

## In this Issue:

- Future Directions Tech Forum
- Technology, Policy and Ethics
- Activities in Our Current Technical Communities
- Activities in Our Graduated Technical Communities
- IEEE Future Directions Events

## Future Directions Tech Forum



The IEEE Future Tech Forum is a series of audience-engaging roundtable discussions with a focus on leading technologies, frontline issues, crucial challenges, and societal impacts - with global subject-matter experts and thought leaders.

The Forum is brought to you by IEEE Future Directions. Fostering partnerships and conversations with Industry, Academia, and Government, the Future Tech Forum additionally showcases Future Directions initiatives.

The following topics have been or will be covered in future events within the 2021 IEEE Future Tech Forum Series: Climate Change, Digital Privacy, Digital Inclusion, Public Safety Technology, and Smart Agrofood Systems.

Be sure to visit the [Future Tech Forum page](#) regularly for more information and to register for the upcoming events.

---

## Technology, Policy and Ethics

[IEEE Future Directions Technology, Policy and Ethics](#) publishes articles addressing issues in current and future technologies, including the social and ethical considerations. We are currently seeking submissions of original content, articles of 800-1200 words on the implications of technology, including but not limited to policy and ethics topics. If interested, please email [FDPolicyEthics@ieee.org](mailto:FDPolicyEthics@ieee.org). Learn more about submitting an article through the [author guidelines](#).

## Artificial Intelligence and Tactile Healthcare for Mitigating the Impact of COVID-19

Ali Nauman, Rashid Ali (Member, IEEE), Yousaf Bin Zikria (Senior Member, IEEE), and Sung Won Kim

The COVID-19 epidemic, and the recent related waves of variant outbreaks, have had a significant impact on every field of life. One of the major impacts of COVID is the increased stress on the already exhausted healthcare system. Tactile healthcare is revolutionizing healthcare systems. The 5G and Beyond-5G (B5G) technologies are expected to enable Tactile Healthcare applications, which are time-sensitive and critical. The 5G and B5G communication networks were constructed to support high data rates on an energy-efficient platform and to provide ultra-reliability and low latency. The use of Reinforcement Learning (RL) algorithms, a type of Machine Learning (ML), can enhance the capability of 5G and B5G networks by optimizing latency and reliability in terms of data delivery. The idea of RL algorithms is to make a system capable of mimicking the human brain and enhancing its abilities. The New Radio (NR) in B5G offers flexible Medium Access Control (MAC) frame structures and scalable numerology. The efficient MAC scheduling approaches are of prime importance for wireless networks. The efficient MAC scheduling protocols and RL algorithms ultimately solve the problems of reliability and latency for Tactile Healthcare applications. This article provides an overview of how ML can improve the scheduling protocols for MAC layers, which can increase the performance of tactile healthcare applications in B5G networks, and in turn, contribute to resolving the challenges of tele-surgery in order to mitigate the impact of COVID-19 on healthcare systems. Moreover, this article provides open research issues due to NR's flexible frame structure and scalable numerology in future directions.

[Read More](#)

## **Towards the Support of 5G Networks During COVID-19**

Divya Gupta, Shruti, & Shalli Rani, *Chitkara University Institute of Engineering and Technology, Chitkara University, Punjab, India*, Shruti, *Goswami Ganesh Dutta Sanatan Dharma Dutta College, Chandigarh, India*, Syed Hassan Ahmed, *Independent Researcher, USA*

Compared to the Second World War and the 1918 Spanish flu in terms of impact on human lives and behaviors, COVID-19 is a pandemic experienced worldwide. Maintaining social distancing, wearing face masks, and staying home to quarantine are some common measures being followed to date to help control the spread of this disease. In complying with these measures, human life has taken on a new normal in which routinely in-person activities such as shopping, training, education, meetings, entertainment, etc. have fully shifted from offline to online mode. This paradigm shift has accelerated the use of digital technologies uniquely among every human. The excessive use of telecommunication technologies has put an enormous strain on both fixed and mobile networks. Existing networks often encounter various challenges due to high traffic congestion on core networks, which merely degrades its performance. Even in its early stage, the recently launched 5G network combines various features, such as enhanced mobile broadband and reliable low delay communication, to provide support for some of the challenges faced during this crisis. In addition, Artificial Intelligence (AI) features have been embedded into 5G networks to enable autonomous and intelligent telecommunication networks. The use of AI can help in dynamic resource allocation due to the ability to assign resources to different locations on-demand in real-time vs. the static resource allocation implemented in existing networks.

