राष्ट्रीय प्रौद्योगिकी संस्थान हमीरपुर
(एक राष्ट्रीय महत्व का संस्थान)
National Institute of Technology Hamirpur
(An Institute of National Importance)

GIAN
GLOBAL INITIATIVE OF ACADEMIC NETWORKS

Global Initiative on Academic Network (GIAN) course
on

Cyber-Physical System Security with Artificial Intelligence
03-15 Feb 2025 | Dept of CSE | NIT Hamirpur

Cyber-physical systems (CPS) are the base for modern infrastructures and their applications in different domains such as energy, healthcare, transportation, and manufacturing. Security and safety of such wide infrastructure is paramount for the citizens to rely on its smart services and operations. It is vital to identify and monitor critical assets, services and crucial operations of the physical systems and apply intelligence to automate the process as well as detect and profile the attacks in real-time. Machine learning and deep learning techniques have shown promising results in detecting advance threats, train and learn the system in federated environment, and handle big data generated from the physical systems (such as sensors, actuators and physical devices). Also, it is extremely important to understand the role of adversarial machine learning and how it could compromise the security of the system.

One of the key elements in understanding the complex cyber-physical systems is the system dependencies and their impact on the whole system. Also, cyber risks identification is crucial in determining the potential system weaknesses and technical vulnerabilities that could be exploited by the cyber attackers. Therefore, identifying critical assets and their protection against cyberattacks are very much required for such modern systems. Furthermore, identifying potential indicator of compromises when the system is under attack, understanding its adverse impact, and providing an appropriate incident-response are needed to build resilient future systems.

Course participants will learn these topics through lectures and hands-on experiments. Also, case studies and assignments will be shared to stimulate research motivation of participants.

Course Objectives

The primary objectives of the course are as follows:

1. Exposing participants to the fundamentals of the cyber-physical systems and AI-based applications
2. Building in confidence and capability amongst the participants in the application of the smart grid systems and relevant tools and techniques and mapping the activities and energy industry problems in terms of identifying critical assets and indicator of compromises in IT-OT scenarios
3. Providing exposure to practical problems and their solutions, through case studies and live projects in smart grid and electric vehicle scenarios
4. Enhancing the capability of the participants to identify, control and remove cyber-threats, risk management and incident responses in complex systems

Course Faculty

Dr Neetesh Saxena is an Associate Professor at Cardiff University, United Kingdom (UK). His research focuses on Cyber Security, Cyber-Physical System Security (Smart Grid, Manufacturing, EVs/CAVs etc.), Cellular Network Security, and IoT Security.

Dr Yamuna Prasad is Assistant Professor in the Department of Computer Science and Engineering, IIT Jammu, India. His research interests include intersection of artificial intelligence, optimization, soft computing, machine learning, Generative AI and Security.

Organizing Committee

Chief Patron:

Prof. H M Suryawanshi, Director, NIT Hamirpur

Patrons:

Dr. Archana Santosh Nanoty, Registrar, NIT Hamirpur

Prof. Anoop Kumar, Dean (Faculty Welfare), NIT Hamirpur

Local Coordinator, GIAN:

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Course Convener:

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Course Coordinators:

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Dr. Rajeev Kumar, Assistant Professor, Dept of Computer Science & Engineering, NIT Hamirpur

Dr. Arun Kumar Yadav, Assistant Professor, Dept of Computer Science & Engineering, NIT Hamirpur

Dr. Mohit Kumar, Assistant Professor, Dept of Computer Science & Engineering, NIT Hamirpur

About the Department

The Department of Computer Science and Engineering was established in the year 1989. The Department offers B.Tech. (CSE), M.Tech. (CSE, AI), B.Tech. and M.Tech. Dual Degree (CSE) and Ph.D. degrees. Our students graduate with more than 100% placement through campus and some of them are placed in more than one organization. The Department has well experienced and dedicated faculty members with different specializations. We have well equipped laboratories with state-of-the-art facilities like servers/workstations, desktops and mobile devices.

About the Institution

The National Institute of Technology, Hamirpur is an Institute of National Importance. The Institute offers B.Tech, M.Tech and PhD programmes in various disciplines of Engineering, Humanities and Sciences. The Institute is functioning in a vast area of above 250 acres at Anu in Hamirpur district of Himachal Pradesh and is 4 Kms from main bus stand of Hamirpur on Mandi-Jalandhar National Highway (NH-70). The city of Hamirpur is well connected with the rest of the country by road. The nearest railway station is UNA (about 85 Km) and the nearest airport is GAGGAL (Kangra) (about 85 Km).

You should attend if

- You are an engineer, faculty and researcher in areas such as Artificial Intelligence, Cyber-Physical Systems and Security
- You are a student (BTech/MTech/PhD) from reputed academic institutions and technical institutions, interested in learning AI approaches to CPS Security.

Course Fee

The participation fees for taking the course is as follows:

1. Foreign participants: US $200/-
2. Participants from Industry: INR 4,000/-
3. Faculty from Academia/ Govt. research organization: INR 1,500/-
4. Students: INR 1,000/-

The above fee includes all instructional materials, computer use for tutorials and assignments, laboratory equipment usage charges, internet facility. The participants will be provided with accommodation on payment basis as per availability.

Guidelines for Course Registration

Step-1: Fee Payment

1. Go to State Bank Collect (onlinesbi.sbi)
2. Select "Educational Institutions"
3. Select "Filter by State": Himachal Pradesh
4. Select "Educational Institution": NIT Hamirpur
5. Select "Payment category": "Workshop STC FDP Conference" and fill the details to proceed further link for payment.

Step-2 E-Registration

After the payment, fill the form for e-registration through Google form:
https://forms.gle/5WKCDtiHkaMy3mZM6

Contact Us

You may reach out to the following for any query regarding the course.

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