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**Vaibhav Hemant Dixit**

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## Summary

A graduate student with active research and work experience in software development, system, computer networks and network security domains. Seeking a full-time engineering position for a long-term commitment.

## Education

**Arizona State University, Tempe, AZ** Master of Science, Computer Science **May 2018, GPA 3.5**  
**Vellore Institute of Technology, India** Bachelor of Technology, Information Technology **May 2013, GPA 3.6**

## Technical Skills

Programming **Languages** - C, Java, Python, Shell, JavaScript, D3, HTML

Other **skills** - SDN, Openflow, OpenStack, TCP/IP, WLAN, REST, Git, Wireshark, Objdump, Gdb, Linux, Android, Jenkins

Relevant **courses** - Principles of Programming Languages, Algorithms & Data Structures, Operating Systems, Software Security, Computer Networks, Embedded Systems

## Professional Experience

**Center for Cybersecurity and Digital Forensics** (Graduate Research Assistant, ASU) **Dec 2016 to present**

- SDN and OpenStack based security framework for Science DMZ network – ODL, OpenStack, HoneyNet, SDN Firewall
- Behavioral analysis of the attacker by propagating the attack to a protected network. Using the feedback to generate dynamic security constraints. These learnt constraints are used for attack graph generation and new ACLs.

**Samsung Electronics, India** (Senior Software Engineer) **Jul 2013 to Jun 2016**

- Developed and designed Wi-Fi AP and P2P WLAN device drivers. Implemented 802.11 protocol based control plane and data plane networking features. Tested and included patches for Android supplicant at user space.
- Programmed the Linux(Android) kernel code in C and unit tested the code with Perl scripts.
- Implemented Open, WEP, WPA, WPA2 and 802.11w secured connection procedures at the driver and supplicant.

## Recent Projects

- **SDN based flow policy conflict detection and resolution:** SDN application for Openflow rules conflict detection, dynamic violation resolution and visualization. Also, design and develop an SDN based network of HoneyPots to redirect the malicious traffic to HoneyNet involving Moving Target Defense. Visualize the conflicts using D3 library.
- **Reflector:** To relaunch the TCP/IP attack from victim to the attacker: Developed a Python based network daemon to impersonate the victim IP addresses using ARP spoofing and relaunch the attack from victim to attacker using Python Scapy packet inspection and modification tool.
- **Framework for exploit detection and patching in Capture the Flag competition:** Participated in a project based CTF game. Developed a Python vulnerability detection engine. Contributed to the design of patching framework to fix the detected vulnerabilities in real time. Won the CTF game.
- **Embedded programming in Intel Quark based Galileo Board:** The project is part of the course “Embedded Operating System Internals”. The project aims to provide an understanding of internals of Linux and RTOS kernel architecture by implementing device drivers. Investigated Linux kernel source code including memory management, kernel synchronization, device driver design and trace, debug support. Programmed ioctl, syscall interface, static and dynamic probes, misc drivers, etc.
- **Full-fledged compiler in C:** Developed a complete parser and compiler modules for lexical and semantic analysis.

## Publications

- HONEYPROXY: **Design and Implementation of Next-Generation HoneyNet via SDN**  
Sukwha Kyung, Wonkyu Han, Naveen Tiwari, **Vaibhav Hemant Dixit**, Lakshmi Srinivas, Ziming Zhao, Adam Doupe', and Gail-Joon Ahn IEEE Conference on Communications and Network Security (CNS) – 2017
- Science DMZ: **Software Defined Networking based Secured Cloud Testbed**  
Ankur Chowdhary, **Vaibhav Hemant Dixit**, Naveen Tiwari, Sukwha Kyung, Dr. Dijiang Huang and Dr. Gail-Joon Ahn NFV-SDN'17. Demo URL: <https://www.youtube.com/watch?v=8yo2ITNV3r4>

## Miscellaneous activities

In house projects on Raspberry PI, and a freelance content writer. An avid cyclist: biked 15000 miles in 2 years including the daunting Himalayas. Aspiring runner: training for Phoenix full marathon – Feb 2018. A seasoned hiker.