee**

October 2020

**[2] USENIX Security 2020 Student Grant**

August 2020

**[1] Citizen Lab Summer Institute (CLSI) 2019 Travel Grant**

August 2019

## Teaching


**[3] SUBSTITUTE INSTRUCTOR - EECS 588 | JANUARY 2023 - APRIL 2020 | UNIVERSITY OF MICHIGAN, ANN ARBOR, USA**

Website: <https://www.eecs.umich.edu/courses/eecs588/>

**[2] GUEST LECTURE - EECS 388 | MARCH 2022 | UNIVERSITY OF MICHIGAN, ANN ARBOR, USA**

**Topic:** Censorship and Circumvention

**[1] GRADUATE STUDENT INSTRUCTOR - EECS 588 | AUGUST 2020 - DECEMBER 2020 | UNIVERSITY OF MICHIGAN, ANN ARBOR, USA**

 GSI Honorable Mention Award

## Reports and Blog Posts

**[3] Blog Post: Profiling Internet Censors: Methods to Measure and Locate Censorship Devices**

Open Technology Fund, December 2022

<https://www.opentech.fund/news/profiling-internet-censors-methods-to-measure-and-locate-censorship-devices/>

**[2] Blog Post: 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/>

[1] **Technical Report: US Government and military websites are geoblocked from Hong Kong and China**

Censored Planet, August 2020

<https://censoredplanet.org/hongkong>

## Service

### **REVIEWER AT CSAE '22 | 2022**

Served as a reviewer for the 6th International Conference on Computer Science and Application Engineering (CSAE).

### **SESSION CHAIR AT FOCI '21 | 2021**

Served as the session chair for the HTTPS censorship session at the ACM SIGCOMM 2021 Workshop on Free and Open Communications on the Internet (FOCI 21).

Workshop Website: <https://conferences.sigcomm.org/sigcomm/2021/workshop-foci.html>

### **PC MEMBER AT FOCI '21 | 2021**

Served as a technical program committee member for ACM SIGCOMM 2021 Workshop on Free and Open Communications on the Internet (FOCI 21).

Workshop Website: <https://conferences.sigcomm.org/sigcomm/2021/workshop-foci.html>

### **OUTREACH CHAIR AT CSEG | JUNE 2020 – MAY 2022**

Worked as the Outreach Chair at my department's graduate student organization. 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 in the first few months of 2022.