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IEEE Future Directions Newsletter



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In This Issue:

- [IEEE Future Directions Technology Time Machine 2018 \(TTM 2018\)](#)
- [Technology Policy and Ethics](#)
- [Current Activities in our Technical Communities](#)
- [IEEE Future Directions Events](#)
- [Submission/Subscribe Information](#)

IEEE Future Directions Technology Time Machine 2018 (TTM 2018)



IEEE Future Directions recently hosted a successful Technology Time Machine symposium (TTM 2018) 31 October-1 November 2018 in San Diego, CA, USA focusing on the theme of technologies Beyond Tomorrow. The room was abuzz as panelists engaged the audience with topics including:

- An intelligent ambient that customizes the environment to each person
- The future role of human digital twins and their legal and ethical implications
- Smart materials that will significantly address energy efficiency
- Development of a prosthetic for long-term memory
- Brain computer interfaces to help enable the disabled through invasive and non-invasive measures
- Applying artificial intelligence to the food supply chain
- Blockchain for management of food safety and decreasing food waste
- Current and future Augmented Reality/Virtual Reality hardware and its applications

While these topics seem diverse, synergies and natural interdependence between the various technologies and their potential applications were evident through the panel discussions and further conversation that occurred among the attendees. A broad understanding of future technologies enables engineers to design their innovations to capture and leverage the commonalities that may exist.

The ethical impact of technology was addressed throughout the conference. Given the future advancement of technology and its impact on all humans, it is critical for engineers to consider ethical and social concerns throughout a product's entire lifecycle, from original idea through design and implementation, to insure that decisions are made with both technology and societal impacts in mind.

[Read more about TTM 2018.](#)

IEEE Future Directions Communities



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.

Smart Town Traffic Management System Using LoRa and Machine Learning Mechanism

By Seung Byum Seo and Dhananjay Singh, ReSENSE Lab Hankuk University of Foreign Studies, Global Campus - Yongin, South Korea

In this article we propose a customized Low Power Wide Area Networks (LPWAN) architecture and machine learning mechanism adaptable to a smart town's traffic management system. LoRa, also known as Long Range Wide Area Network, is a new technology used for LPWAN. This proposal focuses on a smart town, a smaller concept than a smart city, in order to detour the challenges for simulation and provide high-quality service to a small community. By integrating concepts from wireless communication, traffic theory, and machine learning, the proposed cloud platform provides a powerful traffic management model for the smart town. The proposed customized LoRa architecture is not only suitable for manageability, but also for scalability. Our goal is to develop a real-time testbed solution in order to conduct performance analysis and verification of the competency of our model in a real-world scenario.

[Read more.](#)

Current Activities in our Technical Communities

IEEE Big Data:

IEEE DataPort™ is now available for use! Go to ieee-dataport.org to be connected to this valuable one-stop shop data repository which serves the growing Big Data technical community. Contact Melissa Handa at melissa.handa@ieee.org for a coupon code to become a subscriber free of charge.

IEEE Blockchain:

IEEE Blockchain now offers a series of online [Blockchain eLearning modules](#). Courses range from an introduction to Blockchain that lays the groundwork for understanding the technology to insightful case studies and applications to the potential impact of Blockchain on the human rights of nationality and privacy. Gain an in-depth understanding of Blockchain and its social and ethical impacts, and meet your CEU and PDH requirements with each course.

IEEE Brain:

Read our latest interview with Dr. James Giordano, who chairs the IEEE Brain Neuroethics Subcommittee. Dr. Giordano is a professor of Neurology and Biochemistry at Georgetown University, and is chief of the Neuroethics Studies Program at the university's Pellegrino Center for Clinical Bioethics. He is also Senior Researcher and Task Leader for the European Union Human Brain Project's



Philosophy and Ethics Sub-Project. In this interview we explore why Dr. James Giordano believes neuroethics "bespeaks a new worldview." [Read the interview.](#)

[IEEE Cloud Computing:](#)

IEEE Cloud Computing 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. Come be part of this revolution as we invite posts for [The Clear Cloud blog](#). Topics include but are not limited to the following: cloud deployment frameworks, cloud architecture, cloud native design patterns, testing services and frameworks, and more. [Visit our website for more information.](#)

[IEEE Cybersecurity:](#)

IEEE Cybersecurity Development Conference (SecDev) is pleased to again recognize great work from the community with the IEEE Cybersecurity Award for Practice and the IEEE Cybersecurity Award for Innovation. Supported by MITRE, these awards recognize individuals and teams who have generated transformative cybersecurity capabilities and concepts, advancing the field overall via new approaches, leadership, and solutions. This year's recipient of the Award for Innovation is Allesandro Acquisti. [Read more.](#)

[IEEE Digital Reality:](#)

In our first [IEEE Talks Digital Reality Q&A](#), we spoke with Raj Tiwari, lead co-chair of the IEEE Digital Reality Initiative. Raj provided his insights on Extended Reality (XR) and its potential for changing how we live, work, learn, and share, providing information on use cases for the technology and highlighting its importance for both enterprises and individuals as we move into a new transformational era.

[IEEE Future Networks:](#)

Remain relevant and hear from our collection of hand-picked speakers through our monthly webinar series which features 40 minutes of presentation and 20 minutes of Q&A. [Check out this website](#) for our upcoming webinars, and [sign up](#) for the Technical Community to stay informed about upcoming offerings.

