

## CALL FOR PAPERS

### Special Issue on **Distributed Next Generation 5G Data Networks**

#### **Introduction of the special issue:**

The eminent growth in connected devices technologies, like the Internet of Things (IoT), 5<sup>th</sup> generation (5G) and beyond communication systems, lead to innovations for human beings. The uninterrupted data communication services play diverse roles in the mobile user's routine life. The various changing user group patterns are unpredictable due to the day-by-day up-gradation of user devices. Even though the existing telecommunication services have upgraded up to 5G with high performance distributed computing (HPDC) in the distributed data networks (DDN) for ultra-reliable and low latency communication (URLLC) services, yet the backend distributed database systems (DDS) are facing serious security and privacy issues due to lack of federated intelligence in the data networks. Recently, we have seen an increased focus and effort by users and policymakers toward enhancing security and privacy related to the collection and usage of the data in DDNs. When it comes to the intelligence using machine/deep learning (ML/DL) of the HPDC systems for security and privacy, enough dataset is required, which often includes personal user information to train ML/DL models. As data privacy and security represents a growing critical concern, given the above-mentioned new areas of legislation and policies, novel ML methodologies like federated learning (FL) have been developed in part to address these concerns.

The critical ingredient of FL is that it enables data scientists to train clusters of shared statistical models based on DDN devices or servers with a local dataset. It means that although data scientists use the same model to train, there is no need to upload private data to the cloud or exchange data with other data models. Compared to traditional centralized ML/DL techniques that require datasets to reside on a single server, FL reduces data security and privacy concerns by maintaining clusters of local data.

In this special issue, we seek original work addressing novel research and development challenges in the field of ML/DL/FL algorithms for intelligent clusters (ICs) of DDNs, FL algorithms to protect user privacy in DDNs, ML/DL/FL algorithms for HPDC in DDNs, Intelligent Radio Access Network data service paradigms, storage structures for data synchronization servers, optimization techniques for ICs in the field of healthcare information systems.

The editors are looking forward to recent advances in the related research area, not limited to the following topics of interest, providing a platform for researchers from both academia and industry to exchange their innovative ideas, theories, and applications.

#### **Highlights of the special issue:**

- This issue will present combined solutions for 5G Networks with Novel High Performance Distributed Computing (HPDC) Approaches
- This issue will include novel IoT Based Distributed Data Network Schemes
- Next Generation Machine Learning, Deep Learning Ideas for Distributed Data Networks will be presented in this special issue.

**Topics of Interest include, but are not limited to:**

- ML/DL/FL algorithms for 5G - DDN
- Intelligent Clusters of 5G - DDN
- Secure DDN Solutions
- Security Solutions for 5G Backbone Networks
- Software-Defined Networking for 5G - HPDC and 5G - DDNs
- Smart algorithms for activity-based user approaches
- Power-aware computing for Mobile IoT
- Adaptive Networking backbone architectures for IoT
- Authentication solutions for 5G - DDNs

**Important dates**

- **Manuscript submission deadline:** 30-July-2021
- Notification of reviews: 30-Sep-2021
- Submission of final revised paper: 30-Oct-2021
- Notification of acceptance: 30-Nov-2021
- Publications (Tentative): 31-Dec-2021

**Submission guidelines:**

Accepted papers will be published in the IEEE *Xplore* Digital Library as open access. No page charges will be requested for publications. No page limitations are set for paper submissions and publications.

Paper submission link: <https://mc03.manuscriptcentral.com/icnjournal>. The manuscript type should be selected as “Special Issue on Distributed Next Generation 5G Data Networks”.

Submission templates in LaTeX and Word available at:

<http://icn.tsinghuajournals.com/EN/column/column8081.shtml>

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