[Read More](#)

## **Emergence of AR and AI in Educational Institutions: A COVID-19 System Transition**

Debjit Majumder, *Indian Institute of Engineering Science & Technology, and Shibpur* and Anubhav Goswami, *CMR Institute of Technology, Bengaluru*

Humans have been subjected to pandemics for centuries. The last pandemic to have a severe hit on humans was in the 20th century. During this time, humans were barely on the brink of a major technological renaissance. Since then, a century has passed, and this race is standing again at the forefront of another severe pandemic referred to as COVID-19. Ever since the outbreak of COVID-19, people have been forced to follow isolation and social distancing mandates. Augmented Reality (AR) has evolved as a major tool to link every piece of life's puzzle during this tough time for businesses and educational institutions. A report from the AR analytics and consulting firm, Digi-Capital, predicts that by 2025, implementation of AR and virtual reality (VR) in the field of education will merely be 0.02% of the total market size of AR/VR software. This number needs to increase for the common good of everyone, and especially for the betterment of future education systems. This article attempts to shed some light on the implementation of AR in combination with Artificial Intelligence (AI) to improve online laboratory classes for students and to ensure that they will have an enhanced user experience and better practical exposure from remote locations.

[Read More](#)

## COVID-19 and the Future of Higher Education

Oyenuga Michael Oyedele, PhD and Ahungwa Agnes Iember, *Department of Marketing, Veritas University, Abuja, Nigeria*

One of the deadliest diseases of our time is the respiratory syndrome coronavirus 2 (SARS-CoV-2), which is popularly called COVID-19. This disease emanated from China in 2019 and has spread throughout the world, affecting over 200 countries. This virus is so deadly that almost every sector of the economy has been affected—sports, education, religion, politics, tourism (just to mention a few). Countries in Europe and South America (e.g., Brazil, Peru) are more negatively affected compared with their counterparts in Africa. However, many believe that if countries in Africa had adequate testing facilities, they would have recorded more fatalities compared to what is presently obtainable. As of 9 June 2021, the number of confirmed COVID-19 cases in Africa amounted to 5,009,823, which represented around 2.9 percent of the infections around the world. In the African continent, South Africa is the most affected country with more than 1.71 million infections.

[Read More](#)

---

## Activities in Our Current Technical Communities



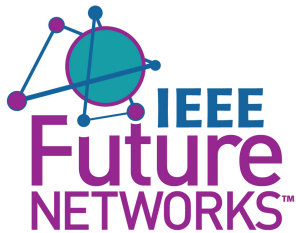
A new Blockchain Transactive Energy (BCTE) [Position Paper](#) is now available. This Position Paper describes the basic framework and principles for using blockchain technology in power and energy domains with the emerging participatory grid. A key goal is the development of the most promising global Transactive Energy use cases which can be advanced toward broader commercialization using blockchain technology.

[Visit Web Portal](#)



Throughout the pandemic, people around the world were forced to rely on digital technologies, accelerating Digital Transformation. Virtual Reality (VR) enables rich and compelling real-life simulations, making it appealing for educational and training purposes. Register for our 18 August webinar, [Learning and Training in VR: Hype and New Hope](#), where Dr. Min Hyung Choi will discuss the taxonomy of learning and training in VR/AR/MR and address core endeavors focused on feedback and adaptive training mechanisms.

[Visit Web Portal](#)



The Optics Working Group has released its [White Paper](#) for the INGR 2021 Edition; topics include Xhaul, high speed optical networks, Co-packaged optics, and others. The 2021 IEEE 5G World Forum has extended its deadline for papers and proposals through 31 August. [Submit your paper today!](#) The Energy Efficiency Working Group is presenting the next in the INGR Webinar Series, titled The Energy Challenge in Deploying 5G & Beyond, on 18 August. [Register today](#) to hear about eliminating the 5G Energy Gap. Public Safety Technology: Gaps and Opportunities is the first White Paper output of the IEEE Public Safety Technology Task Force. [Read the full White Paper.](#)

[Visit Web Portal](#)



Registration is now open for IEEE Quantum Week 2021 - the 2nd IEEE International Conference on Quantum Computing and Engineering (QCE21). IEEE Quantum Week is the leading multidisciplinary venue featuring quantum research, practice, applications, education, and training. This premier event will be held virtually on 18-22 October 2021.

[Register now to reserve your seat!](#)

[Visit Web Portal](#)

---

## Activities in Our Graduated Technical Communities



Calling all advanced degree students and early career professionals interested in building entrepreneurial skills in neurotechnology! [Application is open](#) (deadline 15 August)

for the [Cleveland NeuroDesign Entrepreneurs Workshop](#), an in-person event to be held on 24-26 September at Case Western University. Registration is free, with 2 nights of lodging and meals provided during the event for those students admitted to the program. Students are responsible for travel costs. IEEE Brain will be providing a limited number of travel grants on a needs basis for admitted IEEE members.

[Visit Web Portal](#)



IEEE Cloud Computing is now the IEEE Technical Committee on Cloud Computing. The community provides a forum for members to broaden professional contacts, facilitates information exchange, and stimulates the growth of research, education and industry in cloud computing. [Visit the IEEE TCCLD web portal to learn more.](#)

[Visit Web Portal](#)



The IEEE Security Development Conference (SecDev2021), a venue for presenting ideas, research, and experience about how to develop secure systems, is scheduled for 18-20 October. This virtual event is currently accepting submissions for papers, tutorials, practitioner submissions and posters. [Visit the SecDev2021 site](#) for more details and deadlines.

