PRIYAL SHAH

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Education

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.