

# Sathvik N. Prasad

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## Research Interest

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My research interest spans the area of system security and privacy, with an emphasis on developing and applying data-driven techniques to study spam, abuse and fraud. I currently work on developing techniques to detect and characterize “robocalls” — a catch-all term for automated or semi-automated phone calls.

## Education

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| 08/2018 – 05/2024 (est.) | <b>Ph.D.</b> in Computer Science, North Carolina State University, Raleigh, USA<br>Change of program from M.S. in Computer Networking (08/2018 – 08/2019)<br>Advisor: Dr. Bradley Reaves |
| 09/2011 – 05/2015        | <b>Bachelor of Engineering</b> in Electronics and Communication<br>R. V. College of Engineering, Bangalore, India  |

## Publications

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### Conference Publications (Peer Reviewed)

- On SMS Phishing Tactics and Infrastructure**  
Aleksandr Nahapetyan, [Sathvik Prasad](#), Kevin Childs, Adam Oest, Yeganeh Ladwig, Alexandros Kapravelos, Bradley Reaves  
IEEE Symposium on Security and Privacy, Oct 2023.
- Diving into Robocall Content with SnorCall**  
[Sathvik Prasad](#), Trevor Dunlap, Alexander Ross, Bradley Reaves  
USENIX Security Symposium, Aug 2023.
- Who’s Calling? Characterizing Robocalls through Audio and Metadata Analysis**  
[Sathvik Prasad](#), Elijah Bouma-Sims, Athishay Kiran Mylappan, Bradley Reaves  
USENIX Security Symposium, Aug 2020.  
*Distinguished Paper Award, Facebook Internet Defense Award – 1<sup>st</sup> Prize (\$100,000)*
- Thou Shalt Discuss Security: Quantifying the Impacts of Instructions to RFC Authors**  
Justin Whitaker, [Sathvik Prasad](#), Bradley Reaves, and William Enck  
Security Standardisation Research (SSR) Conference, Nov 2019.

### Other Publications

- Diving into Robocall Content with SnorCall**  
[Sathvik Prasad](#), Bradley Reaves. USENIX ;login: ([Online Article](#)), July 2023
- Does ignoring robocalls make them stop? Here’s what we learned from getting 1.5 million calls on 66,000 phone lines.**  
[Sathvik Prasad](#), Bradley Reaves. The Conversation ([Online Article](#)), Sept 2020

## Posters

1. **Poster: Diving into Robocall Content with SnorCall**  
Sathvik Prasad, Trevor Dunlap, Alexander Ross, Bradley Reaves  
National Cybersecurity Education Colloquium, Sept 2023.
2. **Poster: Diving into Robocall Content with SnorCall**  
Sathvik Prasad, Trevor Dunlap, Alexander Ross, Bradley Reaves  
Network and Distributed System Security Symposium (NDSS), Feb 2023.
3. **Poster: Looking at the landscape of SMS Phishing**  
Aleksandr Nahapetyan, Kevin Childs, Sathvik Prasad, Bradley Reaves and Alexandros Kapravelos  
Network and Distributed System Security Symposium (NDSS), Feb 2023.
4. **Who's Calling? Characterizing Robocalls through Audio and Metadata Analysis**  
Sathvik Prasad, Elijah Bouma-Sims, Athishay Kiran Mylappan, Bradley Reaves  
Network and Distributed System Security Symposium (NDSS), Feb 2020. *Best Poster Presentation*
5. **Who's Calling? Characterizing Robocalls through Audio and Metadata Analysis**  
Sathvik Prasad, Elijah Bouma-Sims, Athishay Kiran Mylappan, Bradley Reaves  
Triangle Area Privacy and Security Day (TAPS), Oct 2019.

