

Summer Newsletter

June 2020

Welcome Message from Editor and Team!

We welcome you to the first edition of IEEE Newsletter, Toronto section. By launching this newsletter, we intend to cover IEEE achievements and success stories specific to the Toronto area. We want to highlight and introduce various IEEE leaders in technical, research, social and ethical paradigms.

In this newsletter, you'll also find about what's been happening in Toronto. To keep you informed and updated, we have decided to do a newsletter once a quarter.

In every issue there will be a "Come Share your story with us!" article of an IEEE member, in order to portrait and acknowledge member' achievements. There will also be a blog / short article to highlight current research and development in various fields. You will also find the latest happenings and events under the IEEE Toronto umbrella.

If you have any questions, suggestions, or concerns, please address them to the editor; Fatima Hussain at fatima.hussain@ieee.org. We hope to hear from you, and we welcome your feedback!

Meet Our Distinguished IEEE Members

Dr. Ali Nabavi ,Chair IEEE Toronto Section

I am happy that after a pause in our newsletter, this is the first IEEE Toronto Section newsletter in my term as the Section Chair. I extend my appreciation to the newsletter team, especially the editor, Fatima, who worked tirelessly during Covid-19 to bring this newsletter to life again. Our newsletter has improved dramatically in terms of quality and accessibility, and I invite you to explore it and send your feedback to the newsletter team in order to better meet your needs.

I want to also extend my gratitude to all the volunteers at Toronto Section who dedicate their time and efforts to provide high-quality events for our members.

IEEE is my second family.

Looking Back at my IEEE Journey!

I first became involved in IEEE 1992 as a graduate student member at University of Toronto. My first volunteer position was in 1998 as a student branch counselor. In 2008, I joined IEEE Toronto section as a Vice-chair, AESS Chapter, and become the AESS Chair in 2011. In 2014, I moved to the IAS/PELS joint Chapter as the Chair. In 2016, 2018, and 2020 I joined to the Section officers as a secretary, Vice-Chair, and Chair. Since 1992, I have been a member of the PES, IAS, PELS, AESS, and CE technical societies. This experience at IEEE has shown me that there is a role and position available for everyone, and this organization has a lot to offer its members.

My vision for the Toronto section is to increase the value of IEEE membership by providing high quality service to our members in Toronto and to increase membership (all levels). I welcome you to send your ideas and requests in order to achieve these goals. IEEE Toronto Section is your home and I welcome any proposal which allows it to grow and flourish based on your needs.

The Distinguished Members section is a new addition to the newsletter, and I was asked to be the first contributor. This section is open to all of you and I encourage any IEEE member in Toronto section to contribute to future newsletters.

Together we can make great changes.

What's New!

IEEE Student Scholarships

The IEEE Toronto Section supports the education and training of undergraduate engineering students through a series of scholarships. The scholarships are available to students in the colleges and universities that are affiliated with the IEEE Toronto Section.

Key Dates:

Application Deadline: August 15th , 2020

Award winners are contacted: September, 2020

Award Distribution: IEEE Toronto Annual General Meeting in Nov. 2020 (winners must attend in person)

The scholarship seeks to encourage students to strive for both academic and real-world design excellence, and also to encourage students to reflect on the goals and impact of the engineering profession. The selection criteria emphasize your vision for the engineering profession, how you are preparing for the technical challenges of the profession, and also how you perceive the social implications of engineering. Due to low

word-count limit in these questions, you should focus on the aspects that are most important to you.

Eligible Institutions in for 2020 (based on the good standing of the IEEE Student Branches):

- University of Toronto (2 x \$2000 scholarships), including the Bruno D. Stefano Scholarship
- Ryerson University (2 x \$2000 scholarships), including the Wallas Khella Scholarship
- York (1 x \$1000)
- UOIT (1 X \$1000)
- Humber (1x\$1000)
- Centennial (1x\$1000)
- Seneca (1 x \$1000)

More information for the application: <https://forms.gle/FHLjisczdYHjBbav7>

New Positions in IEEE Toronto!

New Positions



Vijay Sood
Chair
LM Committee



Melanie Soliven
Webmaster



Fatima Hussain
Newsletter



**Alireza Sharif-
Bakhtiar**
Chair
Solid-State Circuits



**Mostafa
Mahfouz**
Chair
PLES Chapter

Members Benefit!

Various benefits are available for IEEE members and details can be found under:

<https://www.ieee.org/membership/benefits/index.html?byCareerPhase=All&byCountry=CA>

Most prominent benefits are:

[Dell Member Purchase Program](#)

IEEE members in Canada can take advantage of several Dell Member Purchase Program benefits.

[IEEE Canada](#)

<https://www.ieee.ca/en/2019/12/16/member-benefit-ups-discounts/>

COVID-19, A Game Changer

(Editor's Note)

Fatima Hussain

At the time of writing this article, 4 million cases are reported for the novel Coronavirus (COVID-19), with 300K casualties and almost 2 million recovered, around the globe. COVID-19 has badly affected our daily lives; however, we anticipate wider impact in the longer run.

