Priyal Shah

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## Education

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| **Master of Science in Computer Science** | **Oregon State University** | **March 2019** | **3.60 Current GPA** |
| Bachelor of Engineering in Computer Engineering | Gujarat Technological University | May 2016 | 6.85 CGPA |

**Concentration:** Cybersecurity, Security Protocols, Computer System Networks, Intrusion Detection/Prevention Systems

**Graduate Courses:** System Security; Network Security; Cyber Attack and Defense; Cyber Security; Applied Cryptography; Advanced Computer Networking; Parallel Programming with OpenMP, OpenCL and OpenGL; Computer Architecture; Error Correcting Codes; Operating System; Data Analysis and Algorithms; Theory of Computation; Compiler Design, Algorithms, Software Engineering.

## Work Experience

**Oregon State University** Research towards MS Thesis project Sep 2017 – present

* Pursuing research on **IDS/IPS** like **Bro** and **Snort** with Elastic Search and Kibana for Botnet detection.

**Oregon State University – EECS** Graduate Teaching Assistant Sep 2017 – present

* So far worked with over **500 students** as GTA of “Introduction to Computer Networks” (**Wireshark** Labs and **OSI** Model) and Software Engineering-1 (Basic **SDLC**, **UML** Diagrams, Group projects applying **Agile** software development)

**Oregon State University – Information Services** Student Technician Mar 2017 – Sep 2017

* Worked as student **Network administrator**, InfoSec Lab Assistant (**phishing attack** detection, good troubleshooting skills).

## Projects

Virtual Machine Escape Attack Sep 2018 – present

* Escaping out of parallels windows virtual machine to macOS host machine.

Experiment: Can **malware** be detected without having to **decrypt** the traffic? July 2018 – present

* Working with multiple VMs, tcpreplay and .pcap files; IPsec, TLS Tunnelling for encryption; VPN; Bro and Snort as IDS.

Experiment: Prevent **control flow hijacking** July 2018 – present

* Prevent “system(/bin/sh)” calls on network using Bro IDS.

Experiment: Detection of **cryptocurrency mining** on network using Bro as Network Intrusion Detector. July 2018 – present

* Working with **Mininet** Simulations, tcpreplay and .pcap files; Bro as IDS.

Denial of Service (**DoS**) Mitigation June 2018 – Sep 2018

* Implementation with C; Using **client-server puzzle**, a Proof of Work (**PoW**) concept

**Automatic Vulnerability Discovery** June 2018 – Sep 2018

* Applying fuzzing (**afl-fuzz**) and symbolic execution (**KLEE**), exploits using python (**pwntools)**

**Post-Quantum Signature** using C language and MIRACL library May 2018 – June 2018

* Implementing Merkle-hash tree, HORS signature and d-time O(1) key-size HORS/Merkle-tree Mini Post-Quantum Signature.

**Digital Forensic Tool** using C language and MIRACL library May 2018 – June 2018

* Implementing Huffman Compression and Rabin Information Dispersal for Mini Forensic Tool for Wireless Sensor Networks

**CTF** Competition Jan 2018 – Mar 2018

* Exploited **Buffer Overflow**, Arbitrary R/W, **Format String** vulnerabilities with **Shell** scripting; SQL Injection; **R**eturn **O**riented **P**rogramming employing **pwntools**, Burp Suite etc. practicing reverse engineering of x86, x86-64 **assembly** with gdb.

**Network Analysis in TLS Protocol Versions** Jan 2017 – Mar 2017

* **Python** implementation to measure throughput and communication delay in a simple topology.

Tweaked certain aspects of the **iOS** by testing **Jailbreaking** techniques. Jan 2014 – Dec 2016

## Seminars

Detecting **Credential Spearphishing** Attacks in Enterprise Settings: Using Bro as IDS Mar 2018

**Bitcoin-NG** Analysis: Next Generation Bitcoin Protocol to address the issue of scalability. Feb 2018

**KRACK** Analysis: Key Reinstallation Attacks Analysis to understand how WPA2 works. Jan 2018

**Error Correcting Codes** and **Cryptography**: Showed the connection between these two fields. Nov 2017

## Other Experiences and Personal Skills

* Served as Event Coordinator and the Central committee member at National Level Technical Festival.
* Won 1st prize in relay coding competition at National Technical Symposium.
* Undertook volunteering work at Private Educational Institute.
* Worked as a cashier at University Housing and Dining Services at Oregon State University**.**
* **Polyglot:** English, Hindi, and Gujarati; Excellent grasping power; effective team-working and leadership skills.