[IEEE Internet of Things:](#)

The *IEEE Internet of Things Magazine* (IoTM) publishes high-quality articles on IoT technology and end-to-end IoT solutions. IoTM articles are written by and for practitioners and researchers interested in practice and applications, and selected to represent the depth and breadth of the state of the art. The technical focus of IoTM is the multi-disciplinary, systems nature of IoT solutions. IoTM is a forum for practitioners to share experiences, develop best practices, and establish guiding principles for technical, operational, and business success.

The magazine is currently soliciting articles for publication. For more information [visit this website](#).

[IEEE Life Sciences:](#)

The Life Science Initiative focuses on advances in research of extreme environments and their interactions with humans and animals. Extreme environments, natural (underwater, altitude, space, geographic poles, volcanoes, desert) or forced/man-made (extreme sports, emergency and armed forces), are conditions where specific physiological changes in the living organisms are triggered to maintain physiological functionality and to ensure survival. The general research goals in these advances can be formulated to enhance human comfort, performance and survival in adverse environments. [Join the Technical Community to learn more.](#)

[IEEE Rebooting Computing:](#)

Last chance to submit solutions for the [IEEE International Low-Power Image Recognition Challenge](#) (LPIRC-II) is 30 November. 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). First prize in each track: US\$1,500, Second prize in each track: US\$500. To win a prize, a team's solution must obtain scores higher than 2018 LPIRC-I champions' scores.

[IEEE Smart Cities:](#)

The IEEE Smart Cities Newsletter is an online publication which features practical and timely technical information and forward-looking commentary on Smart Cities developments and deployments around the world. Designed to bring clarity to the global Smart Cities industry and to foster greater understanding and collaboration between diverse stakeholders, the newsletter brings together experts, thought-leaders, and decision-makers to exchange information and discuss issues affecting the evolution of the Smart Cities. [Read the latest \(October/November\) issue.](#)

[IEEE Smart Grid:](#)

Did you know you can now earn education credits through the [IEEE Smart Grid Resource Center](#)? Both continuing education unit (CEU) and professional development hour (PDH) credits are available for the webinars and tutorials presented by global smart grid experts.

Also be sure to check out the IEEE Smart Grid Webinar, "Application of Adaptive Hybrid Deep Learning for Power System State Estimation," 29 November at 1:00PM EST. [Get more information.](#)

[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.](#)

[IEEE Sustainable ICT:](#)

"A Smart and Sustainable World through ICT" White Paper summarizes the outcomes of the 1st Sustainable ICT Summit in 2017, its recommendations, and the discussions that took place in the technical, economic, social, and policy spheres. [Order the White Paper.](#) The White Paper forms the basis for the 2nd Sustainable ICT Summit, which will be held in June 2019. For more information about the summit, [visit this website.](#)

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

[A new complimentary White Paper available to SAS Technical Community Members:](#)

The aims of this White Paper are to further develop the ideas presented in the first White Paper: to highlight impacts that are clearly identifiable today, and to indicate emerging issues, thus providing a starting point to those involved in making public policy to understand the technical fundamentals, their evolution, and their potential implications. Note that this White Paper is intended to be self-contained, without requiring the reader to read the previous White Paper.

[IEEE Transportation Electrification:](#)

View the latest TEC Webinar: Vehicle Cyber Security: Where the Rubber Meets the Code.

Modern vehicles include an average of 100 million lines of code and 60 control units.

With automotive manufacturers adding an increasing array of safety, entertainment, navigation, and autonomous driving features, the potential threat vectors for vehicle cyber attacks are rapidly expanding. In this talk, Dr. Stacy Prowell, Director of the Oak Ridge National Laboratory Vehicle Security Center, will discuss the current state of security, the issues to be addressed, and some of the work being done to address these issues. [Access the webinar](#).

IEEE Future Directions Events and Activities

[2018 IEEE Big Data Governance and Metadata Management Workshop \(BDGMM\) and IEEE Brain Data Bank Hackathon](#), 10-11 December 2018, Seattle, WA, USA

[The Internet of Things Meets the Internet of Space, an IEEE IoT Vertical and Topical Summit](#), co-located with IEEE RWW2019, 20-21 January 2019, Orlando, FL, USA

[2019 IEEE Power and Energy Society Innovative Smart Grid Technologies Conference \(ISGT\)](#), 17-20 February 2019, Washington, D.C., USA

[2019 IEEE 1st Global Conference on Life Sciences and Technologies \(LifeTech\)](#), 12-14 March 2019, Osaka, Japan

[IEEE International Conference on Rebooting Computing \(ICRC\)-Digest](#), part of 2019 International Nanodevices and Computing Conference (INC), 3-5 April 2019, Grenoble, France

[2019 IEEE 5th World Forum on Internet of Things \(WF-IoT'19\)](#), 15-18 April 2019, Limerick, Ireland

[2019 IEEE Sustainability through ICT Summit \(StICT\)](#), 18-20 June 2019, Montréal, Quebec, Canada

[2019 IEEE Transportation Electrification Conference and Expo \(ITEC\)](#), 19-21 June 2019, Novi, MI, USA

[2019 IEEE Conference on Network Softwarization \(NetSoft\)](#), 24-28 June 2019, Paris, France

[AIAA/IEEE Electric Aircraft Technologies Symposium \(EATS\)](#), 20-22 August 2019, Indianapolis, IN, USA

[2019 IEEE Secure Development \(SecDev\)](#), 25-27 September, 2019, McLean, VA, USA

[2019 IEEE 5G World Forum \(5GWF'19\)](#), 30 September - 2 October 2019, Dresden, Germany

Submission/Subscribe Information

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