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| **Abstract:** | The ITU Journal on Future and Evolving Technologies have published eight issues – three regular, five special issues – within slightly more than a year. Furthermore, ten calls for papers for special issues have already been announced. This document provides details. |

# 1 Introduction

The [ITU Journal on Future and Evolving Technologies](https://www.itu.int/en/journal/j-fet/Pages/default.aspx) (ITU J-FET), was launched in September 2020 and marks a new chapter in the publication of academic research. Under the leadership of the Editor-in-Chief, [Prof. Ian F. Akyildiz](https://www.itu.int/en/journal/j-fet/Pages/editorial-board.aspx) (Ken Byers Chair Professor Emeritus in Telecommunications at Georgia Tech, USA and Chief Executive Officer at Truva Inc.; h-index: 131; Citations: 131’000+), this 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 test beds. It also discusses the implications of the latest research results for policy and regulation, legal frameworks, the economy and society. Its interdisciplinary approach reflects ITU’s comprehensive field of interest and explores the convergence of ICT with other disciplines.

ITU J-FET is committed to the timely publication of very high quality, peer-reviewed, original papers. **Free, fast, for all**, the Journal aims to promote accessibility of research to academics and industry researchers across the world. The publication is free of charge for both readers and authors, highlighting the true sense of the term "open access". The international [Editorial Board](https://www.itu.int/en/journal/j-fet/Pages/editorial-board.aspx) of experts who are in the forefront of the telecommunications research world, is committed to providing detailed, constructive feedback on submitted papers, as well as a fast turn-around time of less than 3 months from submission to publication.

ITU Member States adopted a new Resolution at the ITU Plenipotentiary Conference, which convened in Dubai, United Arab Emirates, from 29 October to 16 November 2018, to support the further development of the ITU Journal. Members resolved to establish collaborative efforts with the research community and to raise awareness of the ITU Journal worldwide (Resolution 207 (Dubai, 2018)).

By December 2021, the ITU J-FET completed Volume 2 (2021) with the publication of two regular issues and a series of five special issues. A new set of special issues has been developed, with the calls for papers announced and publication anticipated for 2022.

# 2 Publication of the ITU J-FET regular issues

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Description automatically generatedThe ITU J-FET published its first issue ([Volume 1(2020), Issue 1](https://www.itu.int/pub/S-JNL-VOL1.ISSUE1)) in December 2020 which included ten original research papers that highlight emerging technologies in the field of ICT.

In April 2021, the second regular issue of the ITU J-FET was published ([Volume 2 (2021), Issue 1](https://www.itu.int/pub/S-JNL-VOL2.ISSUE1)), with eight published papers highlighting the areas of cryptocurrency, wireless sensor networks and spectrum allocation.

Both regular issues, each containing forewords from the ITU Secretary-General and the Director of the Telecommunication Standardization Bureau, as well as an Editorial from the Editor-in-Chief, are available to download from the ITU Journal website, free of charge.

The third regular issue of the ITU Journal ([Volume 2 (2021), Issue 2](https://www.itu.int/pub/S-JNL-VOL2.ISSUE2-2021)) was published in December 2021 and includes eleven research papers and a survey that provide an in-depth analysis of wireless networks and B5G communication systems.

Achieving a significant impact factor is a goal for this Journal and will derive from the relevance of journal papers to the priorities of academia, industry and governments, leading the way to new frontiers in research.

# 3 Publications of the ITU J-FET special issues

The ITU Journal publishes original research online all year round, welcoming papers at any time, on all topics within its scope (please visit the [About ITU J-FET](https://www.itu.int/en/journal/j-fet/Pages/about.aspx) webpage for detailed information) and with the aim of building bridges between disciplines, connecting theory with application, and stimulating international dialogue on the future and evolution of the digital transformation. In addition to the continuous publication of papers on subjects within the ITU Journal’s scope, in 2021, the ITU J-FET also welcomed papers related to its five special issues.

