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## 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](#).

### Unmanned Aerial System Communication and Security

By Sheeba Backia Mary Baskaran, *Anna University, Chennai, India and Advisory Researcher with Motorola Mobility (Lenovo), Germany*, Andreas Kunz, *University of Siegen, Germany*, and Dr. Ali Kashif Bashir, *Department of Computing and Mathematics, Manchester Metropolitan University, UK*

Unmanned Aerial Systems (UAS) are gaining importance in defense, commercial, and civil spheres, and in addition, their integration into the airspace has recently been increasing. The UAS applications in defense planning include monitoring, securing ground troops, and precise identification and tracking of threat factors. There are various applications pertaining to commercial and civil spheres, including but not limited to remote sensing of atmosphere and ground, exploration of inaccessible terrains, search and rescue operations, the agricultural survey of crops and livestock, fire control, package delivery, etc. This article articulates the overall key services and security aspects of UAS communication.

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### The Impact of the COVID-19 Pandemic on Engineering Education

By Dr. Hazrat Ali, Senior Member IEEE, *(College of Science and Engineering, Hamad Bin Khalifa University, Qatar Foundation, Doha, Qatar)*, Dr. Zubair Shah *(College of Science and Engineering, Hamad Bin Khalifa University, Qatar Foundation, Doha, Qatar)*, Prof. Shahid Khattak *(Vice-chancellor, University of Engineering and Technology Mardan, Pakistan)*

COVID-19 has impacted almost every aspect of our lives. Our dietary patterns, work schedules, education systems, traveling habits, and just about every social norm have been

redefined. The impact of COVID-19 on the education ecosystem, in particular, is monumental. The newly implemented processes and procedures may remain in place for a while, perhaps forever. For example, the world economic forum reported that over 1.2 billion children are now without a physical classroom. This article highlights the major impacts COVID-19 has had on engineering education. Furthermore, it provides policy institutes and leaders with potential methods for mitigating the drastic effects of COVID-19, and supplies resolutions to help cope with the changing trends in engineering education.

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## Machine Learning Algorithm for COVID-19 Prediction

By Gururaj H L, Soundarya B C, and Janhavi V, *Vidyavardhaka College of Engineering, Department of Computer Science and Engineering, Gokulam III stage, Vijaynagar, Mysuru, India.*

Coronavirus (COVID-19), detected around the world, has led to confusion and massive casualties. The world needs an anonymous system that can aid in learning and addressing concerns, questions, and doubts. Such a system would help individuals to overcome present taboos in their society and encourage people to take proper action. A system which would maintain the integrity of patient data can play a significant role in solving such problems.

The world urgently needs a system that can aid in diagnosing and predicting vital parameters, therefore helping to efficiently identify and predict what type of treatment each unique patient may require. In the existing systems, processing results can be timely. An enhanced system, capable of providing results in a shorter time frame, will help those who have encountered the virus take action to prevent further spreading the infection. In addition, a system that can predict the severity of infection in different individuals would help stabilize healthcare systems, prevent medical facilities from becoming overwhelmed, and help avert supply shortages.

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## Activities in Our Current Technical Communities



Is a blockchain solution the right way to go? Learn from Dr. Hunter Albright, Co-Chair of the IEEE Blockchain Initiative, in this brand new five-module continuing education series entitled, Designing Blockchain Solutions. Learners have the opportunity to earn Continuing Education Units (CEUs) and Professional Development Hours (PDHs) with each course.

[Access the Courses.](#)

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During the IEEE Digital Reality webinar on 26 January 2022, in collaboration with IEEE Future Networks, Deepak Kataria, the Principal Solution Consultant for Ericsson, will discuss the interplay of 5G and AI/ML. This event will cover the role of AI/ML to support data-driven 5G operations to

include slice management, fault prediction, security, the interplay of AI/ML with edge computing, how AI/ML is being leveraged for O-RAN, and opportunities for autonomous network operations.

[Click here to learn more.](#)

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The [Future Networks Testbed Workshop](#), from 7-8 February, invites speakers from the wider research community to discuss topics like 6G and beyond, Internet of Things, Industry 4.0, and more. The 2022 Edition of the International Network Generations Roadmap (INGR) will be published shortly. Read the [2021 Edition](#) today to learn more about where communications networking technologies are heading.

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IEEE Quantum is bringing together experts from across the quantum computing industry for this new virtual event. Keynote speakers and invited experts will explore topics in healthcare solutions possible through the application of quantum technologies. A moderated roundtable will cap off the day of presentations. [Register now to attend the live event.](#)

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#### [IEEE Future Directions Small Projects:](#)

The Future Directions Committee has identified various technology areas that are currently in the “Small Project” phase. In this phase, each of the small projects is working towards the path of becoming an initiative in the near future. With volunteer leadership designated to each project, teams have been meeting regularly to ideate, build a framework, and rally the tech community (both internally and externally) on the respective area of focus. Visit the [Small Projects website](#) to learn more.

