ICDLAIR-2023 Special Session

Title	**Role of AI/ML in Smart IoT for industry 5.0**
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Abstract (max 200 words)	The advent of AI/ML has brought about revolutionary growth in smart Internet-of-Things (IoT) networks. Smart IoT networks sense and generate continuous data They can analyze continuous data using AI/ML methods and make decisions without human intervention. The smart IoT has applications in e-health, where family members or doctors can monitor their patients remotely. E-health also includes self-responsive systems such as smart insulin injections for patients with diabetes. Another application is in agriculture, where IoT can sense various soil conditions and automatically start irrigation or induce fertilizers in the oil. In addition to the aforementioned applications, smart IoTs also provide a strong base for Industry 5.0 as well. Industry 5.0, which includes smart robotics, is capable of providing the same functionalities as humans. The virtual functionality of each physical device can be seen in terms of digital twin. However, adapting the smart IoT and digital twin for Industry 5.0 is challenging. Some of the major challenges involved in adapting smart IoT and digital twin for Industry 5.0 involves reliable and fast responses. Hence, there is a need for optimized algorithms for Industry 5.0. capable of providing functionality to the human brain. While discussing independent battery-operated devices, we need durable systems where batteries need not be replaced frequently. There are several other challenges in upgrading smart IoTs for Industry 5.0, such as the improved and rapid decision-making capabilities of smart devices. These challenges require further investigation. Therefore, through this session we invite researchers and engineers from academia and industry to submit their recent results and innovation.
Background and Justification (max 300 words)	The Role of Artificial Intelligence (AI) and Machine Learning (ML) in the implementation of Smart Internet of Things (IoT) systems has become crucial in recent years. With the growing number of connected devices and the massive influx of data, AI and ML offer powerful capabilities for making sense of this vast amount of information and enabling smart decision-making processes.

	One key role of AI/ML in smart IoT is data analysis. By using advanced algorithms, AI/ML can automatically analyze and interpret the huge volumes of data generated by IoT devices. This allows for the identification of patterns, anomalies, and trends that can be used to derive valuable insights. AI/ML algorithms can quickly and accurately process this data, enabling real-time monitoring, predictive maintenance, and efficient resource allocation. Another important role of AI/ML is in improving device control and automation. AI/ML algorithms can learn from previous interactions and adapt to new situations, allowing IoT systems to dynamically adjust settings and parameters based on changing conditions. This capability has significant implications in various domains, such as smart homes, transportation, healthcare, and industrial automation. **Justification:** This special session offers comprehensive research of the key elements shaping the smart IoT landscape. The role of AI/ML, human-computer interaction, time series data analysis, E-health, digital twins, cognitive reasoning, and optimized machine learning algorithms, researchers and practitioners can pave the way for transformative advancements in the field of smart IoT, fostering innovation and enhancing the quality of life for individuals and societies at large. The role of AI/ML in smart IoT cannot be understated. These technologies provide a means to effectively manage and utilize the vast amounts of data generated by IoT devices, enabling real-time insights, intelligent automation, and enhanced security. As the IoT ecosystem continues to expand, AI/ML will play an increasingly vital role in shaping the future of smart IoT applications.
Topics of interest	- Human Computer Interaction - Time series data analysis in smart IoT such as automated vehicles, smart classroom, metaverse, smart agriculture - E Health, remote patient monitoring system - Digital Twins and Industry/Society 5.0 - Cognitive and Reasoning about Things and Smart Objects - Optimized machine learning algorithms for smart IoT