

Education

- Ph.D. in Computer Science, **Area: Systems and Network Security**, *Dartmouth College*, June 2022 (Expected).
- M.S. in Computer Science, *Dartmouth College*, June 2017.
- B.E. in Computer Science and Engineering, GPA: 8.2/10, *College of Engineering Guindy, Chennai, India*, May 2015.
- Graduate Coursework: Concurrent Algorithms, IoT Security and Privacy, Computer Networks, Operating Systems, Security and Privacy, Artificial Intelligence, Principles of Programming Languages, Advanced Operating Systems.
- Undergraduate Coursework: Object-oriented Approach and Programming, Design and Analysis of Algorithms, Database Management Systems, Compilers, System Software Internals.

Programming Languages and Technologies

- Rust, Ruby, Python, Dafny, Ocaml, Ruby on Rails, Java, Android, SQL, C, C++, HTML, CSS, Javascript.
- MySQL, Android Studio, Wireshark, GNU/Linux, Alloy Model Checker.

Talks and Presentations (Selected)

- **IoT Hound: Environment-agnostic Device Identification and Monitoring**, 10th International Conference on the Internet of Things (IoT 2020), Malmo, Sweden. **Best Paper Award**. *October 8th, 2020*. (20% Acceptance)
- **Scalable Identity and Key Management for Publish-Subscribe Protocols in the Internet-of-Things**, 9th International Conference on Internet of Things (IoT 2019), Bilbao, Spain. **Honorable Mention Award**. *October 24th, 2019*. (20% Acceptance)

Employment

Intern-IoT Security and Privacy

SRI International, New York City

June 2018 – September 2018

- Identifying and characterizing IoT devices across Bluetooth, Zigbee, and WiFi networks. *C/C++, Python*

Student Associate

SRI International, Menlo Park

June 2017 – September 2017

- Designing composite-metrics for understanding security of Internet-of-Things ecosystems. *Python, Alloy Model Checker*

Student Associate

SRI International, Menlo Park

June 2016 – September 2016

- Building Language-Theoretic Security compliant clients for Internet-of-Things protocols. *C/C++, Ruby, Hammer*

Projects

- **Building LangSec Compliant protocol clients:** We have so far built implementations of the MQTT, XMPP, DNP3 and C37.118 protocols. All of which are used in the Industrial IoT and Smart Grid. Our implementations are presently being used actively in the power grid by several vendors. *Dafny, VHDL, Python, Ruby*.
- **KeggyFuzzer:** Building smart fuzzers from parser-combinator input. A top-down fuzzer generator generating and mutating inputs to detect input not accepted by grammar. *C/C++, Ruby*.
- **DARPA RADICS:** Contributing to the active development of the TIGR system, being used in the power grid restoration project. We provide information about potential attacks and provide suggestions for defense mechanisms to grid operators. *C/C++, Python*.
- **ELFbac:** ELF-based Access Control—specifying the state machine of a program and enforcing fine-grained access control policies on ELF binaries by modifying the operating system kernel. *C/C++, Ruby*.
- **Cyber-physical attack paths:** We used the *Alloy Model Checker* to find attack paths in Internet-of-Things networks. These attack paths are not only in the cyber channels, but also physical attributes of devices influencing other devices.

Additional Experience and Awards

- **Patent** on “Modeling Cyber-Physical Attack Paths in the Internet-of-Things”
- Leader: HackD, Dartmouth’s Capture the Flag (CTF) team.
- **Best Paper Award** at ACM IoT Conference 2020.
- **Honorable Mention** for the Top 3 papers at ACM IoT Conference 2019.
- TCS Award for the **Best Senior Thesis**.