



[ICNet-2022] 2nd Workshop on Sustainable and Resilient Industrial Communication Networks

Scope

Traditional communication network facilitates the data communication between multiple devices and peripherals. With the evolution of devices and systems such as Internet of Things (IoT) and cyberphysical system (CPS), the characteristics of a network has undergone great changes. In order to accommodate IoT and CPS, Industrial Communication Network (ICNet) was introduced that could handle data integrity and real-time control for large installations in harsh environments. The examples of ICNet include ControlNet, Modbus, DeviceNet, Ethernet, Profinet and so on. The ICNet enables the communication between the devices and elements in an effective way. It forms a communication path among PCs, controllers, and field devices which was difficult to do with traditional communication networks. To achieve complete transparency between the enterprise networks and industrial plant as well as within the industrial plant, industrial Ethernet is used extensively which is part of industrial automation. In this regard, ICNet and industrial automation needs to go hand-in-hand for meeting the real-time operational needs. This is only possible if the information is handled in a redundant and deterministic way. The networks should be able to handle massive number of devices with the support for wide range of standards. Furthermore, the factory system should offer solutions with greater reliability, better efficiency, and faster response times. These benefits could be achieved by designing multi-protocol environment, opting for best communication technology, and urge industries to take initiative for developing interoperable protocols for a sustainable solution. Among the several challenges such as analyzing the data and monitor the activities remotely from home, thus, realizing the smart manufacturing process in the true sense, Low power requirements, smooth communication, integration of next generation networks, realizing the communication between cobots will benefit range of applications such as Private 5G, Network Slicing, Automotive industries, and industrial robotics etc. Therefore, this workshop will seek technical, empirical, and conceptual papers that could offer practical & novel solutions concerning the following topics, but not limited to:

Topics

- AI/ML/DL/FL/TL for Sustainable and Resilient Industrial Communication Networks
- Virtualization techniques (Metaverse and Digital Twin) for ICNet
- MEC framework for ICNet
- Heterogeneous OpenRAN for Industrial communication networks
- 5G/6G evolution for industrial networks
- Security and Privacy for ICNet
- Congestion control techniques in improving user experience in IoT, Cloud, Edge Computing Networks
- Quality of Service (QoS) issues such as Dynamic Resource Allocation, Spectrum Allocation, Energy Efficiency
- Futuristic paradigms for advanced use cases; adopting blockchain, quantum communication etc.
- Parameters like Interoperability, heterogeneity, and bandwidth in congested networks
- Sustainable and Resilient Zero Touch Networks for Industrial applications
- Network management using Network Slicing, SDN and NFV
- Computation offloading with advance AI frameworks
- Authentication, auditing and accountability in ICNet
- Privacy-Enhancing Cryptographic algorithms for ICNet
- Secure Federation and Orchestration of Edge Devices for Industrial applications
- Human centric Industrial communication Networks
- Knowledge transfer from humans to CoBots
- Integration of emerging technologies for Sustainable and Resilient Industrial Communication Networks

Submission Guidelines

- Submitted papers should follow the formatting indications of the main conference (<https://icdcs2022.icdcs.org/cfp/>)

Tentative Workshop Schedule

- Paper submission: Feb, 2022
- Paper acceptance notification: April 7, 2022
- Camera ready: April 21, 2022
- Workshop date: July 10, 2022

Workshop Co-chairs

- Kapal Dev , Munster Technological University, Ireland
- Luca Foschini , Università degli Studi di Bologna, Italy
- Cedric Westphal,, Futurewei Technologies, USA