A Seminar on

Transformative Impact of Deep Learning on Cybersecurity

Activity Report

Academic Year	2024-25
Program Driven by	A Seminar on Transformative Impact of Deep Learning on Cybersecurity
Quarter	III
Program / Activity Name	Capacity Building Program
Program Type	
Program Theme	Innovation and startups
Start Date	15-02-2025
End Date	15-02-2025
Duration of the Activity (in Mins)	60
Number of Student Participant	0
Number of Faculty Participant	70
Number of external Participant	--
Expenditure Amount in Rs.	
Any Remark	--
Mode of Session Delivery	Offline
Objective	
Benefit in terms of Learning / Skills / Knowledge obtained	
Feedback	
Video url (mp4)	
Photograph 1 (jpg)	Attached
Photograph 2 (jpg)	Attached
Overall report of the Activity (pdf)	As given below

Dr. P. H. Zope
Convener IIC

Report on Expert Lecture
Title: *Transformative Impact of Deep Learning on Cybersecurity*
Date: 15th February 2025
Venue: MBA AC Seminar Hall
Speaker: Dr. Sandip S. Patil
Designation: Associate Professor, Department of Civil Engineering

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Objective:

The objective of this lecture was to provide students and faculty with a comprehensive understanding of how deep learning is reshaping the landscape of cybersecurity. The session aimed to introduce the audience to modern AI-driven defense mechanisms, highlight the real-world applications of deep learning in detecting and mitigating cyber threats, and discuss future innovations and challenges in the field.

Points Discussed:

1. **Introduction to Deep Learning in Cybersecurity:**
    - Overview of how neural networks can be applied to identify complex cyber-attack patterns and anomalies in large datasets.
2. **Key Applications:**
    - **Threat Detection & Network Intrusion Analysis**
    - **Phishing Attack Prevention**
    - **Automated Vulnerability Assessment**
    - **Behavioral Analytics for Insider Threats**
    - **Detection of Ransomware Activities**
3. **Challenges in Implementation:**
    - Issues like **adversarial attacks**, **data scarcity**, and **lack of model explainability** were highlighted as ongoing obstacles.
4. **Emerging Solutions & Research Frontiers:**
    - Introduction to **adversarial training**, **federated learning**, and other evolving strategies aimed at overcoming current limitations.
    - Future potential of integrating deep learning models with real-time adaptive cybersecurity systems.

Outcomes:

- Participants gained critical insights into the transformative role of deep learning in cybersecurity.
- Students developed a foundational understanding of how AI models can be used for securing digital infrastructure.
- Awareness was raised about the ethical and practical challenges in deploying AI-based security systems.
- Stimulated academic interest among students for research in the intersection of cybersecurity and AI.
- Enhanced cross-disciplinary learning by showcasing AI applications in traditionally non-CS domains.

Remarks:

The lecture was both thought-provoking and technically enriching. Dr. Sandip S. Patil effectively presented complex concepts in a simplified and engaging manner, making the session accessible to students from diverse academic backgrounds. The interaction during the Q&A reflected the participants' keen interest in the subject, with several attendees expressing a desire to explore deep learning further through projects and research.

Conclusion:

The expert talk successfully met its objectives by providing a platform for knowledge sharing on an emerging and highly relevant topic. It helped participants appreciate the growing significance of AI in cybersecurity and encouraged interdisciplinary thinking—an essential skill in the current technological landscape.


Capacity Building Program-2025
Transformative Impact of Deep Learning
on
Cyber Security
By
Sandip Shankarrao Patil
First Year Engineering Department


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