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La revue canadienne de l'IEEE
Fall / Automne 2015 | No. 74

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La revue canadienne de l'IEEE

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To inform Canadian members of IEEE on issues related to the impacts of technology, and its role in supporting economic development and societal benefits within Canada. To foster growth in the size and quality of Canada's pool of technology professionals to serve our increasingly knowledge-based economy.

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2014-2015
IEEE Canada President and Region 7 Director

Two years, two hundred meetings—it seems—and about two terabytes of e-mails ago, I had the honour of beginning my term as President of IEEE Canada and Region 7 Director. And while I perhaps exaggerate my travel schedule and correspondence, I cannot give thanks enough for the unique opportunity I have had to serve you our members, building on the success of my predecessors. It has been an immensely rewarding experience. There are many acknowledgements to make, but first let me recap the highlights of the Region's activities since my last report to you.

In early May, Canadian Atlantic Section did a fantastic job in hosting the 28th IEEE Canadian Conference on Electrical and Computer Engineering (CCECE) in Halifax. The conference organizers achieved a perfect balance in developing the oceanic theme while maintaining the traditional breadth in the 10 symposia. As promised, for the first time the Awards Ceremony of IEEE Canada (held every year in conjunction with CCECE) was hosted by a professional Master of Ceremony. It was a memorable night for all.

The IEEE International Humanitarian Technology Conference (IHTC) was also held early June in Ottawa with a program that included exciting keynote and panel sessions. Through the conference, IEEE is increasingly seen by Canadian decision makers and influencers as a potential partnership builder with donors, universities and front-line delivery organizations; many thanks to Ottawa Section for expanding the scope of this important outreach event.

The 2015 IEEE Electrical Power and Energy Conference (EPEC) definitely closed our region's conference offerings this year on a high note. Expertly hosted by London Section in late October, it set a new record for patronage of this event with a program seamlessly integrating industry and utility perspectives. Its theme was "Smarter

Il y a de cela deux ans, j'avais l'honneur d'amorcer mon mandat de président d'IEEE Canada et de directeur de la région 7. J'ai l'impression d'avoir assisté dans cet intervalle à quelque 200 réunions et géré environ 2 téraoctets de courriels. Même si j'exagère sûrement l'ampleur de mes déplacements et de ma correspondance, je ne serai jamais assez redevable pour cette occasion unique qui m'a été donnée de tous vous servir, vous – nos membres –, en partant des exploits de mes prédécesseurs. L'expérience a été immensément gratifiante. J'ai beaucoup de remerciements à adresser, mais auparavant, laissez-moi récapituler les faits saillants des activités régionales depuis mon dernier rapport.

Au début mai, la section du Canada atlantique a organisé avec brio le 28e Congrès canadien en génie électrique et informatique (CCGEI) à Halifax. Les organisateurs ont atteint un équilibre parfait entre le développement du thème océanique et le maintien de la diversité traditionnelle entre les dix symposiums. Comme promis, la cérémonie annuelle de remise de prix d'IEEE Canada (qui se tient conjointement avec le CCGEI) a été pour la première fois animée par un professionnel. La soirée a été mémorable pour tous.

Avait lieu au début du mois suivant, à Ottawa, la Conférence internationale de la technologie humanitaire de l'IEEE, avec un programme d'allocutions et de tables rondes des plus passionnants. Cette conférence a contribué à ce que les décideurs et les personnes d'influence au Canada considèrent de plus en plus l'IEEE comme un possible bâtisseur de partenariats avec les donateurs, les universités et les organisations prestataires de services de première ligne. Un grand merci à la section d'Ottawa pour avoir accru la portée de cet important événement.

La Conférence sur l'énergie électrique de l'IEEE 2015 a sans contredit conclu en beauté l'offre de cette année pour notre région. Organisée de main de maître par la section de London fin octobre, elle a battu un nouveau record

Contents / matières

Resilient Power Systems." Numerous examples featured the kinds of innovation that Canada and the rest of the world will need to foster in order to meet our energy and climate challenges.

London was also the site of our Fall IEEE Canada Board meeting. Amongst numerous achievements announced, one was the 2015 IEEE/TELUS Student Innovation Challenge, held this fall in Vancouver. Student teams pitched their ideas, with some selected to attend an innovation bootcamp. Prototypes are expected to be presented at an event in the spring. We are most grateful to TELUS for its generous support of $25,000 for the Challenge; our congrats to the Challenge committee. And from IEEE Canada's History Committee came the good news a plaque will be dedicated in Ottawa's Beechwood National Military Cemetery to honour General A.G.L. McNaughton, namesake of IEEE Canada's highest achievement medal.