1. A picture containing diagram

   Description automatically generated**Internet of Everything**

The first published special issue of the ITU is on the [Internet of Everything](https://www.itu.int/pub/S-JNL-VOL2.ISSUE5) and explores the natural evolution of the Internet of Everything and dives below the surface to explore the fundamental questions of Internet of Everything.

Published in October 2021, the issue contains eight academic research papers, that contribute to the technological and theoretical advancement in the IoE domain and covering the main IoE research issues.

The Editorial Board of this issues includes [Giacomo Morabito,](https://www.dieei.unict.it/docenti/giacomo.morabito) University of Catania, Italy, as Leading Guest Editor; and the following Guest Editors: [Luigi Atzori](https://www.unica.it/unica/en/ateneo_s07_ss01_sss01.page?contentId=SHD30924), University of Cagliari, Italy; [Huansheng Ning](http://www.cybermatics.org/lab/HuanshengNing.html), University of Science and Technology Beijing, China; and [Joel J. P. C. Rodrigues](http://lattes.cnpq.br/5050313480683695), Federal University of Piauí (UFPI), Brazil.

1. **AI and machine learning solutions in 5G and future networks**

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Description automatically generated[AI and machine learning solutions in 5G and future networks](https://www.itu.int/pub/S-JNL-VOL2.ISSUE4) builds on the standards work of ITU including on ML architecture ([ITU Y.3172](https://www.itu.int/rec/T-REC-Y.3172/en)), data handling ([ITU Y.3174](https://www.itu.int/rec/T-REC-Y.3174/en)), intelligence level ([ITU Y.3173](https://www.itu.int/rec/T-REC-Y.3173/en)) and ML marketplace ([ITU Y.3176](https://www.itu.int/rec/T-REC-Y.3176/en)) as well as on the [ITU AI/ML in 5G Challenge](https://www.itu.int/en/ITU-T/AI/challenge/2020/Pages/default.aspx), a global competition in which 26 partners (telecom operators, vendors, and academia) hosted 23 problem statements. 1300+ participants from over 60 countries have engaged in this contest, solving real-world problems. Based on results from this Challenge in 2020, hosts and participants were encouraged to submit their solutions for publication in this special issue of the ITU Journal.

This issue contains an Editorial of the Challenge Organizers (Reinhard Scholl and Thomas Basikolo, ITU, and Vishnu Ram, Independent Researcher), and ten papers dedicated to the exploration of artificial intelligence and machine learning in 5G and future networks as well as enabling technologies and tools in networks.

This issue was completed with the support of the Challenge Organizers and leading experts as members of the Editorial Board.

Leading Guest Editor: [Chih-Lin I](https://attend.ieee.org/wieils-beijing-2019/chih-lin-i/), China Mobile Research Institute, China

Guest Editors: [Akihiro Nakao](https://www.nakao-lab.org/?page_id=55), University of Tokyo, Japan; [Aldebaro Klautau,](https://www.lasse.ufpa.br/aldebaro/) The Federal University of Pará (UFPA), Brazil; [Nuria González Prelcic](https://ece.ncsu.edu/people/ngonzal9/), North Carolina State University, USA; and [Albert Cabellos-Aparicio](https://personals.ac.upc.edu/acabello/), Technical University of Catalonia, Spain.

1. A picture containing diagram

   Description automatically generated**Wireless communication systems in beyond 5G**

Papers included in this issue explore future and evolving technologies and discuss the potential of technology evolution, addressing what key future services and applications might be needed to design novel wireless communication systems beyond 5G.

[Wireless communication systems in beyond 5G](https://www.itu.int/pub/S-JNL-VOL2.ISSUE6) considers the relationship of 5G to machine learning and artificial intelligence and provides a forward-looking perspective in this area of research.

