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Harshvardhan Patel

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EDUCATION

INDIAN INSTITUTE OF TECHNOLOGY (IIT) BHILAI
B.Tech. Computer Science and Engineering
2016 - May 2020 |
Raipur, INDIA
CGPA: 8.67/10

KEY COURSEWORK†

Machine Learning (ML) •Adversarial ML
Computer System Security • Blockchain
Cryptography • Cryptographic Protocols
†Graduate Level Courses

SKILLS

SOFTWARE

Languages Proficient:
C • C++ • Python • Bash
Languages Familiar:
Java
Devops:
Linux (Debian)
Software Tools:
Docker • Git • Jenkins • LaTeX

HARDWARE

Embedded Boards:
Raspberry Pi 4 • NXP i.MX Series SOM

EXTRA-CURRICULARS

DEVELOPERS STUDENT CLUB

Core-Member, ML
Organized ML Bootcamps
Teaching seminars | 2019-20

ACHIEVEMENTS

COMPETITIVE PROGRAMMING

ICPC 2019 India Online Round
Team Rank: 225/3700
Team Name: PreciS10n
ACM-ICPC 2018 India Online Round
Team Rank: 171/3300 teams
Team Name: TLERush
ACM-ICPC 2018 India Regionals
Team Rank: 69/115 Qualified teams
Team Name: TLERush

WORK EXPERIENCE

ATONARP MICRO-SYSTEMS | Member of Technical Staff (Firmware)

Aug 2020 – Present | Bangalore, INDIA — C | Bash | Python

- Customizing/Patching device trees, device drivers from mainline embedded Linux kernel and U-Boot Bootloader
- Application development for FreeRTOS, implementing support for Asymmetric Multiprocessing (AMP) between ARM Cortex-A and Cortex-M processors using RPMSG.
- Security and Hardening of Aarch64 Debian OS
- Maintaining Jenkins build pipelines, Debian Repositories, Linux Devops and Dockerizing applications for ARM64 emulation

BOSCH - RBEI | ESY-1 (Security and Pentesting) Intern

May 2019 – July 2019 | Bangalore, INDIA — Docker | Python

Created minimal and hardened Docker images for in-house Linux apps

- Built application specific Docker base images from scratch packaging only the app's run time dependencies – eliminating the bloat faced when using standard Docker Hub images.
- Cythonized the Python source code of applications for performance gain and source-code hiding
- Setup a build pipeline for building the above Docker images (Using Bash, Bazel and Python)
- Achieved up to 85 per cent size reduction in Final Docker images

MAX SECURE SOFTWARE | Software Development Intern

May 2018 – July 2018 | Pune, INDIA — C++ | Python

Worked primarily on static malware detection in Windows environment.

- Created a Python Proof Of Concept (PoC) for malware classifications using Random Forests. Achieved a high classification accuracy and F2 score by engineering just over 30 statically extracted features.
- Ported the PoC to Windows Visual C++. Wrote functions for static feature-extraction, Wrote Windows DLLs linking the ML backend with the antivirus scanner
- Integrated the setup into the Antivirus scanner and deployed into production

Worked on Android Malware detection towards the end of the internship. Created PoC with Python for malicious Android APK detection based on features derived from Android manifest and Dex files

RESEARCH PROJECTS

SECURE BOOT FOR EMBEDDED DEVICES | Project Scientist

Supervisor: Prof. Dhiman Saha, Asst. Prof, Dept. EECS, IIT Bhilai
Jointly Supervised by: Proj. Brejesh Lall, Professor, Dept. EE, IIT Delhi

- Implemented Verified Boot and Measured Boot solutions for Raspberry Pi 4 Model B
- Used Trusted Platform Module (TPM 2.0) as a Hardware Root of Trust
- Patched mainline U-Boot to accommodate TPM-based firmware authentication
- Development carried out in C for U-Boot patching, TPM2-TSS SDK for TPM programming

ACADEMIC PROJECTS

E-WALLET APP | Android | Java | Python

- Developed the client side (Android app) for an E-wallet payment system.
- Designed and Implemented custom protocols for Peer to Peer (P2P) transactions and Peer to Vendor (P2V) transactions based on offline verification of QR codes that served as acknowledgement tokens