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IEEE Future Directions Newsletter



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TAB VP Highlights Future Directions

The September 2018 issue of *The Institute* opens with [a message from Kathy Land](#), 2018 IEEE Technical Activities Vice President. While sharing highlights from the June Technical Activities Board (TAB) meeting, Kathy brings attention to the activities of IEEE Future Directions including the six active initiatives ([Rebooting Computing](#), [Symbiotic Autonomous Systems](#), [Future Networks](#), [Digital Reality](#), [Brain](#), and [Blockchain](#)), two projects (roadmaps and environmental engineering), and upcoming flagship event, [IEEE Technology Time Machine 2018](#).

To read the full article visit [The Institute](#).

Upcoming Future Directions Events

Grab your calendar to make time for upcoming IEEE Future Directions events that will prove to be enlightening and compelling while providing opportunities to network with world-renowned experts in technology, industry, and government.

[IEEE Technology Time Machine 2018 \(TTM 2018\)](#): A gathering of the foremost experts in a diverse array of disciplines, the event is a catalyst for compelling explorations and discussions of the emerging advancements and technologies significantly impacting humanity today, tomorrow, and beyond. [Register](#) by 1 October to secure a discount rate. Held **31 October - 1 November 2018 in San Diego, CA, USA**

[IEEE International Workshop on Symbiotic Autonomous Systems](#) will cover topics such as advanced interaction and self-evolving capabilities; brain-computer interfaces; human augmentation technologies; self-replication abilities. [Register](#) for this one-day event co-located with [IEEE TTM 2018](#) on **30 October 2018 in San Diego, CA, USA**

IEEE Future Directions Communities



[IEEE Brain Initiative Workshop on Advanced NeuroTechnologies](#), co-located with [IEEE TTM 2018](#), on **1-2 November 2018 in San Diego, CA, USA** will highlight the development of novel technological innovations, covering both invasive and non-invasive approaches, which provide precise and consistent therapy in a controlled and rigorous manner, track quantitatively the therapy related improvement and treat many subjects simultaneously, with multiple robots under the supervision of just one or two therapists. The workshop will also focus on translational neural engineering as well as career and entrepreneurial opportunities in this field. [Register](#) for this two-day event.

[2018 Cybersecurity Development \(SecDev\)](#) is distinguished by its focus on how to "build security in" (and not simply to discover the absence of security). Its goal is to encourage and disseminate ideas for secure system development among both academia and industry. [Register now](#) to attend **30 September-2 October 2018 in Cambridge, MA, USA**

[IEEE Symbiotic Autonomous Systems: Fostering Technology, Ethics, Public Policy, and Societal Enablers](#), co-located with [IEEE SMC 2018](#), **9 October 2018 in Miyazaki, Japan** will allow for the discussion of the implementations and implications of symbiotic autonomous systems including important factors such as socio-economic issues and public policy requirements. The workshop will focus on two main themes: Enabling Technologies and Existing Gaps and Ethical, Legal, and Societal Considerations. [Register](#).

[IEEE Rebooting Computing Week](#), held **6-9 November 2018 in Washington, D.C., USA** will reveal insights into the direction and pace of the computing evolution, providing an interdisciplinary look at what to expect next year, in five years and perhaps how to prepare for the next 20-30 years of computing. [Register](#) for this unique even on the future of computing technologies.

[IEEE International Forum on Smart Grids for Smart Cities \(SG4SC\)](#), **26-28 November in Genk, Belgium**, will be a gathering of experts from the energy, telecommunications, and computing sectors looking to address some of the challenges and opportunities of development and implementation of smart grids for the citizens of smart cities. [Register](#) before 16 October to take advantage of discount rates.

IEEE Future Directions Technology Time Machine 2018 (TTM 2018)

Early discount registration is ending soon - register now! Join us for the [2018 TTM Symposium](#) 31 October - 1 November, 2018 at the Hilton San Diego Resort & Spa, San Diego, CA. Be inspired by world renowned thought leaders and innovators from AT&T, Qualcomm, Intel, Oracle, Mozilla, and many more addressing future technological innovations impacting virtual/augmented reality, agricultural food systems, neuroscience and brain computer interfaces, entrepreneurship in tech fields and more. The social and ethical implications of these technologies on society are discussed throughout the program.



Access recent publications highlighting TTM and the future of technology that will impact your life Beyond Tomorrow:



- [Seeking Delphiâ„ Podcast Special Edition: 2018 IEEE Technology Time Machine Preview](#), Roberto Saracco, IEEE Symbiotic Autonomous Systems Initiative Chair and IEEE TTM 2018 Speaker
- [IEEE Digital Reality Podcast with Conor Russomanno](#), Director of Advanced Interfaces at Meta, Co-Founder and CEO of OpenBCI, and speaker on the 2018 TTM Mixed Reality panel.
- [IEEE Digital Reality Podcast with Kathy Grise](#), IEEE Future Directions Senior Program Director for IEEE Digital Reality Initiative and Organizing Committee Member for IEEE TTM 2018.
- [IEEE Brain Q&A with Dr. Jose Carmena](#), Chancellor's Professor of Electrical Engineering and Neuroscience and Co-Director of the Center for Neural Engineering and Prostheses (CNEP) in the Department of Electrical Engineering & Computer Sciences of the Helen Wills Neuroscience Institute at the University of California, Berkeley.

