



COMPUTER SCIENCE & ENGINEERING/IT DEPARTMENT

AICTE Training and Learning Academy (ATAL) Sponsored Six Day Faculty Development Program on “Cyber Security Techniques and Tools” on 25th -30th November

A six-day Faculty Development Program on Cyber Security Techniques and Tools was organized by the Department of Computer Science and Engineering at SNPIT&RC Umrakh, in collaboration with the AICTE Training and Learning Academy (ATAL), from 25th to 30th, November 2024.

The program was inaugurated on November 25th, 2024, by Coordinator Dr. Md.Salman R. Bombaywala, Co-Coordinator and Head of the CSE Department Prof. Bhavesh Patel, and Head of the Information Technology Department Prof. Vishmay Vaidhya. Assistant Professors Hemangini Patel and Jahnvi Desai from the Computer Science and Engineering Department welcomed the participants.

Dr. Md.Salman R. Bombaywala provided an overview of the entire Faculty Development Program schedule, including details about the resource persons and their areas of expertise. He also emphasized the importance of understanding security concepts in the cyber world and their practical applications.

The keynote address was delivered by the chief guest, Dr. Dhaval Jadhav, who highlighted various applications and research areas in cybersecurity. The following are some snapshots from the inauguration. The following are some snapshots from the inauguration event:



Date: 25th November 2024 - Monday - (Day 1)

Session 1

Session Expert: Dr. Vivaksha Jariwala, SCET Surat

Topic: Introduction to Security

The session 1 was delivered by Dr. Vivaksha Jariwala, SCET Surat. This session highlights the important of security in digital world. Her focus is on The dynamic nature of cyber threats requires continuous adaptation and improvement of security measures. Emerging technologies such as AI, IoT, and blockchain present new opportunities and challenges for digital security. Collaboration between governments, industries, and individuals is essential for a robust cybersecurity framework.

She mainly focuses on the age of digitalization; security has become a paramount concern. The increasing reliance on digital technologies has brought about significant benefits, such as improved efficiency, accessibility, and convenience. However, it has also introduced a range of cybersecurity challenges and threats. The following are some snapshots from the discussion session:



Article Discussion

This session conducted by Prof. Jagruti Boda from Computer Science and Engineering Department. She discussed about research paper with title “Research Trends, Challenges, and Emerging Topics in Digital Forensics” 2022 IEEE publication. The paper provides a comprehensive review of the current research trends, challenges, and emerging topics in digital forensics. It highlights the increasing sophistication of cyberattacks and the complexity of evidence acquisition, which often requires the use of multiple technologies¹. The authors performed a qualitative review of various reviews in the field to identify common problems and challenges. The primary challenges include difficulties in collecting data from devices, the cloud, and counter-analysis methods. The paper emphasizes the need for closer collaboration among researchers and practitioners across different domains of digital forensics. The following are some snapshots from the discussion session:



Session 2

Session Expert: Dr. Bhavesh N. Gohil SVNIT Surat

Topic: Security in Cloud

Session 2 was delivered by Dr. Bhavesh Gohil, SVNIT SURAT, This session highlights the basics of cloud computing, important of security in cloud computing. He give description about Cloud security involves a collection of policies, technologies, and controls designed to protect data, applications, and infrastructure in cloud environments. As organizations increasingly adopt cloud services, ensuring the security of these environments becomes crucial. He discussed on Cloud security is a shared responsibility between the cloud service provider and the customer. The provider is responsible for the security of the cloud infrastructure, while the customer must secure their data, applications and other resources within the cloud. The following are some snapshots from discussion session:



Hands on Training

Session Expert: Asst. Prof. Dhaval Patel and Asst. Prof. Kevin Prajapati, SNPIT&RC-Umrakh

In this session hands on training given by prof. Dhaval Patel and Kevin Prajapati. In this session both expert give hands on training on Anti-virus software and firewall, Two-factor Authentication, Craft strong password, Download Attachments with Care Question Legitimacy of Websites. They also discussed on Cyber security fundamentals, Basics of threats and vulnerabilities, Networking concept, Basic of web and network security. The following are some snapshots from Hands on Training session:



Date: 26th November 2024 – Tuesday –(Day 2)

Session 3

Session Expert: Dr. Vishruti Desai, CKP Surat

Topic: Memory forensic in Cyber Security

The session 3 was delivered by Dr. Vishruti Desai, CKP Surat. This session highlight the Memory forensics is the process of collecting and analyzing memory dumps from computers to investigate cybercrimes and identify the origins of malware breaches. This technique is crucial for understanding how an attack occurred and for uncovering hidden processes and network connections that may not be evident through traditional forensic methods. She discusses about how Memory forensics plays a vital role in modern cybersecurity by providing deep insights into cyberattacks and helping to develop more effective defense mechanisms. The following are some snapshots from the discussion session:



Article Discussion

This session conduct by Prof. Niyanta Panchal from Computer Science and Engineering Department. She discussed about research paper with title “A Survey on the Cyber Security of Small-to-Medium Businesses: Challenges, Research Focus and Recommendations”. The paper reviews recent research on cybersecurity for small-to- medium businesses (SMBs) and aligns it with the NIST Cyber Security Framework (CSF). It highlights that SMBs, despite being a significant part of the economy, often lack adequate cybersecurity measures, making them vulnerable to cyber-attacks. The paper identifies key challenges SMBs face in implementing effective cybersecurity and provides lack of expertise, and awareness about cybersecurity threats. This review also suggest that future research should be more balanced

and adopt quantitative approaches. It also recommends that governments and academia should incentivize research to expand the focus on SMB cybersecurity. The following are some snapshots from the discussion session:



Session 4

Session Expert: Dr. Sankita J. Patel, SVNIT-Surat

Topic: Privacy preserving techniques

Session 4 was delivered by Dr. Sankita J. Patel, SVNIT SURAT, she mainly focuses on the importance of privacy-preserving techniques in the digital age, where vast amounts of data are generated and processed. The speaker highlighted several key techniques designed to protect user data while still allowing for valuable insights and analysis like Differential Privacy (DP), Federated Learning (FL), Homomorphic Encryption (HE), Secure Multi-Party Computation (SMPC). The talk emphasized the need for these techniques to address privacy concerns in various applications, including big data analytics, recommender systems, and cloud computing. The speaker also discussed the challenges associated with implementing these techniques and the ongoing research efforts to overcome these challenges. The following are some snapshots from discussion session:



Hands on Training

Session Expert: Asst. Prof. Dhaval Patel and Asst. Prof. Kevin Prajapati,

SNPIT&RC-Umrakh

In this session hands on training given by prof. Dhaval Patel and Kevin Prajapati. In this session both expert give hands on training on Passive information gathering and Active information gathering using different tools virus total, sublist3r, Th3inspector. In this session discussed about vulnerability, exploit, threat and risk and Creating a vulnerability report and Common Vulnerabilities and Exposure (CVE) list. The following are some snapshots from Hands on Training session:



Date: 27th November 2024 – Wednesday – (Day 3)

Session 5

Session Expert: Prof. Tushar Gohil , SCET-Surat

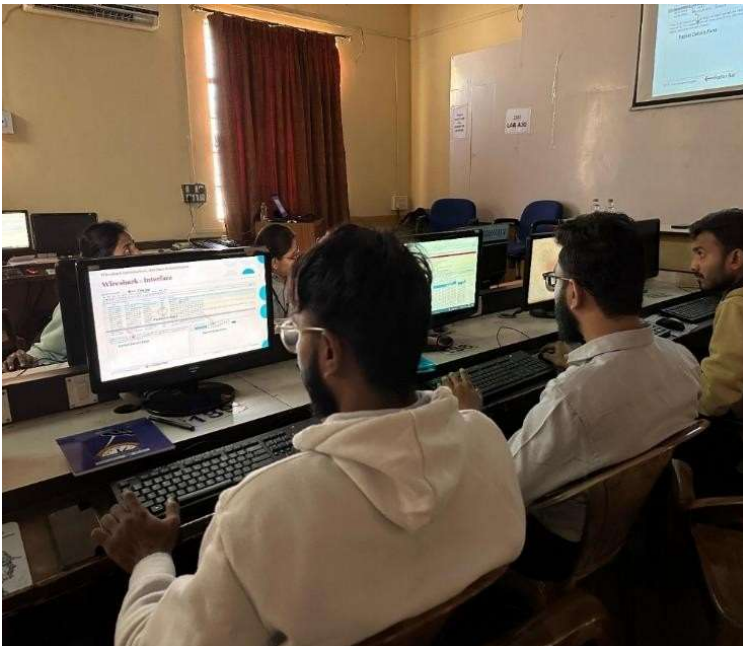
Topic: Wireshark for network packet analyzer