The Editorial Board includes [Dejan Vukobratovic](https://sites.google.com/view/vukobratovic), University of Novi Sad, Serbia, as Leading Guest Editor; and the Guest Editors [Guan Gui,](http://www.scholat.com/guiguan) Nanjing University of Post and Telecommunications, China; [Güneş Karabulut Kurt](https://securewireless.io/), Istanbul Technical University, Turkey; [Haris Gačanin](http://www.ice.rwth-aachen.de/), RWTH Aachen University, Germany; [Matti Latva-aho](https://www.oulu.fi/university/researcher/matti-latva-aho), University of Oulu, Finland; and [Petar Popovski](http://petarpopovski.es.aau.dk/), Aalborg University, Denmark.

1. **Terahertz communications**

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Description automatically generatedIt is anticipated that THz band communications will enable unprecedented applications both at the macro-scale and at the nano-scale, ranging from high-speed satellite communications, ultra-high-capacity wireless fronthaul/backhaul in cellular networks, ultra-high-speed short-distance data transfer between devices, to inter/intra-chip communications and instantaneous data exchange between nano-scale devices.

This special issue will present the most recent advances with respect to the theoretical foundations and practical applications of [Terahertz communications.](https://www.itu.int/pub/S-JNL-VOL2.ISSUE7) The original research in this issue spans the topics arising from heterogenous networks and extends to aspects of wireless communications in space.

This issue will be published by the end of October with the support and contribution of the Leading Guest Editor, [Wolfgang Gerstacker](https://www.idc.tf.fau.de/person/wolfgang-gerstacker/#biography), Friedrich-Alexander University Erlangen, Germany; and the Guest Editors, [Chong Han](https://sites.ji.sjtu.edu.cn/chonghan/), Shanghai Jiao Tong University, China, and [Josep Miquel Jornet](https://unlab.tech/team_members/josep-miquel-jornet/), Northeastern University, USA.

1. Diagram

   Description automatically generated**Internet of Bio-Nano Things for health applications**

The special issue on the [Internet of Bio-Nano Things for health applications](https://www.itu.int/pub/S-JNL-VOL2.ISSUE3) comprises eight insightful papers on the most recent advances with respect to the theoretical foundations and practical implementation of IoBNT towards health applications.

This comes as Internet of Things (IoT) approaches technological maturity with growing number of applications on the market and new integrative ideas emerging to push the current boundaries of IoT and extend its application range.

The Editorial board includes [Bige Deniz Unluturk](https://sites.gatech.edu/bunluturk/), Michigan State University, USA, as Leading Guest Editor, and the Guest Editors [Murat Kuscu, Koc](https://mysite.ku.edu.tr/mkuscu/) University, Turkey; [Erin Purcell](https://reilmsu.com/), Michigan State University, USA; [Wen Li](https://www.egr.msu.edu/mems/), Michigan State University, USA; [Ulkuhan Guler,](https://icaslab.org/) Worcester Polytechnic Institute, USA; and [Nureddin Ashammakhi](https://samueli.ucla.edu/people/nureddin-ashammakhi/), University of California Los Angeles, USA.

# 4 New series of special issues announced

The ITU Journal has announced a new series of ten special issues to be published in 2022 and paper submissions are currently welcome. These issues continue to look towards exploring the areas of future technologies and with an emphasis on 6G as well as papers based on the most recent ITU AI/ML in 5G Challenge.

More information on the [Editorial Board](https://www.itu.int/en/journal/j-fet/Pages/editorial-board.aspx), [scope and topics​](https://www.itu.int/en/journal/j-fet/Pages/about.aspx)​, [publication rights and copyright​](https://www.itu.int/en/journal/j-fet/Pages/publication-rights-copyright.aspx), [submission guidelines and templates​​](https://www.itu.int/en/journal/j-fet/Pages/submission-guidelines.aspx), and [review policy](https://www.itu.int/en/journal/j-fet/Pages/review-policy.aspx) can be found online.