[Register now.](#)

Technology Policy and Ethics

Future Directions considers the reflection of technology through the lens of social implications a key tenet of our work as we incubate and promote technologies. We are seeking submissions of original content, short articles of 800-1200 words on the social implications of technology, including but not limited to policy and ethics topics. If interested, please email FDPolicyEthics@ieee.org.

[Deep Learning: Is it the Main Challenge Behind Autonomous Vehicles Deployment?](#)

By Fatima Hussain and Rasheed Hussain

There has been a growing interest in the field of intelligent transportation systems (ITS) to improve road safety and traffic management issues. ITS is realized through social interaction among vehicles which offers plethora of applications and services ranging from safety to information and entertainment (collectively referred to as infotainment). These applications on one hand guarantee safe driving, and on the other hand add value to our driving experience. Significant efforts have been made in the last decade by researchers from both academia and industry to realize the ITS through different communication paradigms such as vehicle to vehicle (V2V) and vehicle to infrastructure (V2I) communications. ITS uses existing communication technologies such as Dedicated Short-Range Communication (DSRC), WiFi, 4G/LTE, Bluetooth, WiMax, and so on.

[Read more.](#)

[Consumers Drive Technological Change Within Energy System Transitions](#)

By Veryan Hann

Energy systems in OECD countries are transitioning towards decentralization. This shift is due to energy policy and climate policy pressures, changing consumer preferences, and drive to decentralized generation and storage, and this transformation is also driven by technological advances such as the "internet of energy"™ of which includes smart grids. This article offers an insight into this socio-technical change from a sociological perspective; the challenges for policy makers, and the challenges for energy networks, through the lens of an Australian smart grid pilot.

[Read more.](#)

Current Activities in our Technical Communities

IEEE Big Data:

[William Hurley \(Whurley\)](#) is Chair of the IEEE Quantum Computing Working Group. In this interview, Whurley explores some of the ways quantum computing will change the world, including by analyzing large, often disparate datasets that traditional computers struggle to process. He's also involved in a new IEEE project that aims to eliminate arguably the biggest barrier to quantum computing going mainstream: the lack of industry-standard definitions about its most fundamental concepts. Read our interview with him [here](#).

IEEE Blockchain:

The fifth course in the IEEE Blockchain eLearning series, [Blockchain Governance and Human Rights](#), offers a look into how the architecture of blockchain technologies shapes governance processes and the forging and maintenance of a legal system. Participants will learn the relation between blockchain, governance, and the rule of law plus potential impacts of blockchain on the human rights of nationality and privacy. Meet your CEU and PDH requirements with this course.

IEEE Brain:

The IEEE Brain Neuroethics team held a kick-off meeting 31 August 2018 at Georgetown University. This team, comprises a neuroscientist, philosopher, ethicist, neurologist, engineer, and data scientist, will work to create an ethics document for neurotechnologies.

IEEE Cloud Computing:

Call for Blog Writers: IEEE Cloud Computing Community is a key platform for researchers, academicians and industry practitioners to share and exchange ideas regarding cloud computing technologies and services, as well as identify the emerging trends and research topics that are defining the future direction of cloud computing. The submissions should be 300-2000 words and any figures must be your own or have the ability to be used / permission granted for use. Email Tarun Kumar Sukhu at tkukhu@gmail.com with your blog post or for more information.

IEEE Cybersecurity:

Check out the [IEEE Security & Privacy Magazine](#) which provides articles with both a practical and research bent by the top thinkers in the field along with case studies, tutorials, columns, and in-depth interviews and podcasts for the information security industry.

IEEE Digital Reality:

The first episode of the new [IEEE Digital Reality Podcast Series](#) is now available. In this episode, Conor Russomanno, Director of Advanced Interfaces at Meta, and co-founder and CEO of OpenBCI, shares his views on the future of AR and VR, brain computer interfacing, some of the key challenges and opportunities that are driving the industry forward, and what keeps him up at night when it comes to the future of technology. Listen today and subscribe for future episodes.

IEEE Future Networks:

The IEEE Future Directions 5G Initiative relaunched as IEEE Future Networks, with the tagline, Enabling 5G and Beyond. The new name better reflects the multidimensional scope of contributions IEEE makes to the current 5G marketplace and the coming evolution of technologies beyond the current telecommunications generations. To learn more, read our [About page](#).

Join us at the [IEEE Workshop on 5G Technologies for Tactical and First Responder Networks](#), on Tuesday, 23 October in Laurel, MD, USA. This one day workshop is organized by the IEEE Future Networks Initiative in collaboration with The Johns Hopkins University Applied Physics Laboratory to bring together the government, industry, and academic communities to discuss the opportunities and challenges that emerging 5G technologies pose for a broad spectrum of government and first responder missions. Register for complimentary [on-site participation](#) or [livestreaming](#) of the event.

