

The *ITU Journal on Future and Evolving Technologies (ITU J-FET)* is an international journal providing complete coverage of all communications and networking paradigms, free of charge for both readers and authors. The ITU Journal considers yet-to-be-published papers addressing fundamental and applied research. It shares new techniques and concepts, analyses and tutorials, as well as learnings from experiments and physical and simulated testbeds. It also discusses the implications of the latest research results for policy and regulation, legal frameworks, the economy and society. This publication builds bridges between disciplines, connects theory with application, and stimulates international dialogue. Its interdisciplinary approach reflects ITU's comprehensive field of interest and explores the convergence of ICT with other disciplines. The ITU Journal welcomes submissions at any time, and on any topic within its scope.



3<sup>rd</sup> special issue on

## **AI and machine learning solutions in 5G and future networks**

### **Call for papers**

The ITU AI/ML in 5G Challenge rallies like-minded students and professionals from around the world in solving problems at top of mind for innovators working to ensure that communication networks capitalize on new capabilities introduced by advances in Artificial Intelligence (AI) and Machine Learning (ML).

Since 2020, ITU has been hosting the challenge in order to apply ITU's ML architecture in 5G networks and provide proof of concepts for ML in 5G. Through various problem statements, participants are able to solve real world problems, based on standardized technologies developed for ML in 5G networks as well as new research questions in which solutions from participants becomes the state-of-the-art.

The third edition of the ITU AI/ML in 5G Challenge was launched in 2022 with thirteen problem statements contributed by hosts from around the world. ITU is already now launching a new call for papers based on the research related to the third edition of the Challenge. Based on solutions and results from the ITU Challenge, we are calling for papers from hosts and participants of the ITU Challenge to submit their solutions for publication in a special issue of the ITU Journal. This special issue is dedicated to the exploration of AI and ML in 5G and future networks as well as enabling technologies and tools in networks.

## Suggested topics (but not limited to):

### Application of AI/ML in future networks including 5G

- Methodologies for AI-enabled communication systems
- Network performance, optimizations and autonomy using AI/ML
- Simulators and data generation and management techniques

### ML and AI for wireless communications system design beyond 5G

- Radio resource management
- AI and ML for wireless/mobile traffic analysis and prediction
- AI and ML for network management and orchestration

### Deep learning for communication networks

- Graph Neural Networks (GNN) applied to communication networks
- Application of Deep Neural Networks (DNN) in communication networks
- Multi Modal and federated machine learning in networks

### Advances in AI for signal processing

- Multimedia and application processing using AI/ML for communications and networks
- Hybrid model-based/ML-based approaches

### Application of ML in other domains

#### Keywords

5G, beyond 5G, 6G, artificial intelligence (AI), wireless communication systems, machine learning (ML), deep learning, architecture, autonomous networks

#### Deadlines extended

Paper submission: 17 March 2023

Paper acceptance notification: 12 June 2023

Camera-ready paper submission: 3 July 2023

#### Paper submission

This special issue calls for original scientific papers. Submitted papers should not be under consideration for publication elsewhere. Submissions must be made electronically using EDAS: Editor's Assistant at <https://edas.info/N30535>. Templates and guidelines can be found at <https://www.itu.int/en/journal/j-fet/Pages/submission-guidelines.aspx>

#### Publication

Papers will be published in the ITU digital library.

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