## Employment & Experience

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### Research Experience

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| 04/2022 – Present | <b>Lead Graduate Student</b> , WSPR Lab, North Carolina State University   |
| 08/2019 – Present | <b>Graduate Researcher Assistant</b> , North Carolina State University<br>Using audio analysis, speech processing, and NLP techniques, I study robocalling campaigns in the real-world phone network by operating a telephony honeypot.<br>Advisor: Dr. Bradley Reaves |
| 01/2019 – 04/2019 | <b>Student Member</b> , WSPR Lab, North Carolina State University<br>I developed techniques to identify telephony related CVEs from the NVD dataset.<br>Advisor: Dr. Bradley Reaves  |
| 06/2014 – 07/2014 | <b>Summer Research Fellow</b> , Indian Institute of Science, Bangalore, India<br>I studied techniques to synthesize antenna-arrays with specific characteristics.<br>Advisor: Dr. Narayanaswamy Balakrishnan   |

## Industry Experience

- 05/2023 – 08/2023 **Data Science Intern**, Remote Internship, The Industry Traceback Group (ITG)  
I worked with the Data Science team and the ITG staff to develop data pipelines which enhanced the traceback process.
- 05/2022 – 09/2022 **Data Science Intern**, Remote Internship, Google Cloud/Mandiant  
I worked with the Data Science research group to develop source-code analysis pipelines by fine-tuning transformer-based Language Models (LLMs).
- 05/2021 – 08/2021 **Fraud Analyst Intern**, Bandwidth, Raleigh, North Carolina, USA  
Developed a tool to aid the fraud team uncover fraudulent messaging traffic using Natural Language Processing (NLP) frameworks.
- 06/2019 – 08/2019 **Engineering Intern**, CenturyLink, Broomfield, Colorado, USA  
Automated the configuration deployment process for an Avaya VoIP System.
- 10/2017 – 07/2018 **Software Development Engineer**, Cisco Systems, Bangalore, India  
Developed VoIP features for Cisco’s enterprise application suite while following agile development practices. Identified and fixed critical defects and security flaws.
- 07/2015 – 09/2017 **Technical Services Engineer**, Cisco Systems, Bangalore, India  
Troubleshoot some of the world’s largest VoIP networks, uncovered security flaws in VoIP products and worked with internal development teams to fix critical bugs.
- 01/2015 – 07/2015 **Intern**, Cisco Systems, Bangalore, India  
Designed, implemented and deployed *MagicTrace* — a tool to identify VoIP call-failure within minutes, instead of hours of manual analysis. The project received an award for innovation and impact, and drastically simplified problem isolation.

## Teaching Experience

- 01/2021 - 05/2021 **Teaching Assistant**, Cellular Network Security, North Carolina State University  
Delivered a lecture on fundamentals of security. Responsible for formulating and evaluating weekly quizzes. Instructor: Dr. Bradley Reaves

## Awards & Honors

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- 2023 Selected to present my research at the National Cybersecurity Education Colloquium
- 2023 Nominated for the Carla Savage Award for outstanding service, NCSU
- 2021 Computer Science Graduate Student Leadership Award, NCSU
- 2020 Facebook Internet Defense Award at USENIX Security – 1<sup>st</sup> Prize (\$100,000)
- 2020 Distinguished Paper Award at USENIX Security (top 1% of accepted papers)
- 2020 Best Poster Presentation Award at NDSS
- 2020 Student Travel Grant to attend NDSS
- 2017 Cisco Operational Excellence Award, Cisco Early Career Network Achiever Award
- 2015 Cisco CLEAD Award for Innovation

## Service

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- 2024 Program Committee – ACNS
- 2024 Program Committee – IEEE S&P
- 2023 Program Committee – WiSec
- 2023 Artifact Evaluation Committee – WiSec
- 2022 Artifact Evaluation Committee – ACSAC
- 2022 Poster Jury Committee – IEEE S&P
- 2022 Replicability Committee – WiSec
- 2021 External Reviewer – USENIX Security
- 2021 External Reviewer – Network and Distributed System Security Symposium (NDSS)
- 2021 External Reviewer – Passive and Active Measurement (PAM) Conference