In November, a one-day entrepreneurship summit called IEEE N3XT was piloted in Toronto. The summit brings together tech startups, investors and service providers. Kudos to Toronto Section Young Professionals for its role in this highly successful new initiative.

Throughout the calendar year, IEEE Canada volunteers host hundreds of ongoing smaller, more targeted events. Local chapters organize workshops and seminars specifically for industry practitioners, as well as events for broader audiences including academia and students. Our Young Professionals group, Women in Engineering group, Life Members group and Student Activities Committee organize various workshops and meetings throughout the year for our members. Our Teacher In-Service Program, Industry Relations and other committees reach out beyond our organization to make us more relevant. I often hear great feedback from our members about these events.

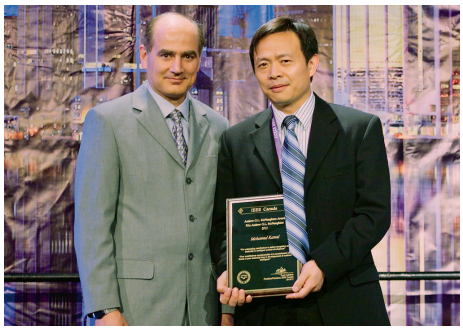


Photo: Martin Jardine

CCECE 2015 General Chair Jason Gu receives McNaughton Award from IEEE Canada President Amir Aghdam on behalf of recipient Mohamed Kamel.

Le président général de CCGEI 2015, Jason Gu, reçoit le prix McNaughton des mains du président d'IEEE Canada, Amir Aghdam, au nom du récipiendaire, Mohamed Kamel.

IEEE Canada's publications/communication team plays no small role in the success of our region. Many of you may have noticed that we now have a redesigned website. Content from the old design is being continually reformatted into the new, with transition expected to be fully completed within about a year. Our *Canadian Journal of Electrical and Computer Engineering* (*CJECE*) is increasingly seen by prominent Canadian and international researchers as a highly desirable outlet for their work. Its second issue of this year was the largest issue ever published (outside of a double issue) with 14 papers! The *IEEE Canadian Review* recently achieved a "first" with posting of its previous-issue profile of IEEE Canada's Young Professionals to that affinity group's global Facebook page. The IEEE Canada Newsletter brings us all the updates on our major conferences and other activities, the vital work of the IEEE Canadian Foundation, and the achievements of individual members. Supporting all of this is the critical work of IEEE Canada's translation and advertising/publicity committees.

For all of the above, I would like to thank the hundreds of our volunteers and our external contractors, who contribute to so many events and activities of IEEE Canada, only some of which have been mentioned.

There were several goals I had in seeking to become IEEE Canada President. One was

Photo: Glenn McKnight

IHTC 2015 General Chair Maria Rey (far right) and Amir Aghdam pose with Reem Alanqar, one of three UOttawa students participating in a panel competition.

La présidente générale du Congrès international sur la technologie humanitaire 2015, Maria Rey (à droite), et Amir Aghdam posent avec Reem Alangar, l'une des trois étudiant(e)s de l'Université d'Ottawa à avoir participé à un concours oratoire.

de commanditaires en présentant un programme où se mariaient les perspectives des services publics et de l'industrie. La Conférence, qui avait pour thème « Smarter Resilient Power Systems, » a fourni de nombreux exemples d'innovations que le Canada et le reste du monde devront favoriser pour relever nos défis énergétiques et climatiques.

C'est également à London qu'a eu lieu la rencontre automnale du conseil d'administration d'IEEE Canada. Parmi les nombreuses réalisations annoncées figurait le concours d'innovation étudiante IEEE/TELUS 2015, tenu cet automne à Vancouver, qui invitait des équipes d'étudiants à soumettre leurs idées d'innovation. Les équipes retenues avaient ensuite l'occasion de suivre un atelier intensif, puis les prototypes produits seront normalement présentés au printemps prochain dans le cadre d'un événement. Merci à TELUS pour son généreux soutien de 25 000 $ et au comité du concours pour son travail. Par ailleurs, le comité d'histoire d'IEEE Canada nous réservait une bonne nouvelle : en effet, une plaque sera installée au cimetière militaire national Beechwood pour rendre hommage au général A.G.L. McNaughton, en l'honneur de qui est nommée la médaille pour réalisations exceptionnelles d'IEEE Canada.