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## Activities in Our Graduated Technical Communities



The IEEE Brain Initiative was formed in 2015 to create a technical community to facilitate cross-disciplinary collaboration and coordination to advance research, standardization, and development of engineering and technology to improve our understanding of the brain to

treat diseases and to improve human condition. As an IEEE-wide effort, the IEEE Brain Initiative unites engineering and computing expertise across IEEE Societies and Councils relevant to neuroscience, and provides an avenue for IEEE to work with multiple constituencies in academia, industry and government to incubate and sponsor new activities, projects, and standards that facilitate bringing neurotechnology to market in an ethical and responsible manner. Visit the IEEE Brain web portal to learn more.

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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.](#)

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The IEEE Internet of Things is one of IEEE's important, multi-disciplinary, cross-platform Initiatives. The Internet of Things (IoT) is one of the most exciting technological developments in the world today and the global technical community is coalescing around the thought-leading content, resources, and collaborative opportunities provided by the IEEE IoT Initiative. Visit the IEEE Internet of Things web portal to learn more.

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The intersection of medicine, life sciences, physical sciences, and engineering is a rapidly growing field, producing benefits for humanity and offering meaningful career paths. The IEEE Life Sciences Community brings together engineers, computer scientists, life scientists, medical practitioners, and researchers to advance the application of engineering and technology to the life sciences. Visit the LSTC web portal to learn more.

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The [IEEE International Roadmap for Devices and Systems™ \(IRDS\) 2021 Edition](#) is Available. It provides a look at the future of the electronics, semiconductor, and computer industries, from application needs through



devices and systems. Register for on-demand access to the [IEEE International Conference on Rebooting Computing \(ICRC 2021\)](#), the premier venue for computing research, including algorithms and software, system and network architectures, new devices and circuits, and applications of new materials and physics. The [2022 IEEE Autonomous Unmanned Aerial Vehicles \(UAV\) Competition](#), a competition of autonomous unmanned aerial vehicles (UAV, also called drones), will be held April 2022 at Purdue's UAV Research and Test Facility (PURT).

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IEEE Smart Grid provides expertise and guidance for individuals and organizations involved in the modernization and optimization of the power grid. IEEE Smart Grid Initiative was conceptualized and led under the direction of Wanda Reder, former President of the IEEE Power & Energy Society, as a New Initiative in IEEE Future Directions Committee (FDC) in 2011. Visit the Smart Grid web portal to learn more.

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IEEE Smart Cities brings together IEEE's broad array of technical societies and organizations to advance the state of the art for smart city technologies for the benefit of society and to set the global standard in this regard by serving as a neutral broker of information amongst industry, academic, and government stakeholders. Visit the Smart Cities web portal to learn more.

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Cloud Computing, Software-Defined Networks (SDN) and Network Functions Virtualization (NFV) can be seen as different expressions of an overall transformation which is going to impact Telecommunications and ICT industries. This trend (sometimes called Softwarization or IT-zation) is going to impact several other industries, for example reducing costs by digitizing and automating processes, optimizing the usage of resources and creating new forms of cooperation/competition in the value-chains. Visit the Software Defined Networks website to learn more.

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Launched in early 2015 through the support of IEEE Future

Directions' new initiatives committee, the Sustainable ICT initiative's mission statement has been defined as to build a holistic approach to sustainability through ICT by incorporating green metrics throughout IEEE technical domains. Visit the Sustainable ICT website to learn more.

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TEC has just relaunched its [Resource Center](#). Check out the following 2021 webinar/panels now available: Modeling Power Electronics for Electric Powertrain Applications; Wireless Power Transfer – The Invisible Truth; Adaptive EMC Design for Wide Bandgap Power Converters in Aviation Applications; and Power Electronics for Precision Farming with Sustainable and Cleaner Environments. Visit the TEC web portal to learn more.

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## IEEE Future Directions Events

### Powered by AI: AI/ML in the Era of 5G and Beyond Webinar

Online | 26 January 2022

### IEEE Quantum Computing Healthcare Summit

Online | 2 February 2022

### Future Networks Testbed Requirements, Challenges and Opportunities

Online | 7-8 February 2022

### IEEE Quantum Internet Summit

Online | 22 February 2022

### IEEE Quantum Computing Summit on Climate Change

Online | 2 March 2022

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### 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](#).

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