COVID-19 has not only shaken the healthcare systems, but has also paralyzed the work norms due to both 'work from home' and 'no work' norms. COVID-19 does not seem to be just a health threat, as we struggle to work remotely and try to sustain our jobs while managing our personal and social lives. We also expect a major shift in social, economic, financial and technological paradigms as the aftershocks of COVID-19.

Furthermore, we anticipate a major shift in enterprise culture and work ethics in the future. During this COVID-19 crisis, industries and enterprises have modified and adjusted their operations to run virtually. Industries have invested finances and efforts to get technology working for innovative ways of collaborative operations and efficient virtual communications, with added cyber security measures in place. After all these successful adjustments for virtual connectivity, industries might question the need of a physical infrastructure. Since we have experimented with virtual businesses successfully, physical infrastructure might seem to be a luxury and industries might want to completely transform to a virtual setup.

This shift in mindset is not only anticipated at the enterprise level but can also be seen at the institutional level, daily shopping, and entertainment etc. Sudden transformation is seen in educational institutions to online teaching. There is an increased demand for online shopping more than ever to maintain social distancing. This transformation requires strong and reliable communication infrastructure, in addition to virtual private networks, devices and software, and thus putting technology under trial. This also leads to increase in demand of cloud

infrastructure services, internet services and communications equipment. As these services are important for seamless connectivity and efficient utilization of virtual services.

<https://www.worldometers.info/coronavirus/> (Accessed on May 18, 2020)

IEEE Computational Intelligence Society

Bruno Di Stefano

The IEEE Standards Association (IEEE-SA) is an 100 year old organization within IEEE, that develops global standards in the range of industries within the IEEE sphere of interest. The IEEE Computational Intelligence Society (IEEE CIS) is a young society and was born in 2002 and acquired the current name in 2004. The mission of IEEE CIS is: “Advancing nature-inspired computational paradigms in science and engineering” (e.g., Neural Networks, Fuzzy Systems, and Evolutionary Computation, Cognitive and Developmental Systems, Adaptive Dynamic Programming, Reinforcement Learning, Bioinformatics & Bioengineering, etc.). Twelve Technical Activities committees run the conferences, journals, magazines, and related peer-review process of the society. The IEEE CIS Standards Committee supports the technical committees by developing technical standards, i.e., “guidelines, best practices and procedures aimed at optimizing the reliability of the materials, products, design methods, and services that people, scientists and engineers use every day.”

The Standards Committee of the IEEE CIS has brought to completion two standards: IEEE 1855-2016 (IEEE Standard for Fuzzy Markup Language (FML)) and IEEE 1849-2016 (IEEE Standard for eXtensible Event Stream (XES) for Achieving Interoperability in Event Logs and Event Streams). IEEE 1855-2016 “allows modelling a fuzzy logic system in a human-readable and hardware independent way. FML is based on eXtensible Markup Language (XML).

The designers of fuzzy systems with FML have a unified and high-level methodology for describing interoperable fuzzy systems.” All of this is vendor independent and designers can use for each phase the tool they deem the most appropriate for that phase. This documentation helps also when documenting for legal reasons the design done (i.e. patents, safety certifications, etc).

IEEE 1855-2016 has proven to be very successful with the research community: Google Scholar returns more than 100 scientific, peer-reviewed articles mentioning IEEE 1855-2016 and work conducted in adherence to the standard.

IEEE 1849-2016 provides “a language to transport, store, and exchange (possibly large volumes of) event data (e.g., for process mining)”. “Process mining aims to discover, monitor and improve processes by extracting knowledge from event logs representing actual process

executions in a given setting. Process mining depends on the availability of accurate and unambiguous event logs, according to established standards.” IEEE 1849-2016 provides a “format for the interchange of event data between information systems in many application domains on the one hand and analysis tools for such data on the other hand”.

The IEEE CIS Standards Committee also deals with Computational Intelligence Data Sets, that is duly and properly validated reference data to be used to validate and compare algorithms. A well known data set is the MNIST data set of handwritten digits, a “large database of handwritten digits that is commonly used for training various image processing systems”. This allows testing new algorithms and comparing the relative performance of new and existing algorithms. The IEEE CIS Standards Committee also works on such datasets.

About Author!

Bruno Di Stefano is a professional engineer (Electronics) (PEO member), LSMIEEE, FEIC, FEC. He is an active member (Standards Committee) of IEEE Computational Intelligence Society(CIS) and also a Member At Large of The IEEE Toronto Section Executive. From 1980 to 2012, he held an active professional engineering license. Since January 1, 2013, he no longer offers engineering services to the public. Bruno Di Stefano conducts research in some of his areas of interest & expertise and manages Nuptek Systems Ltd., the company of which he is president since 1981.

Get Involved with Us!

IEEE Toronto section is looking forward to hearing from you. your contributions are welcome to this monthly newsletter. We invite our members to share and submit:

- Short Story (about IEEE members, WIE members)
- News items and Affinity group reports
- Technical Articles/Blogs (Brief discussions of cutting edge research, new technological tools, topics of your choice)

Submission

Articles should be submitted in Word format. Word count for News items, Affinity group reports is 50 to 200 words and for blogs/ articles is 500 to 800 words.

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