Un sommet entrepreneurial d'une journée, IEEE N3XT, a rassemblé nouvelles entreprises de haute technologie, investisseurs et fournisseurs de services à Toronto en novembre. Félicitations à la section Jeunes professionnels de Toronto pour son rôle dans cette initiative grandement réussie.

Pendant toute l'année, les bénévoles d'IEEE Canada donnent vie à des centaines d'activités ciblées de plus petite échelle. Les sections locales organisent des ateliers et des séminaires à l'intention des professionnels de l'industrie ainsi que des événements de portée plus large incluant universitaires et étudiants. Nos groupes de jeunes professionnels, de femmes en génie et de membres à vie, de même que notre comité des activités étudiantes, proposent à nos membres divers ateliers et rencontres tout au long de l'année. Notre programme de formation en cours d'emploi pour le personnel enseignant et nos comités de relations industrielles assurent aussi, parmi d'autres, notre rayonnement. Je reçois fréquemment des commentaires élogieux de nos membres à leur sujet.

L'équipe des publications et des communications d'IEEE Canada joue un rôle crucial dans la réussite de nos activités régionales. Beaucoup d'entre vous ont dû remarquer que nous avons modernisé notre site Web. Le contenu de l'ancien site est continuellement retravaillé pour alimenter le nouveau, et la transition devrait être terminée d'ici un an. Notre Revue canadienne de génie électrique et informatique est de plus en plus prisée par d'éminents chercheurs canadiens et internationaux pour la diffusion de leurs travaux. Avec 14 articles, le deuxième numéro de la Revue cette année a été le plus volumineux de son histoire (en dehors d'un numéro double). La Revue canadienne de l'IEEE a dernièrement réalisé une « première » en affichant sur la page Facebook de ce groupe d'affinités les profils de jeunes professionnels d'IEEE Canada parus dans son édition précédente. Le Bulletin d'IEEE Canada diffuse les dernières nouvelles sur nos principales conférences et activités, le travail essentiel de la Fondation canadienne de l'IEEE et les réussites de nos membres. Les comités de traduction et de publicité d'IEEE Canada appuient diligemment tous ces efforts.

Pour tout ce qui précède, je tiens à remercier les centaines de bénévoles et nos fournisseurs externes qui contribuent aux innombrables événements et activités d'IEEE Canada; il y en a bien davantage que ceux mentionnés ci-dessus.

to restructure the management of our conferences so volunteers could spend more of their limited time in creating value for attendees. Through countless hours of discussions of the IEEE Canada Conference Advisory Committee, we now have a signed three-year contract for use of a single Paper Management System, which will also provide more consistency in registration fees. As part of this restructuring, the newly created IEEE Canada Conference Editorial Board will oversee the review process of conference papers.

Another priority of mine was increasing the nomination of Region 7 members for election to Fellow grade. A total of 28 Fellows have been elevated from our region over the last two years—a very strong showing relative to our size. Congratulations to all. Our Section Chairs have been very proactive in member elevation to both Senior and Fellow grades, with resounding success.

Photo: Hessam Jouybari

EPEC 2015 General Chair Maike Luiken presents Amir Aghdam with gift of appreciation at closing of conference.

La présidente générale de la Conférence sur l'énergie électrique 2015, Maike Luiken, remet à Amir Aghdam un cadeau en guise d'appréciation à la clôture de la conférence.

I also saw the need to better serve members in Windsor area. Due to tightened border security, many found attending events in Detroit increasingly challenging. With IEEE approval granted in November 2014, the newly created Windsor Section got off to a quick start, rapidly creating new Chapters and Affinity Groups. I am very proud to announce it will be hosting CCECE 2017. The process of establishing the need for a Section in Windsor also helped develop collaborative ties at the Regional level between IEEE Canada and volunteers in Region 4 (Michigan and adjacent states).

A fourth initiative I undertook was advocating for strong federal government funding of engineering and computer science. In support of possible broader IEEE Canada activity, several senior volunteers have expressed interest in reviewing the government relations efforts of IEEE USA to see what approaches may be applicable in this country.

Photo: Esrafil Jedari

IEEE Windsor Section inaugural meeting, February 5, 2015.

Réunion inaugurale de la section de Windsor de l'IEEE, 5 février 2015.

A President cannot hope to lead effectively without the full backing of the entire organization. I am most thankful to the IEEE Canada Board of Directors, members of the steering committee, members of the executive committee, and committee chairs for the support and guidance they have given me. I was also fortunate to have been "passed the torch" by Keith Brown, under whose capable stewardship our region enjoyed numerous successes.

