Future and evolving technologies

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, and learnings from experiments and physical and simulated testbeds. It also discusses the implications of the latest research results for policy and regulation, legal frameworks, and 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, on any topic within its scope.



5th Special issue on

AI and machine learning solutions in 5G and future networks

Call for papers

As the digital world moves towards more complex and powerful network infrastructures, AI and ML are increasingly seen as critical enablers for improving efficiency, scalability, and performance across network layers. These technologies are instrumental in addressing the growing demands for ultra-low latency, high data rates, massive connectivity, and energy-efficient networks that 5G/6G and future networks promise.

Through the ITU AI/ML in 5G Challenge, ITU has provided a global platform for students, researchers, industry professionals, and academia to tackle real-world communication network challenges using AI/ML. Since its inception in 2020, the Challenge has successfully brought together problem statements from telecom operators, vendors, and academic institutions worldwide, contributing to the growing body of knowledge on the integration of AI/ML in network systems.

Following the successful publication of four special issues on theme of AI and ML in 5G and future networks, the ITU Journal on Future and Evolving Technologies (ITU J-FET) is launching a new call for papers focused on research related to problem statements of the fifth edition of the Challenge. This special issue invites papers that offer novel insights and solutions for using AI and ML in 5G/6G and future network systems. We welcome contributions that push the boundaries of current AI/ML applications in network design, optimization, and management.

This special issue aims to explore how AI and ML can be harnessed to revolutionize communication networks and accelerate innovation in 5G, 6G, and beyond.

Suggested topics

- Application of AI/ML in future networks, including 5G/6G
- AI-Native networks
- AI/ML in automating operations and management tasks in complex heterogeneous network environments
- AI/ML for wireless communications system design in future networks, including 5G/6G
- AI/ML for energy-efficient operations in future networks, including AI for modelling and optimization
- AI/ML solutions that optimize energy consumption and improve the environmental impact of network infrastructures.
- AI/ML for fault analysis and management in network operation and maintenance
- AI/ML for network security including Software Defined Networking (SDN)
- Advances in AI/ML for signal processing in future networks, including 5G/6G
- Application of AI/ML in resource constrained environments and other domains
- AI/ML for the verification of software and hardware in future networks, including 5G/6G
- AI/ML in support of standard comprehension, creation and use in future networks, including 5G/6G
- AI/ML techniques for resource management, traffic prediction, and network slicing in 5G and beyond.
- AI/ML in 6G Vision (Pioneering research on the role of AI/ML in shaping the development of 6G networks and future digital infrastructures).
- Trustworthiness and responsibility of applying AI/ML in future networks, including 5G/6G.



Keywords

5G, beyond 5G, 6G, artificial intelligence (AI), AI for network operations, energy efficiency, future networks wireless communication systems, machine learning (ML), deep learning.

Deadlines

Paper submission: 20 April 2025 Paper acceptance notification: 30 June 2025 Camera-ready paper submission: 31 August 2025

Paper submission

As an academic journal, submissions should emphasize the novelty or uniqueness of the solution, ensuring they contribute fresh perspectives or insights to the field. All submissions will be subjected to a stringent peer-review process, upholding the quality and pertinence of accepted narratives.

Submissions must be made electronically using <u>ScholarOne Manuscripts</u>, where templates and guidelines are also available.

Publication

Papers will be published in the ITU digital library.

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