[Visit Web Portal](#)



In the next monthly webinar hosted by the IEEE IoT Initiative Activities Board, Victor Grimblatt, R&D Group Director and General Manager Synopsys, Chile, will deliver a talk titled "How to Feed a Growing Population While Conserving the Planet - IoT to the Rescue" on 11 August 2021. [Register now.](#) On 20-24 September 2021, the IEEE IoT Initiative will host a Virtual Summit focused on IoT and Tourism. [Please join us.](#)

[Visit Web Portal](#)



The [Life Sciences Technical Community](#) (LSTC) has several member and collaborating societies and aims to expand its reach through focused technical workshops and conferences at various international venues. An example outside of the annual main Life Sciences Conference (LSC) is the [IEEE Global Conference on Life Sciences and Technologies \(LifeTech\)](#), which is held annually in Japan. A

similar event was held in Taiwan. These events span the interests in life sciences of various sponsoring societies. The LSTC plans to expand its outreach through additional such events in the future.

[Visit Web Portal](#)



The 2021 International Symposium on Roadmapping Devices and Systems (ISRDS) took place on 26-27 May, featuring read-outs that preview the 2021 IRDS™ and highlights from the ICRC 2020. [Access On-Demand content](#). The [2021 Low-Power Computer Vision Challenge \(2021 LPCVC\)](#) is being offered again as a virtual competition, with submissions open on 1 August 2021. The [IEEE International Conference on Rebooting Computing \(ICRC 2021\)](#) Call for Papers deadline is 20 August 2021. The [2022 IEEE Autonomous Unmanned Aerial Vehicles \(UAV\)](#) Competition, a competition of autonomous UAVs, will be held in March 2022 at Purdue's UAV Research and Test Facility (PURT).

[Visit Web Portal](#)



Smart Grid Technical Activities Committee Calls all utilities for Participation by sharing the best practices in Smart Grid to increase the awareness for a Reliable, Resilience, Safe, Secure, Efficient, and Sustainable Smart Power Grid. For more information, [read the call for participation](#).

[Visit Web Portal](#)



Registration is open for the IEEE Smart Cities flagship event, the IEEE International Smart Cities Conference (ICS2). The virtual conference will be held 7-10 September 2021. Visit the [event site](#) to register or review the program.

[Visit Web Portal](#)



IEEE SDN now offers a collection of online courses in the field of Software Defined Networking, Network Function Virtualization, and related technologies. Learn from industry experts about topics that include the fundamentals of SDN and NFV, security and management challenges, the latest SDN open source platforms, and more. Participants also have the opportunity to earn Continuing Education Units (CEUs) and Professional Development Hours (PDHs) with each course. [Access the courses](#).

[Visit Web Portal](#)



IEEE is pleased to announce the next webinar in the Sustainability Within the Information and Communications Technology (ICT) Industry series. On 14 September 2021, Melike Erol-Kantarci, guest speaker, Canada Research Chair in AI-enabled Next-Generation Wireless Networks, and Associate Professor at the School of Electrical Engineering and Computer Science at the University of Ottawa, will share her thoughts on "The Role of AI, Communication and Transactive Energy Systems in Sustainability". [Learn more.](#)

[Visit Web Portal](#)



The IEEE Transportation Electrification Community June 2021 Newsletter is Now Available! This issue includes several articles from the Co-Editor-in-Chiefs, JinWoo Ahn and Sheldon Williamson. [View all of the articles](#), including *Regional News - News on Marine Electrification in India, The Ray, Electric Vehicles, New School Bus Offers Valuable Electrification Lessons*, and more.

[Visit Web Portal](#)

---

## IEEE Future Directions Events

- [2021 IEEE International Smart Cities Conference \(ISC2\)](#)  
7-10 September 2021, Online
- [IEEE Digital Privacy Workshop](#)  
7-8 October 2021, Online
- [2021 IEEE 5G World Forum \(5GWF'21\)](#)  
13-15 October 2021, Montreal, Canada / Online
- [2021 IEEE International Conference on Quantum Computing and Engineering \(QCE\)](#)  
18-22 October 2021, Online

---

### Subscribe to this Newsletter

Participants of current and graduated IEEE Future Directions technical communities receive this newsletter automatically. If you did not receive a copy of this newsletter directly, or you would like to learn more about a particular initiative, you can subscribe by [joining an initiative](#).

### View the Newsletter Archive

If you would like to read any of our past issues, you can [find them here](#).

### Contribute Content

If you would like to submit items to be considered for inclusion in this newsletter, please send an email to [ieeefd-digital@ieee.org](mailto:ieeefd-digital@ieee.org).

---



© 2021 IEEE– All rights reserved.

[Privacy Policy](#) | [Contact](#)