A special note of gratitude from us all to Cathie Lowell. Serving as IEEE Canada's Administrator for 23 years, she will retire from most of her duties in the New Year. The scope of her responsibilities was vast. Answering to the needs of Sections coast-to-coast and hundreds of committee members, no request went unanswered — whether from an IEEE Canada President or a new member. In her calm, efficient manner she has played a vital role in coordinating the vast amount of information exchange necessary for so many of our activities, as well as managing their logistics. Thank-you Cathie.

In January, we welcome Dr. Witold Kinsner from the University of Manitoba as IEEE Canada President 2016-2017. Our President-Elect for 2016-2017 is Dr. Maike Luiken from Lambton College, Sarnia. They already have an ambitious plan of new initiatives.

My thanks to all members, who have made these last two years, some of the most rewarding years of my life.■

Je m'étais fixé plusieurs objectifs en devenant président d'IEEE Canada. L'un d'eux était de restructurer la manière dont nos conférences étaient gérées pour que les bénévoles puissent consacrer davantage de leur temps limité à la création de valeur pour les participants. Les innombrables heures de discussion du comité consultatif des conférences d'IEEE Canada ont mené à la signature d'un contrat de trois ans nous permettant d'utiliser un système de gestion des communications qui donnera également plus d'uniformité aux tarifs d'inscription. Dans le cadre de cette restructuration, le nouveau comité des conférences d'IEEE Canada passera en revue le contenu des communications.

J'avais aussi comme priorité d'accroître le nombre de candidatures au titre de fellow originaires de la région 7. Au total, 28 fellows ont émergé de notre région depuis deux ans – une contribution remarquable compte tenu de notre taille. Félicitations à tous! Nos présidents de section ont été très proactifs pour proposer des membres senior et fellow, avec un succès retentissant.

Je percevais également le besoin de mieux servir nos membres dans la région de Windsor, le resserrement des mesures de sécurité à la frontière canado-américaine ayant compliqué la participation aux activités à Detroit. Après avoir reçu l'approbation de l'IEEE en novembre 2014, la nouvelle section de Windsor a rapidement pris son envol, créant sans tarder de nouveaux groupes d'affinités et sous-sections. Je suis très fier d'annoncer qu'elle accueillera le Congrès canadien en génie électrique et informatique (CCGEI) de 2017. En travaillant à justifier la création de cette section, nous avons aussi pu tisser des liens de collaboration à l'échelle régionale entre IEEE Canada et les bénévoles de la région 4 (Michigan et États adjacents).

La quatrième initiative qui me tenait à cœur a été d'inciter le gouvernement fédéral à soutenir généreusement l'informatique et le génie. Afin d'élargir les activités d'IEEE Canada, plusieurs bénévoles d'expérience se sont montrés désireux d'examiner les efforts d'IEEE États-Unis en matière de relations gouvernementales afin de voir quelles approches pouvaient s'appliquer à notre pays.

Un président ne peut espérer exercer une direction efficace sans l'appui de toute l'organisation. Je remercie sincèrement le conseil d'administration d'IEEE Canada, les membres du comité directeur, les membres du comité exécutif ainsi que les présidents des comités pour leur soutien et les conseils qu'ils m'ont donnés. J'ai aussi eu la chance de reprendre « le flambeau » de Keith Brown, sous l'égide duquel notre région avait déjà accumulé de nombreux succès.

Enfin, j'aimerais exprimer ma reconnaissance en notre nom à tous à Cathie Lowell. Après avoir été administratrice d'IEEE Canada pendant 23 ans, elle quittera la plupart de ses fonctions au tournant de l'année. L'éventail de ses responsabilités était vaste : elle répondait aux besoins des sections d'un océan à l'autre et de centaines de membres de comités, ne laissant aucune demande sans réponse – qu'elle provienne d'un président d'IEEE Canada ou d'un nouveau membre. Avec le calme et l'efficacité qu'on lui connaît, elle a joué un rôle vital dans la coordination des multiples échanges d'information nécessaires à nombre de nos activités, ainsi que dans la gestion de leur logistique. Merci Cathie.

Nous accueillerons en janvier Witold Kinsner, de l'Université du Manitoba, comme président d'IEEE Canada pour 2016-2017, et notre présidente élue pour 2016-2017 est Maike Luiken du Lambton College de Sarnia. Ils débordent déjà de projets et d'idées.

