



ICONIP 2023

November 20-23, 2023, Changsha, China

Invited Session Proposal for ICONIP2023

Title: Federated Learning for Industry 5.0

Description:

The industrial revolution can be regarded as a significant turning point in history that enabled various scientific and technological developments in almost all areas of human life. There has been a huge transition from Industry 1.0 which started with the rise of manufacturing, to Industry 2.0 which led to the advancements in Electricity & Communication, to Industry 3.0 which has given rise to automation, to Industry 4.0 (I4.0) can be termed as an era of Cyber-Physical Systems (CPS), to the latest trend of Industry 5.0 (I5.0) that integrates I4.0 with human intervention. Even though many manufacturers are still focused on developing CPS models for their business, the I5.0 has already started marking its impact in every domain including business, healthcare, transportation, agriculture and so on. Machine learning is a branch of Artificial Intelligence that relies on data and algorithms to mimic the way how humans learn and perceive things which will further enable better decision-making and smart action plans. Nevertheless, one of the major limitations of machine learning models is that it needs to have access to the data for training the model. As the data collected would be sensitive, especially in mission-critical applications, sharing data as such would lead to various privacy and security implications. Federated Learning (FL) is a recent advancement in Information and Communication Technology that enables the training of models with no sharing of data as such. The integration of FL with I5.0 applications can unlock greater potential in all applications, especially mission-critical ones. This special session welcomes state-of-the-art and high-quality research works describing practical and theoretical solutions on FL for I5.0 applications.

Topics include (but are not restricted to):

- FL- based security and privacy solutions for I5.0
- FL- based networking solutions for I5.0
- FL- based modelling, analysis, simulation, and verification for I5.0
- FL- based sustainable I5.0 systems

- FL- based optimized communication for I5.0
- FL- enabled edge computing for I5.0
- FL-enabled Metaverse for I5.0
- Integration of FL and blockchain for I5.0

Proposers:

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