

Arnav Bansal

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Education

VIT Bhopal University

Pursuing B.tech in Computer Science and Engineering with a CGPA of 8.27
(Specialization in Cyber Security and Digital Forensics)

Madhya Pradesh
July 2021 - onwards

Puna International School

Graduated Class XII in CBSE with 82.2%

Ahmedabad
June 2021

Rachana School

Graduated Class X in CBSE Board with 85.0%

Ahmedabad
May 2019

Skills & Certifications

Technical Skills

- **Programming:** Python, C, SQL(Postgres,SQLite,Mongo,MYSQL)
- **Cybersecurity:** Network Security, Firewalls, VPNs, Active Directory, Wireshark, Nmap
- **Cloud & DevOps:** AWS, GCP, Docker,VM(VMware, HyperV)
- **Networking:** TCP/IP, DNS, DHCP, VLANs, VPNs, Subnetting, Routing
- **System Administration:** Linux (Ubuntu, Kali Linux), Windows, MacOS

Tools & Technologies: Wireshark, Metasploit, Nmap, Burp Suite, Git, Cisco Packet Tracer

Certification : Bits and Bytes of Networking (Coursera), Foundation of Cybersecurity(Google, Coursera), Manage Security Risks(Google, Coursera), Networks and Network Security(Google, Coursera)

University Projects

Vault (May - July 2024)- Encrypted File Sharing Platform (Nov 2023- May 2024) File-sharing platform that uses AES encryption to securely encrypt any file and stores it in a zip archive. The platform generates a pair of public and private keys for secure sharing and then uploads the encrypted zip file to an AWS S3 bucket, making it easily accessible for sharing

- **Technologies:** Typer, os, time, json, boto3, requests, typing_extensions, pathlib, pyperclip, enum, posixpath, Crypto (AES, PKCS1_OAEP, RSA, ECC, Padding, Hash), base64, botocore
- **Role:** Development and Operation in Python
- **Link:** <https://github.com/arnavbansal172/vault-main>

Network Vulnerability Assessment using LLM (Jan 2025 - March 2025) - Designed and implemented a hybrid network vulnerability assessment system, leveraging a fine-tuned Large Language Model (LLM) to enhance the detection and analysis of network vulnerabilities.

- **Technologies:** Python: Core language for development of the system. Scapy: Python library for packet manipulation; used for capturing and extracting network packet data.
- **Transformers:** Hugging Face library for implementing and fine-tuning the LLM.
- **PEFT (QLoRA):** Parameter-Efficient Fine-Tuning (Quantized Low-Rank Adaptation) for efficient LLM fine-tuning.
- **TinyLlama-1.1B-Chat:** The LLM fine-tuned for network vulnerability analysis.
- **Click:** Python library for creating the command-line interface (CLI).
- **Role:** Python Development: Developed the core system components, including rule engine, LLM interface, and CLI.
- **LLM Fine-tuning:** Fine-tuned the TinyLlama model using a custom dataset to specialize in vulnerability detection. **Network Security Analysis Implementation:** Integrated rule-based and LLM-based analysis for comprehensive vulnerability assessment.
- **Result:** Developed an automated solution for network vulnerability assessment, enabling efficient analysis of network traffic (PCAP files and live capture), accurate identification of vulnerabilities (SQL Injection, XSS, Buffer Overflow, DoS/DDoS, MitM), and generation of detailed reports with mitigation strategies..

Responsibilities

Technical Team Head, NULL Chapter

- planned and organized 3 CTF challenges attended by 1200+ students
- pioneered a Cybersecurity Awareness Week campaign, educating 6206 people through social media

Finance Team Head, The Fusion Club, VIT Bhopal

- implemented strategies to generate profits of over INR 25,000 per event
- managed efficient allocation of INR 6,00,000 budget at 9 events with total footfall of 2500+ student

Additional Information

Extracurricular: 2nd runner-up in KAVACH Cybersecurity Hackathon by Ministry of Education, Jul 2023

Languages: English, Hindi, Gujarati, Marathi

Hobbies: Watching Movies and TV shows and Roaming around preferred mode walking