



# IEEE Rochester Section

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April 2021 Newsletter

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## Message from the Chair

Dear Colleagues,

IEEE Region 1 held two virtual Board of Governors meetings in February and March. The sessions focused on common challenges faced and solutions implemented by Sections in 2020. There was ample discussion of multi-Section collaboration on and cross-promotion of virtual and hybrid events. This mindset shift at the Regional level promises to bring additional technical content and events to Rochester IEEE members in their areas of interest and provide a broader audience for presenters at Rochester Section events.

The 2021 STRATUS Conference will be held virtually from May 17-19 (<http://stratus-conference.com/>).

The next IEEE Rochester Section virtual ExCom meeting will be on Star Wars Day, May the 4th, from noon until 1 pm via WebEx (vTools# 255223).

Stay healthy, and best regards,

*Eric T. Brown*



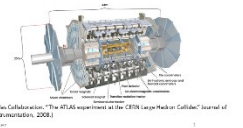
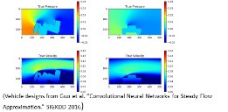
## February 9<sup>th</sup> Signal Processing Talk: CNNs with Point Cloud Data

On February 9<sup>th</sup>, Dr. Miguel Dominguez presented his work on using Convolutional Neural Networks (CNNs), a standard tool in classification and segmentation problems for computer vision to process point cloud data. CNNs are usually based several assumptions that exploit the structure of images and

array data. Recently there has been interest in adapting these networks to point cloud analysis for 3D understanding, which has applications in self driving cars and robotics (via LIDAR sensors), 3D graphics, and computer-aided design. In this talk, Dr. Dominguez reviewed previous work that attempted to map the functionality of CNNs to point clouds, but either simplified the convolutional structures or added a large amount of computational overhead. He showed how to give point cloud networks the same modeling capability as traditional CNNs while placing downward pressure on the overhead. He used two approaches: Graph-CNNs and Hard Directional Graph Networks, and applied these networks to standard point cloud vision benchmarks as well as segmentation of Large Hadron Collider data and Computational Fluid Dynamics simulation. Finally, he showed that his work resulted in codes that outperformed competing baselines.

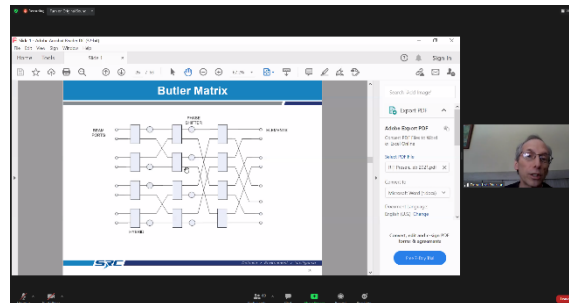
Where are Point Clouds?

- LiDAR sensors
- 3D graphics
- Physics/Engineering simulations
- Sensor Arrays (Large Hadron Collider)



## February 19<sup>th</sup> MTT/AP Talk: Phase Array Antennas

On February 19<sup>th</sup>, the Microwave Theory and Techniques and Antennas and Propagation chapters sponsored a talk on Phased Array Antennas for Radar Applications. The speaker, Donald McPherson, is a senior IEEE member. He has more than 30 years of experience in RF, microwave and antenna engineering from 400 MHz to 94 GHz. He has contributed to numerous phased array radars including an S-Band multi mission radar, an L-Band counter mortar radar and a UHF foliage penetration radar. About 60 people joined this meeting.



## STRATUS 2021 – Registration Open, and 2<sup>nd</sup> Keynote Speaker

Early registration for this great conference is now open – until April 16<sup>th</sup>. Registration is \$50, and students may register for free. Visit the site at [stratus-conference.com](http://stratus-conference.com) to register and to get conference details.

The STRATUS conference previously announced that Peter Webley, Geophysical Institute, University of Alaska Fairbanks. STRATUS has now announced another keynote speaker for 2021.

Ken Stewart, President and CEO of NUAIR, is responsible for setting the overall vision and product strategy for the organization. Mr. Stewart is an experienced industry veteran in wireless telecommunications and cloud-based software market with a specialization in building Enterprise SaaS, Federated digital marketplaces and platforms. Prior to joining NUAIR Mr. Stewart served as the CEO of AiRXOS, a GE aviation company, where he led innovation, development and commercialization of Unmanned Traffic Management services. After beginning his career in engineering and management positions at IBM and GTE, Stewart served as an executive with several venture capital and private equity-backed companies commercializing and scaling pre-revenue start-ups and transforming organizations for growth.



## IEEE Rochester Section Events

Please check the events to ensure they are as scheduled below. Visit [events.vtools.ieee.org/m/vtools#](http://events.vtools.ieee.org/m/vtools#) for details about any of these events.

Event	Vtools #	When	Where
<u>EXCOM Meeting</u>	255223	April 6 <sup>th</sup> , 11:50 – 13:00	Via Webex
<u>EXCOM Meeting</u>	255224	May 4 <sup>th</sup> , 11:50 – 13:00	Via Webex
<u>STRATUS – GeoHazards and Extreme Events</u>		May 17 <sup>th</sup> – May 19 <sup>th</sup>	Now <b>On-line only</b>