Raj Kumar

OSCP Certified

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EDUCATION

Year	Degree/Certificate	Institute	CPI/%
2022-2024	M.Tech./Cyber Security (CSE)	Indian Institute of Technology, Kanpur	8.1/10
2018-2022	B.Tech/Computer Science & Engg.	Guru Gobind Singh Indraprastha University, Delhi	8.5/10
2018	CBSE(XII)	Colonel's Central Academy, Gurugram	89.6%
2016	CBSE(X)	Colonel's Central Academy, Gurugram	9.0/10

CERTIFICATIONS

Offensive Security Certified Professional (OSCP) (Sept'23)
- Earned the OSCP certification, demonstrating practical proficiency in penetration testing and ethical hacking
- Successfully passed an extensive hands-on exam assessing skills in exploiting various systems, including Windows, Linux, and Active Directory environments, simulating real-world application, vulnerabilities, and comprehensive system analysis

Certified Information Security Professional (CISP) (Feb'21 - May'21)
Defense Institute of Advanced Technology (DIAT)
- Attained an overall score of 77.73%, with a notable 77/100 in the final CTF exam
- Covered a comprehensive range of topics including Vulnerability Analysis, Penetration Testing, Malware Analysis, and hands-on application of various essential cybersecurity tools

MTECH THESIS

SSI-based Password-less Authentication Ecosystem | Guide: Prof. Sandeep K Shukla (April'23 - June'24)
Tech: PolygonID, NodeJS, ReactJS, React Native, Docker
- Creating a robust SSI system for social media user profiles to enhance privacy and controlled data sharing within platforms
- Designing SSI-based authentication system for streamlined user registration and login on web3 social media platforms
- Implementing verifiable credentials with custodial SSI mobile wallet app and using PolygonID for data integrity

PROJECTS

Breaking 3-XOR (Physical Unclonable Function) PUF in Operation Technology (OT) Systems | Guide: Prof. Purushottam
- Developed advanced SVM-based solvers and feature mapping to enhance the **security of OT systems** using XOR-PUFs
- Achieved **99% accuracy** in predicting XOR-PUF output despite multiple PUFs and even-odd rule for secure authentication
- Strengthened OT system security by evaluating model on 30k dataset and **mitigating** tampering and cloning risks.

DeCAPTCHA Solver and Data Dumping | Guide: Prof. Purushottam Kar
- Utilized machine learning algorithms to build a DeCAPTCHA Solver, enhancing web security by **testing CAPTCHA**
- Developed a machine learning model for character recognition, achieving **98.5% accuracy** by isolating backgrounds, reducing noise, segmenting characters, and utilizing **Logistic Regression** for precise character analysis
- Created **automation script to extract data** from a website, using a Machine Learning model to clear CAPTCHA challenges

Unified Kill Chain (UKC) Navigator Tool | Guide: Prof. Sandeep K Shukla
- Innovated within the UKC framework that aligned with its principles, enhancing cyber **attack analysis and mitigation**
- **Developed and deployed tool** for seamless upload, retrieval, and visualization of mapped cyber attack reports
- Showcased **attack-specific kill chains** for comprehensive insights and concurrent comparison of multiple reports

Healthcare Records on Private Blockchain | Guide: Prof. Angshuman Karmarkar
- Developed a Blockchain-based Smart Healthcare System utilizing **Hyperledger Fabric** and an effective user-interface, enabling seamless participation of healthcare providers, **improving data security**, and enhancing patient care coordination
- Improved patient care by enabling **secure storage**, and **access management** of health records among healthcare providers
- Developed backend using **NodeJS SDK** to establish a connection between the frontend and blockchain network

TECHNICAL SKILLS

- **Languages:** C, C++, Python, JavaScript, Bash
- **Databases:** MySQL, MongoDB
- **Pen-testing:** Active Directory, Network, Web Application, Windows and Linux Systems
- **Blockchain Tech.:** Hyperledger Fabric, Hyperledger Aries, Ethereum Blockchain
- **Web & App Technologies:** ReactJs, NodeJs, React Native, HTML & CSS

ACHIEVEMENTS AND EXTRA CURRICULAR ACTIVITIES

- Engaging in **Hack The Box** labs, learning about security through CTF-like boxes and hosting **write-ups** about my methods
- Secured **All India Rank 444 in GATE CS 2022**, about 1 lakh candidates appeared for the examination
- Developed a Telegram bot for **IIM Sirmaur students**, with a user base of **100+ active users** and continuous enhancements