Amit Vitekar

amitvitekar@ymail.com
+353 (0) 89 271 6414
linkedin.com/in/amitvitekar
Availability: Immediate

Website | r00tb3.github.io

Profile:

- Masters' student, specialising in Cyber Security and on track for a 2:1
- 2 years' work experience as Security Researcher with US based Start-up – Securethings AI
- Strong in reverse engineering, vulnerability analysis of Cellular Networks (GSM, UMTS, LTE, 5G - V2X), Cellular Modems (Quectel, Telit, Sierra Wireless), Embedded and IoT Devices.
- Strong experience in firmware development & porting using Buildroot, LiTB(Linux in The Box), Yocto & OpenWRT.
- Strong with HTML ,C, x86 & ARM architecture with Assembly. Currently learning Python with focus on security.
- Hands-on training with CCNA(Cisco Certified Network Associate) Routing & Switching, CompTIA Security+.

- **Visa:** Currently on Stamp 2. Expect to graduate in November 2022. Eligible under the 1G third level graduate scheme to work without restriction from November 2022- November 2023.
- **Languages:** English (Fluent written & oral), Marathi(Native), Hindi.

Education:

Sept 2021 – Sept 2022	National College of Ireland, Dublin	ncirl.ie

MSc Cybersecurity – Specialising in Cloud Security
Modules: IT Law and Ethics, Network Security and Penetration Testing, Secure Programming for Web, Security Fundamentals, Cryptography, Research in Computing, Secure Programming for Application Development, Cloud Security, Malware Analysis, Research Methods.

Network Security and Penetration Testing: Conducted Penetration Testing and Security assessment of vulnerable virtual machines on HackTheBox, VulnHub which had Web Application, OS and Network vulnerabilities Tools used: Burpsuite, Wireshark, FastFuzz, HashCrack.
Secure Programming for Web: 2 members. Created a secure social media web application. Users could sign up, comment, share and post. The web application was secured from vulnerabilities like SQLinjection, XSS(Cross Site Scripting), CSRF(Cross Site Request Forgery),Click Jacking, Weak Password Authentication etc. Technologies Used: Django Framework, Python.
Security Fundamentals: Studied and analysed different flavours of malware's namely Spywares, Trojans, Remote Administration Tool(RAT), Ransomware's.

June 2012–June 2019	Savitribai Phule Pune University, India	unipune.ac.in

Bachelor of Engineering (B.E) Electronics and Telecommunication
Modules: Signals & Systems, Digital Signal Processing, VLSI, Embedded Systems, SOC & Microprocessors, Digital Communication Systems, Cellular Networks, Broadband Communication, Software Defined Radio, Internet of Things (IoT), Networking and Security.

Final Year Project: FIRMWARE SECURITY - A Look into Operating Systems Running in Deep Corners of a Smart Device.(pdf)
Studied and analysed different hardware vulnerabilities present in an IoT device, exploited the firmware by leveraging hardware vulnerabilities and implement mitigation techniques.

Technology Skills:

- **Languages:** Studied C, HTML, ARM assembly programming language for 3 years along with Data Structures and Algorithms during my bachelor's program.
- **C:** Studied C programming language for 2 years and have good grasp on memory management, data structures.
- **Assembly Language:** Studied and comfortable with ARM and x86 assembly language along with architecture of the same.
- **Operating Systems**: Studied & Developed Embedded Linux system based out of Buildroot, LiTB(Linux in The Box), Yocto, OpenWRT for development boards namely Qualcomm 410C, Huawei Kirin 970.
- **Cellular Networks**: Practical knowledge on deployment and security assessment of 3GPP cellular networks GSM, UMTS, LTE and 5G-V2X.
- **Cellular Deployments**: Hands-on experience with opensource projects namely Osmocom, OpenBTS, srsLTE, Open5Gs.

- **Cellular Modems & Basebands**: Good understanding of baseband architectures and their RTOS's like Qualcomm's Hexagon, Samsung's Shannon, MediaTek , Huawei Balong.

Career History:

June 2019 – July 2021:   **Securethings AI Pvt Ltd**, India

Security Researcher
- Security Assessment & Penetration Testing of Engine Control Unit, Telematics Control Unit, Infotainment System.
- Reverse Engineering of Hardware and Embedded components and protocols like System on Chip(SoC), Microcontroller, JTAG(Joint Test Action Group), CAN (Controlled Area Network), UART(Universal Asynchronous Receiver Transmitter).
- Tinkering and reversing Keyfobs, Immobilizers of Electric Vehicles and Electric Bikes.
- Penetration Testing of cellular modems present in Telematics Unit by deployment of opensource cellular projects namely Osmocom, OpenBTS, srsLTE, Open5Gs.
- Security Assessment of GPS, Wi-Fi, Bluetooth, and other RF standards used in Electric Vehicles vastly.
- Systems and Methods to protect Automotive Connected Systems from Cyber Attacks through Remote and Physical Interfaces *(Pending Patent)*
  – Developed pseudo base station detection and prevention technique using 2FA(2 Factor Authentication) for GSM & LTE networks deployed over cellular basebands in the Electric vehicles.
  – Designed and deployed hardware based MiTM attacks detection and prevention over serial interfaces like UART, USART for AT commands being executed in the modems.

Dec 2018 - April 2019   **Payatu Labs**, India

IoT Research Intern
- Built a malicious and powerful firmware Evil-Boot which can be loaded into any Embedded / IoT device's memory to bypass security mechanism like password protected bootloader, secure kernel and rootfs to gain complete control over the device in minutes.

Feb 2018 - Oct 2018   **IoTIoT.in(smart6)**, India

Embedded Systems Intern
- Ported & Developed Embedded Linux Systems and firmware's for routers, multiple development boards and implemented mitigation techniques for memory corruption vulnerabilities.
- Firmware Development Using OpenWRT & Buildroot
- MEDIA SERVER ROUTER OS: Media streaming based on miniDLNA Router OS.
- MULTI-WAN ROUTER OS: A load balancing and WAN to GSM auto switching Router OS.(link)
- PEER-TO-PEER (P2P) ROUTER OS: Developed a peer-to-peer Router OS based on BitTorrent (link)

Interests and Achievements:

Publications:
- Internet of Insecurities : IoT Threats and Mitigations, Advancements in Communication, Computing and Electronics Technology [ACCET-2019].(link1)(link2)
- A survey on evolution in Information Security : International Conference on Mechanical, Electronics Systems and Computer Engineering (IMESCOE 2017) (link)
- Railroad Track Maintenance : International Conference on Mechanical, Electronics Systems and Computer Engineering (IMESCOE 2017)(link)

Honours & Awards:
- Best Research Paper Award
  Awarded for the best research paper at the Advancements in Communication, Computing and Electronics Technology [ACCET-2019] for the paper INTERNET OF INSECURITIES : IOT THREATS AND MITIGATIONS.

REFEREES AVAILABLE UPON REQUEST