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**WORKSHOP ON  
DEVICE SECURITY IN INTERNET OF  
THINGS**

July 7<sup>th</sup> – 11<sup>th</sup>, 2021



Organized by  
Department of Computer Science and Engineering,  
Indian Institute of Information Technology Guwahati  
in collaboration with  
AICTE Training and Learning (ATAL) Academy,  
New-Delhi.



Venue:

On your Desktop/Laptop/Tablet/Smart Phone with Internet  
Connectivity from anywhere.

	10 – 11:30 AM		12 – 1:30 PM		2:30 - 4 PM	4:15 – 4: 45
7/07/2021	Inauguration: IoT Devices, Architecture & Security Requirements	TEA	IoT attack types, Applications, IoT Malware	Lunch	DoS attacks, IoT Botnet, Countermeasures	
8/07/2021	IoT Protocols, Vulnerabilities & Countermeasures		Device Authentication and Access Control techniques		Cloud security, NFV and Security Policies with <b>Hands-on</b>	
9/07/2021	Secure IoT and Cloud Integration, IFTTT		Secure device programming techniques		AWS, Microsoft Azure, Google Cloud with <b>Hands-on</b>	
10/07/2021	Location & User Privacy in IoT		APTs on Critical Infrastructure and Countermeasures	IoT Enterprise Security, IDS and IPS with <b>Hands-on</b>	Test	
11/07/2021	Device Security: Building Automation Systems		Wearable device security & IoT in Healthcare	Feedback	IoT Device Security: Future Trends	Valedictory

## About IIIT Guwahati

Indian Institute of Information Technology Guwahati (IIITG) is an institution of National Importance under an Act of Parliament (THE INDIAN INSTITUTES OF INFORMATION TECHNOLOGY (PUBLIC-PRIVATE PARTNERSHIP) ACT, 2017). It offers B. Tech. courses in Electronics and Communication Engineering (ECE) and Computer Science Engineering (CSE), M. Tech. courses in CSE and ECE and runs PhD programmes in ECE, CSE, Mathematics, and Humanities and Social Sciences (HSS). IIITG started operations in August 2013 with B. Tech programmes in CSE and ECE. The first batch of B. Tech. students completed their programme in May 2017. The first convocation of the Institute was held on May 15 2018. The institute has further received funding for infrastructural development and academic improvement under TEQIP III. IIITG is one of the 20 IIITs set up by the Central Govt. in PPP mode. A Bill (Act of Parliament) to declare all the PPP-IIITs (including IIITG) as Institutes of National Importance was passed by both the houses of the Indian parliament in July, 2017. In its very first year when it became eligible, IIITG has got a rank of 66 in the Engineering category of NIRF 2020. What is even more notable is that it is ranked the highest among all MHRD IIITs! This includes even the older, Govt. funded IIITs! IIITG strives to be attentive to academic needs of every student. The institute moved to its permanent campus in July, 2018. Prof. Gautam Barua former Director of IIT Guwahati is the Director of the Institute.

## About the CSE Department

The department of CSE offers B. Tech in CSE, M. Tech in CSE and PhD programs. The vision of the department is to become a center of excellence in the field of CSE. The B. Tech programme is designed to create innovators and researchers. Students are given a strong foundation in CSE that includes electronics and hardware. The B. Tech. (CSE) program at IIIT-Guwahati starts with computing oriented courses first, and allows the possibility of doing science courses later. Besides being better suited for an IT program, it also enables the possibility of students seeing newer applications and possibilities of relating IT with these subjects.

## About AICTE Training and Learning (ATAL) Academy

The main objective of ATAL Academy is to plan and help in imparting quality technical education in the country and to support technical institutions in fostering research, innovation and entrepreneurship through training in various emerging areas.

## About the Short Term Programme

With the rapid advancements in wireless technologies and embedded computing, more and more physical devices are getting connected to the Internet. The collection of such things is called Internet of Things (IoT). These devices in the IoT network are constrained in terms of energy, processing and storage and thus, the traditional computer security solutions are not applicable to these devices/systems. But, the devices are susceptible to all such attacks that are possible on a typical computer system/network. In fact the impact of such an attack increases multifold because of the criticality of IoT applications like a smart grid, or an industrial control system. More recently, the IoT network has been used to target regular computer systems, enterprises and the Internet, for example the MIRAI botnet. The constraints posed by these devices, the ubiquitous presence of the devices, and the ease of setting-up and use of such applications makes them prone to security vulnerabilities. Therefore, there is a need to understand the security requirements of IoT devices, attack surfaces and attack vectors on these devices, different types of attacks, countermeasures, etc., need to be understood to develop security solutions for these networks. This workshop aims to provide a basic understanding of all the above aspects of device security in IoT. It will provide a comprehensive understanding on the security requirements of IoT devices that will help faculty/research-students/master's and bachelor's students to also pursue application development and research in this direction.

**Who can attend:** Participation in this FDP is open to the faculty members of the AICTE approved institutions, research scholars, PG students, participants from Government and Industry (Bureaucrats and Technicians) and staff of host institutions. Registration Fees There is no Registration fee from any participant.

### Topics to be covered

- IoT device architecture, Security attacks, Vulnerabilities and security requirements.
- IoT attack types, attack surfaces, applications and IoT Malware.
- Denial of service attacks, IoT Botnets, attacks and countermeasures.
- IoT application layer protocols, vulnerabilities, attacks and countermeasures.
- IoT device authentication, user authentication and access control techniques.
- Cloud security, Network functions virtualization, security policies.
- Secure IoT – cloud integration, secure home-automation techniques like IFTTT.
- Secure device programming techniques, cloud solutions like Google cloud, Microsoft Azure, etc.
- Privacy in IoT, Advanced Persistent Threats on Critical Infrastructure, countermeasures.
- Enterprise IoT Security, Intrusion detection and prevention systems.
- IoT device security: building automation systems, wearable device security in health care.
- Research challenges: current and future research directions.

**Resource Persons:** The course content will be delivered from a pool of resource persons with expertise on the subject from industry and academic institutions. Pedagogy: PPT slides handout, online lecturing, and demonstration videos. An online test will be conducted at the end of the program. Digital certificate from AICTE ATAL Academy will be issued to those who have attended the program without any absenteeism and scored minimum 60% marks in the test.

**Registration:** Please visit <https://atalacademy.aicte-india.org/> and sign-up as a participant and select the workshop "Device Security in IoT". The number of seats are 200. The selection will be done on first-come first-serve basis.

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