[IEEE Internet of Things:](#)

The 2019 IEEE 5th World Forum on Internet of Things (WF-IoT 2019) will be held 15-18 April 2019 and is the premier conference for the IEEE IoT Initiative, consisting of the most outstanding participants from the research community, the public sector, and industry. The theme of the conference is "IoT and the Digital Revolution" in recognition of strides and leadership that the host location of Limerick, Ireland has made in the deployment of "smart" technologies, operating principles, and policies. Visit our [website](#) to view the Call for Papers and more!

[IEEE Life Sciences:](#)

Life Sciences will hold its second annual conference 28-30 October 2018 in Montreal, Quebec, Canada. Details of the conference may be found at <https://lsc.ieee.org/2018/>

[IEEE Rebooting Computing:](#)

Registration is open for [IEEE Rebooting Computing Week 2018](#). Join us 5-9 November 2018 in Tysons, VA, USA for a full week of events as we explore the next era of computing with emphasis on all aspects of the computing stack. Events include the [3rd IEEE International Conference on Rebooting Computing \(ICRC\)](#), [Industry Summit on the Future of Computing](#), and the [Fall IRDS session](#).

IEEE Announces 2018 LPIRC-II

- Due to the large number of contestants and strong interests of sponsors, the IEEE International Low-Power Image Recognition Challenge (LPIRC) will be held again in November 2018, called LPIRC-II.
- LPIRC-II offers two tracks:
 - Track 1: Evaluates accuracy and execution time using TensorFlow models
 - Track 2: Evaluates energy consumption using the Caffe2 deep learning framework (software) running on NVIDIA Jetson TX2 (hardware)
- Visit the [website](#) to learn more.

Records from IRDS Webinars from August and September on the latest on roadmap considerations are available on irds.ieee.org.

[IEEE Smart Cities:](#)

The [IEEE Smart Cities Resource Center](#) is a database that showcases content generated by our IEEE Smart Cities experts including webinars, tutorials, technical reports, publications and presentation slides. These materials are prepared and reviewed by professionals in the field. This information does not compete with the files in IEEE *Xplore*. The material is available for download to IEEE members and the public with a majority of material being complimentary for the IEEE Smart Cities Society/Council Members.

[IEEE Smart Grid:](#)

Webinar on Demand: [Grid Modernization and Resiliency - Frameworks and Case Study](#)

Presented by: Aaron F. Snyder, Director of Grid Technology Consulting at EnerNex

[IEEE Software Defined Networks \(SDN\):](#)

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 [here](#).

[IEEE Sustainable ICT:](#)

To align closer with the IEEE Mission and the trends of the industry, the Greening through ICT Initiative has been re-branded to the "Sustainable ICT" Initiative. [Learn more](#) about the initiative and join IEEE's Sustainable ICT community.

[IEEE Symbiotic Autonomous Systems \(SAS\):](#)

Social Robotics and Symbiotic Autonomous Systems with Roberto Saracco - A Seeking Delphi™ episode: How we use robots, how we communicate and interact-and ultimately control themâ€"is critical. IEEE, ever in the forefront of maintaining standard practices and ethical approaches to technology, is directly in the fray on this one. Roberto Saracco, a noted computer scientist and educator from Turin, Italy, is co-director of the SAS initiative and is featured in a podcast episode from Seeking Delphi™. Listen to the podcast.

Read the Symbiotic Autonomous Systems eBook by Roberto Saracco on our [website](#).

[IEEE Transportation Electrification:](#)

Upcoming webinar: Vehicle Cyber Security: Where the Rubber Meets the Code
Wednesday, 17 October 2018 - 11:00am ET - 12:00pm ET
Presenter: Dr. Stacy Prowell, Chief Cyber Security Research Scientist, Oak Ridge National Laboratory
[Register now](#).

IEEE Future Directions Events and Activities

[2018 IEEE Cybersecurity Development \(SecDev\)](#), 30 September-2 October 2018, Cambridge, MA, USA

[IEEE Symbiotic Autonomous Systems: Fostering Technology, Ethics, Public Policy, and Societal Enablers](#), 9 October 2018, Miyazaki, Japan

[IEEE Future Directions Technology Time Machine 2018](#), 31 October-1 November 2018, San Diego, CA, USA

[IEEE International Workshop on Symbiotic Autonomous Systems](#), Co-located with IEEE Technology Time Machine (TTM 2018), 31 October-1 November 2018, San Diego, CA, USA

[IEEE Brain Initiative Workshop on Advanced Neurotechnologies](#), 1-2 November, San Diego, CA, USA

[IEEE Rebooting Computing Week](#), 5-9 November 2018, Tysons, VA, USA

[IEEE International Forum on Smart Grids for Smart Cities \(SG4SC\)](#), 26-28 November 2018, Genk, Belgium

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