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| **I.** |  | The [special issue on AI-driven security in 5G and beyond](https://www.itu.int/en/journal/j-fet/2022/005/Pages/default.aspx) seeks novel contributions dealing with security issues in networking technologies in the 5G and beyond era through utilization of AI tools.  Paper submission: **10 January 2022** |
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| **II.** |  | [Towards vehicular networks in 6G era](https://www.itu.int/en/journal/j-fet/2022/001/Pages/default.aspx) calls for papers dealing with rising communication and networking technologies for vehicular networks that will be required to meet the high expectations of the 6G era.  Deadline for submissions is **31 January 2022.** |
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| **III.** |  | Based on the second ITU AI/ML in 5G Challenge, the special issue on [AI and machine learning solutions 5G and future networks](https://www.itu.int/en/journal/j-fet/2022/004/Documents/ITUJ-FET_AI-ML-5G_cfp.pdf) will present the solutions and results from the ITU Challenge.  Participants of the ITU Challenge are welcome to submit their research papers by **31 January 2022**. |
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| **IV.** |  | The special issue on [Future of networking beyond 2030](https://www.itu.int/en/journal/j-fet/2022/006/Pages/default.aspx) calls for research or survey/tutorial articles focusing on Internet technology, Internet protocol, QoS, KPI guarantee, high precision networking, lossless network, AI and ML for networking, holographic type communication, addressing and routing, and green Internet.  Deadline for submissions is **2 February 2022.** |
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| **V.** |  | This special issue will explore the evolution of beyond 5G towards 6G with the increasing integration of wireless segment and access/metro/core portions of the network as well as the growing entanglement of communications and computation.  Submissions to this issue on [Integrated and autonomous network management and control for 6G time-critical applications](https://www.itu.int/en/journal/j-fet/2022/002/Documents/ITUJ-FET_network-mgmt-control_cfp.pdf) are welcome by **2 February 2022.** |
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| **VI.** |  | This special issue solicits papers on the [Digital continuum and next generation networks](https://www.itu.int/en/journal/j-fet/2022/007/Pages/default.aspx) with an emphasis on the combination of innovative techniques with advanced system applications. Technical contributions with working implementations and practical evaluations are particularly welcome. Research work that explores new and compelling communications and networking scenarios and applications is also welcome.  Deadline for submissions is **7 February 2022.** |
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| **VII.** |  | This special issue focuses on state-of-the-art developments regarding high data rate communication among diverse devices (e.g., terahertz, millimeter wave, powerline and D2D communications, etc.) and it is dedicated to future networks as they will emerge in the new decade (e.g. beyond 5G).  Deadline for submissions to the [Emerging trends and applications in future communication networks](https://www.itu.int/en/journal/j-fet/2022/009/Pages/default.aspx) is **28 February 2022** |
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| **VIII.** |  | [Innovative network solutions for future services](https://www.itu.int/en/journal/j-fet/2022/003/Documents/ITUJ-FET_network-solutions_cfp.pdf) will highlight the characteristics needed for future networks to achieve the versatility and flexibility needed to support a wide array of envisaged services.  Submissions are welcome by **15 April 2022.** |
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| **IX.** |  | The special on [Intelligent surfaces and their applications towards wide-scale-deployment](https://www.itu.int/en/journal/j-fet/2022/008/Pages/default.aspx) is aimed at introducing the latest research and challenges in the development and deployment of intelligent surface-assisted systems, with particular emphasis on the end-to-end behaviour, in diverse fields.  Paper submission: **30 April 2022** |
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| **X.** |  | In the highly virtualized and distributed environments that characterize the landscape of 5G and 6G networks, several challenges arise related to the management and orchestration of resources, which are the target of this special issue on [Network virtualization, slicing, orchestration, fog and edge platforms for 5G and 6G wireless systems](https://www.itu.int/en/journal/j-fet/2022/010/Pages/default.aspx).  Paper submission: **25 July 2022** |

For more information on the ITU J-FET activities, please visit the ITU Journal [webpage](https://www.itu.int/en/journal/j-fet/Pages/default.aspx) or contact the ITU Journal Team at [journal@itu.int](mailto:journal@itu.int).

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