

Sathvik N. Prasad

Computer Security and Applied ML Researcher

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Professional Summary

- 9+ years of cumulative experience in Computer Security, Machine Learning, NLP, Networking, and Software Development. Expertise in conceptualizing and developing large-scale data collection systems and novel data processing pipelines to study spam, fraud, and abuse. PhD research involved designing and operating the largest academic telephony honeypot in the US and developing innovative techniques to study scam calls (also called **robocalls**) and phishing SMS messages.
- Data collection techniques from my research on robocalls have driven the **FCC's regulatory policy** on protecting millions of phone users across the US from fraudulent robocalls. Demonstrated real-world impact through industry-academia collaborations which led to multiple publications at top security conferences (USENIX Security, IEEE S&P, CCS), press coverage spanning 60+ articles, 20+ invited talks and panel discussions at industry and academic forums.
- Recipient of the prestigious **Internet Defense Award** (1st place, \$100,000) which recognizes security research that meaningfully contributes to the protection and defense of the Internet. Recipient of two **Distinguished Paper Awards** (USENIX Security & CCS), **Distinguished Artifact Award** (CCS) and **Best Poster Presentation Award** (NDSS).

Employment & Experience

Research Assistant, WSPR Lab, NCSU

Aug '19 – Present

Led the design, development and operation of the **Robocall Observatory** infrastructure — a honeypot of 66,000 phone numbers spread across the US, which collected over 10 Million robocalls over six years. Used audio fingerprints and **audio-LM** based embeddings to aggregate similar-sounding robocalls into campaigns with 95% accuracy. Leveraged **semi-supervised learning** and **NLP** techniques to expose deceptive tactics of fraudulent robocallers responsible for millions of dollars in damages to victims. Extracted robocall **threat intelligence** from enforcement reports and consumer complaints. Measured the prevalence of STIR/SHAKEN **call authentication** framework. Published six papers, winning multiple awards.

Data Science Intern, The Industry Traceback Group (ITG)

May '23 – Aug '23

I was part of the Data Science group within the FCC-designated body that identifies the source of illegal robocalls. Fine-tuned the scoring system of the inaugural version of **Traceback Insights** initiative, which is being used by regulators, enforcement agencies, and 1,000+ service providers worldwide to track the point of origin of illegal robocalls. Also developed NLP pipelines that provide a consistent and holistic view of robocall campaigns across multiple robocall feeds automatically.

Data Science Intern, Google/Mandiant

May '22 – Sept '22

Worked with the research team to develop fine-tuning pipelines for open-source code Large Language Models (**code-LLMs**). Trained LLM-based classifiers to identify potentially malicious source code across 10+ programming languages.

Fraud Analyst Intern, Bandwidth

May '21 – Aug '21

Developed internal tools using sentence embeddings models (S-BERT) and NLP techniques to aid the fraud team in detecting and mitigating fraudulent messaging traffic. Delivered internal training sessions on blocking fraudulent traffic.

Engineering Intern, CenturyLink

June '19 – Aug '19

Developed automated configuration and change deployment system for Avaya VoIP systems deployed across the US.

Software Development Engineer, Cisco Systems

Oct '17 – July '18

Developed numerous features for Cisco's enterprise VoIP application suite. Specialized in triaging, recreating and addressing critical software defects and security flaws affecting customer deployments across the globe, serving millions of users.

Technical Services Engineer, Cisco Systems

July '15 – Sept '17

Troubleshoot some of the world's largest VoIP networks which process millions of calls, uncovered security flaws in VoIP products and worked with product teams to fix critical bugs. Developed widely used internal productivity enhancing tools.

Intern, Cisco Systems

Jan '15 – July '15

Won the Innovation Award for developing a tool called *MagicTrace*. It drastically simplified troubleshooting tasks for critical phone networks by reducing the time taken to identify failed calls from hundreds of hours to a few minutes.

Summer Research Fellow, Indian Institute of Science

June '14 – July '14

Benchmarked evolutionary algorithms against other optimization techniques to solve antenna array positioning problems.

Education

M.S., Ph.D. in Computer Science, North Carolina State University

2018 – 2024 (est.)

Dissertation Title: “Systems and Techniques to Characterize Robocalls”

Advisor: Dr. Bradley Reaves; Committee: Dr(s): William Enck, Alexandros Kapravelos, Anupam Das

B. E. in Electronics and Communication, R.V. College of Engineering, India

2011 – 2015

Publications

1. **Characterizing Robocalls with Multiple Vantage Points**, To appear in IEEE S&P (Oakland), 2025
Sathvik Prasad, Aleksandr Nahapetyan, Bradley Reaves
2. **Jäger: Automated Telephone Call Traceback**, ACM CCS, 2024
David Adei, Varun Madathil, Sathvik Prasad, Bradley Reaves, Alessandra Scafuro, acceptance rate = 17%
🏆 *Distinguished Paper Award* 🏆 *Distinguished Artifact Award*
3. **On SMS Phishing Tactics and Infrastructure**, IEEE S&P (Oakland), 2023
Aleksandr Nahapetyan, Sathvik Prasad, Kevin Childs, Adam Oest, Yeganeh Ladwig, Alexandros Kapravelos, Bradley Reaves, acceptance rate = 17%
4. **Diving into Robocall Content with SnorCall**, USENIX Security, 2023
Sathvik Prasad, Trevor Dunlap, Alexander Ross, Bradley Reaves, acceptance rate = 29%
5. **Who's Calling? Characterizing Robocalls through Audio and Metadata Analysis**, USENIX Security, 2020
Sathvik Prasad, Elijah Bouma-Sims, Athishay Kiran Mylappan, Bradley Reaves, acceptance rate = 16%
🏆 *1st Prize — Internet Defense Award (\$100,000)* 🏆 *Distinguished Paper Award*
6. **Thou Shalt Discuss Security: Quantifying the Impacts of Instructions to RFC Authors**, SSR, 2019
Justin Whitaker, Sathvik Prasad, Bradley Reaves, and William Enck, acceptance rate = 35%

Expertise & Skills

Programming Languages	Python, C
Tools and Protocols	L ^A T _E X, Git, Wireshark, Audacity, MongoDB, Cisco Routing, Switching & Troubleshooting (CCNP – expired), vCenter, Proxmox, TCP/IP, DNS, HTTP(s), TLS, SIP, RTP
ML Techniques	Semi-Supervised Learning, Clustering, Natural Language Processing, Transformer-based models, Speech Processing, Anomaly Detection, Time Series Analysis
Relevant Courses	Computer and Network Security, Advanced Network Security, Operating Systems, Cellular Network Security, Algorithms, Natural Language Processing

Service

Program Committee – IEEE S&P	2025
Program Committee – IEEE S&P and ACNS	2024
Program Committee – WiSec, Artifact Evaluation Committee – WiSec	2023
Artifact Evaluation Committee – ACSAC and WiSec, Poster Jury Committee – IEEE S&P	2022
External Reviewer – USENIX Security, NDSS and PAM Conference	2021