## Invited Talks & Lectures

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1. **Who's Calling? Characterizing Robocalls through Audio and Metadata Analysis**  
USENIX Security Symposium, Aug 2020, *Invited Talk*
2. **Who's Calling? Characterizing Robocalls through Audio and Metadata Analysis**  
University of Wisconsin-Madison, Aug 2020, *Invited Talk*
3. **Who's Calling? Characterizing Robocalls through Audio and Metadata Analysis**  
The George Washington University, Sept 2020, *Invited Talk*
4. **Who's Calling? Characterizing Robocalls through Audio and Metadata Analysis**  
Bandwidth Inc., Oct 2020, *Internal Company-wide Talk*
5. **Discussion on Telecom Network Security and Robocalls**  
University of Michigan, Dec 2020, *Invited In-class Discussion*
6. **Security Fundamentals - A Comprehensive Review**  
Cellular Network Security, Jan 2021, *Class Lecture*
7. **Who's Calling? Characterizing Robocalls through Audio and Metadata Analysis**  
Duke Privacy and Security Seminar, Duke University, Feb 2021, *Invited Talk*
8. **Key Management, Key Distribution and Certificates**  
Computer and Network Security, Sept 2021, *Class Lecture*
9. **Fraud, Spam, Robocalls and the International Dimension**  
Risk and Assurance Group Conference, New Orleans, April 2022, *Invited Panelist*
10. **How to Extract Insights from Millions of Robocalls?**  
Resideo, May 2023, *Invited Talk*
11. **Diving into Robocall Content with SnorCall**  
J.P. Morgan AI Research, Aug 2023, *Invited Talk*
12. **Diving into Robocall Content with SnorCall**  
USENIX Security, Aug 2023, *Conference Presentation*
13. **How to Extract Insights by Analyzing Millions of Robocall Audio Recordings**  
SIPNOG (co-presented with Dr. Brad Reaves), Sept 2023, *Invited Talk*

#### 14. Systems and Techniques to Characterize Robocalls

National Cybersecurity Education Colloquium , Sept 2023, *Panel, Poster and Research Presentation*

#### 15. How to Extract Insights from Millions of Robocalls?

Transaction Network Services, Oct 2023, *Invited Talk*

## Expertise & Skills

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<b>Programming</b>	Python, C, C++, TCL
<b>Operating System</b>	Ubuntu, Cisco IOS, Cisco IOS-XE, XINU
<b>Tools</b>	L <sup>A</sup> T <sub>E</sub> X, Git, Wireshark, Audacity, MongoDB, Asterisk, Cisco IP-IP Gateways, Cisco VoIP and TDM Gateways, Cisco IP Routing & Switching, Cisco ASA (Firewall), VPN, VMWare vCenter, Vagrant, TCP/IP, DNS, HTTP(s), TLS, PKI
<b>Relevant Courses</b>	Computer and Network Security, Advanced Network Security, Operating Systems, Cellular Network Security, Algorithms, Natural Language Processing

## Leadership & Mentoring

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- Mentored an undergraduate student at NC State University and three new hires at Cisco
- Trained developers and network engineers on automation workflow at Cisco
- Developed a comprehensive training plan on networking fundamentals at Cisco

## Community Outreach

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08/2019 – 04/2020	<b>Campus Lead</b> , India Student Hub, USA Organized a university-wide poster presentation and a gathering with the Embassy of India Science and Technology Counselor at North Carolina State University.
2019 – 2022 (4 years)	<b>Small Pack Leader</b> , North Carolina State University As a student volunteer for the Office of International Services, I have collectively led over 150 new incoming graduate students from more than 15 countries. My responsibility was to help these international graduate students transition from their home country to an academic life at NC State.

## Media Coverage

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- *Facebook Research Press Release* – [Facebook Internet Defense Award Winners](#)
- *ACM Communications* – [Study Examines Robocall Strategies and Techniques for Stopping Them](#)
- *Newsobserver* – [Tired of robocalls? NC State, Bandwidth team up in search of solutions](#)
- *WRAL Article* – [Fight against robocalls is making progress, NCSU study finds](#)
- *Bruce Schneier's Blog* – [Robocall Results from a Telephony Honey-pot](#)
- *NC State Press Release* – [Study Debunks Robocall Myths, Lays Groundwork for Stopping Them](#)

- *NC State Magazine* – Who’s calling? Computer Science Researchers get to the Bottom of Robocalls
- *ZDNet* – A simple telephony honeypot received 1.5 million robocalls across 11 months
- *Engadget* – Research shows answering one robocall doesn’t lead to more
- *Bandwidth Inc.* – Bandwidth Partners with NC State University on Rigorous Robocalling Study
- *NASDAQ* – Bandwidth Partners with NC State University on Rigorous Robocalling Study
- *Yahoo Money* – Bandwidth Partners with NC State University on Rigorous Robocalling Study
- *Business Insider* – Bandwidth Partners with NC State University on Rigorous Robocalling Study
- *Yahoo News* – Does ignoring robocalls make them stop?
- *The Chronicle of Higher Education* – A thank you note in the daily briefing