**5-day  SERB SPONSORED WORKSHOP**
**on**
**'AI-Powered Secure Decision-Making Based on Situational Awareness'**
**15ᵗʰ-19ᵗʰ July 2024 (Hybrid Mode)**
**Organized By**
**Department of Computer Science and Engineering**
**Dr. B. R. Ambedkar National Institute of Technology Jalandhar, Punjab, India-144008.**

**Coordinators:**
 **Dr. Rajneesh Rani, Associate Professor**
 **Dr. Urvashi, Assistant Professor**
**Dr. Shefali Arora, Assistant Professor**
**Department of CSE, Dr. B. R. Ambedkar National Institute of Technology Jalandhar, Punjab, India-144008.**

**Title:**
 AI-Powered Secure Decision-Making Based on Situational Awareness

**Duration:**
5-Day Hybrid Workshop (15 July 2024 – 19 July 2024)

**Funding agency:**
SERB

**Summary of the event:**

The workshop began with an inaugural ceremony on 15th  July at 10.00 AM and was followed with a lamp lighting ceremony. Dr.Rajneesh Rani, Head of the Department of Computer science and Engineering, welcomed Dr. Binod Kumar Kanaujia, Director , B.R. Ambedkar National Institute of Technology, Jalandhar and Resource Person Dr. Lalit Kumar Awasthi , Vice-Chancellor, Sardar Patel University,Mandi. Dr. Binod Kumar Kanaujia gave presidential address and explained the importance of Workshop in the present scenario.

**Day 1**: AI For Sustainability & Information Extraction from Social Media
The workshop commenced with an introduction to AI, led by Dr. Lalit Kumar Awasthi. He provided an overview of advancements in AI and key concepts such as regional impact , sectoral impacts, and enabling AI for the environment. An engaging group activity encouraged participants to brainstorm AI applications relevant to their fields, fostering a collaborative spirit. The next session was a hands-on on the concept of machine unlearning and comprehensive understanding of graph machine learning structures which are used to analyze social networks, extract valuable informati-on.

**Day 2**: Predictive Modelling using IoT
Day two was dedicated to Internet of things and predictive modelling, with Dr. Gaurav Singal, Netaji Subhas University of Technology, Delhi. He explained the Architecture of IoT Devices and covered the importance of IoT Security, followed by an introduction to predictive modelling using various types of ML, including supervised, unsupervised, and reinforcement learning. Participants engaged in a practical session, thus gaining hands-on experience. He also gave insights into context modeling and situational awareness based on sensor data

**Day 3:** Generative Adversarial Networks (GANs) & Adversarial attacks

The third day covered Generative Adversarial Networks (GANs). Dr. Nidhi Lal, Assistant Professor, VNIT Nagpur, introduced GAN concepts such as Generator $G(x)$ and a Discriminator $D(x)$.She provides a detailed overview of the benefits of GANs and their limitations.  This was followed by hands-on practice on the implementation of GANs. Participants learn about the usefulness of GANs networks on Image classification projects, gaining insights into Image processing challenges.

She discussed about the concept of adversarial attacks in AI systems and the use of GANs in developing secure frameworks by monitoring and mitigating such attacks, adapt to the
changing behavior of adversaries, predict unseen attack scenarios, and make decisions.

**Day 4**: Security  & Privacy enabled situational awareness

Ethics and societal impact took center stage on day four, with Dr. Shishupal kumar , Assistant Professor, IIIT Nagpur,leading the discussion. He outlined ethical principles for cybersecurity development, emphasizing fairness, accountability, transparency, and privacy.

He discussed about privacy-enabled situational-aware frameworks use of enhanced search algorithms and graph analytics to ensure data privacy while maintaining situational awareness capabilities.

**Day 5**: Predicting Modelling & AI Frontier

The final day looked ahead to future trends in AI. Dr. Geeta Sikka discussed emerging topics such as Generative AI, Large Language Model(LLM), Prompt engineering, and AI's integration in applications which involve predictive modelling. She showcased real-world applications and startup challenges which are dealing with modelling and analytics. A collaborative brainstorming activity encouraged participants to propose innovative AI projects, fostering a sense of community and forward thinking.

The workshop concluded with a valedictory session in which and all the participants were awarded workshop completion certificates.

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15 July 2024 at 11:05