The Session 5th was conducted by Prof. Tushar Gohil, SCET-Surat. The expert talk focused on the powerful capabilities of Wireshark, a widely-used network protocol analyzer. Wireshark allows users to capture and interactively browse the traffic running on a computer network, making it an invaluable tool for network administrators, security professionals, and anyone involved in troubleshooting network issues. In this session he discussed about some key aspect like Capturing Network Traffic, Protocol Analysis, Filtering and Displaying Data, Troubleshooting. The following are some snapshots from discussion session:



Article Discussion

This session conducted by Prof. Jagruti Boda from Computer Science and Engineering Department. She discussed about research paper with title “Open source solution for vulnerability Assessment: A comparative analysis”. The paper provides a comprehensive comparison of various open-source tools used for vulnerability assessment. It evaluates these tools based on several criteria, including ease of use, effectiveness, and community support¹. The goal is to help organizations select the most suitable tool for their specific needs. This paper also focuses on some key features like Tool Comparison, Evaluation Criteria, Community Support. The paper aims to guide organizations in choosing the most effective open-source vulnerability assessment tool, ensuring robust cybersecurity measures. The following are some snapshots from the discussion session:



Session 6

Session Expert: Prof. Tushar Gohil , SCET-Surat

Topic: Nmap for information-gathering

Session 6th was also conducted by Prof. Tushar Gohil , SCET Surat . The expert focused on Nmap, a powerful open-source network scanning tool used for information- gathering and network discovery. Nmap, short for Network Mapper, is widely used by network administrators, security professionals, and penetration testers to map out networks and identify devices and services. He also discussed about Network Scanning, OS Detection, Scripting Engine. The expert emphasized the importance of mastering Nmap to effectively gather information and secure networks against potential threats. The following are some snapshots from discussion session:



Hands on Training

**Session Expert: Asst. Prof. Dhaval Patel and Asst. Prof. Kevin Prajapati,
SNPIT&RC-Umrakh**

In this session hands on training given by prof. Dhaval Patel and Kevin Prajapati. In this session discussed and perform hands on about vulnerability Assessment & Penetration Testing and doing Installation of BVWA/DVWA for Web pentesting. They also discussed about discussed Network Protocols - HTTP, HTTPS, NetBIOS, TCP, UDP, Scanning network using nmap tool for finding vulnerabilities, Scanning Network, Monitor network using tools – Wireshark, Netminer. They also discussed and provide training about discussed about Threats - Vulnerability Scanning, Wireless network and wi-fi security, and Wireless network and wi-fi security and also perform Wi-fi auditing using aircracking.. The following are some snapshots from Hands on Training session:



Date: 28th November 2024 – Thursday –(Day 4) Session 7

Session Expert: Prof. Bela Shah , PIT Vadodara

Topic : Machine Learning in Cyber Security

The session 7th was delivered by Prof. Bela Shah, PIT Vadodara. The expert focused on the transformative impact of machine learning (ML) in the field of cybersecurity. Machine learning, a subset of artificial intelligence, empowers systems to learn from data and make predictions or decisions without explicit programming. She also discussed about Anomaly Detection, Automated Response, Behavioral Analysis, Threat Intelligence, Integration with IDS. The expert also addressed challenges such as the need for high-quality data, the risk of adversarial attacks on ML models, and the ethical considerations of using ML in cybersecurity. The expert emphasized the importance of leveraging machine learning to enhance cybersecurity measures and stay ahead of evolving cyber threats. The following are some snapshots from discussion session:



Research Methodology

Session Expert: Dr. Yazad C. Jabbar, SNPIT&RC Umrahk Topic :

Research Methodology

This session conducted by Dr. Yazad C. Jabbar, SNPIT&RC, Umrahk. The expert focused on demystifying research methodology and providing practical insights for conducting successful research. The session covered key aspects such as identifying the right research methodology, understanding the interrelation between research design and methodology, and providing evidence to support the chosen research approach. He also discussed about Choosing the Right Methodology, Research Design and Methodology, Evidence and Validation, Comparative Analysis, Literature Review, Ethics in Research. The session aimed to equip researchers with the knowledge and skills needed to plan and execute their research projects effectively. The following are some snapshots from discussion session:



Session 8

Session Expert: Prof. Pinal Hansora, CHARUSAT

Topic : Machine Learning in Cyber Security

The session 8th was delivered by Prof. Pinal Hansora, CHARUSAT. The expert lecture delved into the transformative impact of machine learning (ML) on cybersecurity. The speaker highlighted how ML algorithms can enhance threat detection, automate responses, and improve overall security measures. The expert emphasized the importance of leveraging ML to enhance cybersecurity measures and stay ahead of evolving cyber threats. Expert focus on Securing ML Models, Data Privacy. The session underscored the dual role of ML in cybersecurity: not only must ML models be protected from threats, but they can also serve as powerful tools in identifying and mitigating cyber risks. The following are some



Hands on Training

Session Expert: Assistant Prof. Dhaval Patel and Kevin Prajapati, SNPIT&RC-Umrakh

In this session hands on training given by prof. Dhaval Patel and Kevin Prajapati. In this session discussed and perform hands on Website Enumeration and Information Gathering and perform HTML Injection, Bypassing Input Filter and Executing Command. In this session discussed and implement practically about Web Security Testing- Command Injection, Injecting User-Agent Header, Injecting Cookie Field and Redirecting, the Page Running PHP Reverse Shell with Command Execution Vulnerability, Broken Authentication-Broken Authentication via Cookie & Forgot Password Challenge. The following are some snapshots from Hands on Training session:



Date: 29th November 2024 – Friday –(Day 5) Industrial visit

Name of the Organization: Jemistry Info Solutions LLP Area of specification: Cyber Security

On 29th November 2024 the participant visited Jemistry Info Solutions LLP to gain insights into the cybersecurity industry, understand current practices, and learn about emerging trends and technologies. The visit began with a warm welcome from the host company, followed by a brief introduction to their operations. The participants were given an overview of the company's history, mission, and role in the cybersecurity landscape. Key personnel from various departments shared their expertise and experiences. The company showcased its use of advanced technologies, including Artificial Intelligence (AI), Machine Learning (ML), and Block-chain, to enhance cybersecurity measures and protect against sophisticated cyber threats. They do detailed discussions were held on the evolving threat landscape. The team highlighted common cyber threats such as ransomware, phishing attacks, and Advanced Persistent Threats (APTs), and demonstrated their strategies for mitigating these risks.

The visitors were given a tour of the Security Operations Center (SOC), where they observed real-time monitoring and incident response activities. The SOC team explained their methodologies for threat detection, analysis, and response. The company is actively involved in research and development to stay ahead of cybercriminals. They shared their latest projects and innovations aimed at enhancing cybersecurity capabilities. The industry visit provided valuable insights into the current state of cybersecurity practices, technologies, and challenges. It emphasized the need for continuous learning, collaboration, and innovation to effectively combat cyber threats. The participants gained a deeper understanding of the practical aspects of cybersecurity and the importance of staying updated with emerging trends and technologies. The following are some snapshots from industry visit:





Session 9

Session Expert: Dr. Ankit Patel, VBT MCA

Topic : Emerging Trends in Cyber Security

The session 9 was delivered by Dr. Ankit Patel VBT MCA. The expert talk highlighted several key emerging trends in cybersecurity that are shaping the industry and influencing how organizations protect their digital assets. Expert also highlight the key concept like Generative AI (GenAI), Cybersecurity Outcome-Driven Metrics, Zero Trust Security Models, AI-Enabled Attack and Défense. Supply Chain Risk Management, AI-Assisted Cybersecurity Tools, Resilience and Performance. he expert emphasized the importance of staying current with these trends to effectively manage the evolving threat landscape and protect organizational assets. These trends highlight the dynamic nature of the cybersecurity landscape and the need for continuous innovation and adaptation to protect against increasingly sophisticated threats. The following are some snapshots from discussion session:

Hands on Training

Session Expert: Asst. Prof. Dhaval Patel and Kevin Prajapati, SNPIT&RC-Umrakh

In this session hands on training given by prof. Dhaval Patel and Kevin Prajapati. In this session discussed about basics of security threats, levels of vulnerability, red team, blue team, CIA. Also discussed about different types of attacks and based on it real life case study. In this session discussed about hacking as social protest also brief discussion about DDOS attacks on government agency with real life example. In this session briefly discussion about methods of defense. In this session briefly discussion about try hack me and show hands on challenges by using tools nmap, dirbuster, nessus etc. The following are some snapshots from Hands on Training session:



Date: 29th November 2024 – Saturday –(Day 5) Session 10

Session Expert: Mr. Priyank Mistry, Accenture Solutions Pvt Ltd

Topic: Vulnerability Assessment

The session 10 was delivered by Mr. Priyank Mistry, Accenture Solutions Pvt Ltd. The expert focused on the critical role of vulnerability assessment in maintaining robust cybersecurity. Vulnerability assessment is the process of identifying, classifying, and prioritizing vulnerabilities in systems, networks, and applications to mitigate potential security risks. The talk emphasized the importance of systematically identifying vulnerabilities using automated tools and manual inspections. The expert discussed various strategies to address identified vulnerabilities, such as applying security patches, updating software, and implementing stronger access controls. The talk highlighted the importance of generating comprehensive reports to demonstrate compliance and inform stakeholders about the security posture. The expert emphasized that vulnerability assessment is a proactive approach to cybersecurity, helping organizations stay ahead of potential threats and protect their digital assets effectively. The following are some snapshots from



discussion session:

Life Skill Session

The yoga program was conducted under the life skill session as per ATAL FDP schedule to promote physical and mental well-being through the practice of yoga. Yoga is not just about physical postures. The program aimed to introduce participants to various yoga breathing techniques, and meditation practices. By integrating these life skills into daily routines, individuals can enhance their personal and professional lives, leading to greater fulfilment and well-being. Yoga serves as a powerful tool for personal growth and development, equipping individuals with the skills needed to navigate life's challenges effectively. The yoga program was successful in achieving its objectives of promoting physical and mental well-being. The following are some snapshots from Life Skill session:



Valedictory Session

The valedictory session of the Faculty Development Program (FDP) on Cyber Security Techniques and Tools was a fitting conclusion to an insightful and engaging program. The valedictory ceremony began with the lighting of the traditional lamp, symbolizing the dispelling of darkness and the pursuit of knowledge. It set the tone for an event that was both celebratory and reflective. The session included reflections on the key learnings, discussions on the future of cybersecurity, The event was attended by a total of 43 faculty members and postgraduate scholar participants.

Dr. Piyush S. Jain convener delivered an inspiring address, commending the participants for their dedication and thirst for knowledge. He underscored the critical role of faculty development in an institution's growth, academic excellence, and impact on society

Dr. Md.Salman R. Bombaywala the FDP Coordinator, highlighted the journey of the program and shared the achievements and successes. He encouraged the participants to apply the knowledge and insights gained during the FDP in their academic and professional roles. He also delivered the vote of thanks, expressing gratitude to the dignitaries, instructors, participants, speakers, and support staff for their contributions to the success of the program.

He emphasized the collective effort that made the FDP a resounding success, concluding by encouraging all to continue their pursuit of knowledge and to apply what they've learned in their academic and professional journeys. The valedictory session provided a comprehensive wrap-up of the the Faculty Development Program on “ Cyber Security Techniques and Tools”

The following are some snapshots from Valedictory session:





Compiled By: Prof. Niyanta M. Panchal