À tous les membres qui ont fait de ces deux années une des expériences les plus gratifiantes de ma vie, une dernière fois, merci! ■

Biz-tech Report

by Terrance Malkinson

Profiles of one-hundred Canadians who best embody the spirit of exploring are provided in "Canada's Greatest Explorers" [*Canadian Geographic*. pp. 32-40. June, 2015. www.canadiangeographic.ca]. The list was created with the help of the Fellows of the Royal Canadian Geographical Society. Exploration was determined to be "about the forging of dramatic new relationships with the natural world and telling essential stories to accelerate our understanding of the critical importance of these relationships."Important to this definition is the concept that exploration is evolving and non-restrictive in our changing world – exploration is no longer restricted to the discovery of "new lands." Explorers profiled include; astronauts, deep-sea divers, polar adventurers, paleontologists, historians, conservationists, and photographers to name but a few.

In a second article in the same issue of *Canadian Geographic* [pp. 48-53] Anne Casselman in her article "The Big One" discusses preparations being made for the impact of the next Canadian megathrust earthquake. The Geographic Society of Canada records and locates more than 4,000 earthquakes that occur in Canada each year. The last megathrust earthquake to strike Canada was in 1700 and it is predicted that a "strong earthquake" will occur somewhere in Canada within the next 50 years. The challenge is predicting when, where, and magnitude. The author discusses recent catastrophic earthquakes, susceptible areas in Canada, predictability, consequences, and emergency planning.

The cover story of *Canadian Business* [Summer, 2015. www.canadianbusiness.com] is "Canada's 2015 Market Guide." A series of articles provide information on the market outlook, companies to watch, leading companies, superstar companies, strategies for innovation success, and case studies of entrepreneurial success.

"Women in Technology" is the cover story of the Spring, 2015 issue of *Technology Alberta* [pp. 6-9. www.aset.ab.ca]. The authors discuss how women remain under-represented in technology-based careers and that the wage gap between males and females remains unequal. The article discusses the challenges for female technology professionals and the business case for gender equality. Importantly, the trend is moving toward equality as more and more women are choosing technology education, entering the workforce and advancing up the career ladder. Related to diversity in the workplace [*Alberta Construction Magazine*, "Finding Tomorrow's Workers Today," 2015], Joseph Caouette Summer reports on outreach efforts being made to build a diverse construction workforce to meet the demands resulting from retirement and industry growth. In an online report ["Grade Nine Girls Hit Post-secondary Campuses to Discover Wonders of STEM. "www.sait.ca/about-sait/news/news/2015-5-6-explore-it.php] more than 650 girls from Grade nine classes around Calgary took over classrooms at SAIT Polytechnic, Mount Royal University and the University of Calgary to explore the world of science, technology, engineering and math (STEM) during the 16th annual Explore IT event.

Profiles of Alberta's 50 most influential people are provided in the July, 2015 issue of *Alberta Venture* [pp. 22-44. www.albertaventure.com]. These are the movers, shakers and difference-makers who are reimagining the province in a year where the political landscape changed dramatically and decisively. An article by Tadzio Richards ["End of the Line." *Alberta Views*. 18(6):28-33. July/August, 2015] discusses the fall of the 44-year, seven premiers and twelve majority governments of the Progressive Conservative Party; replaced by the New Democratic Party led by Rachel Notley. Correctly, it is the people who decide who will govern.

As reported by Omar Mouallem [*Canadian Geographic*. 135(4):43-48, July-August, 2015. www.canadiangeographic.com] the Missing Children Society of Canada is using personal communication technology and social media to help find missing kids. Three recently developed platforms are now available to get information out in a matter of seconds to the public. These include: a news release service, public social media feeds, and its own app.

"Designing Canada's Supercar is the title of an article by Costa Mouzouris in *Design Engineering*[61(3): 20-23. May-June 2015. www.design-engineering.com]. Decades of race car engineering has resulted in the Quebec's Magnum (Boucherville, QC) MK5 supercar, designed primarily for racetrack driving, but also street-legal. Starting with the basics including a tubular steel frame, carbon fiber bodywork gives it a power-to weight ratio of 460hp per tonne; enough to propel it from zero to 100 km/hr. in 3.2 seconds.

The focus of the Summer 2015 issue of *Canadian Retailer* [www.retailcouncil.org] is on consumer mobile behavior. Feature articles include "Growing Sales Through Online Marketplaces", "The Future of Retail", "Getting Online" "The Mobile Shift" and "Rebooting for Better Business."

Drone engineering is opening up incredible possibilities. In "Close Encounters of the Drone Kind" [*Wings* pp. 46-50. May-June 2015. www.wingsmagazine.com] Rick Adams describes how Transport Canada is making UAVs in civil airspace a simple process. An excellent overview of the important issues, and comparison with the United States FAA regulations governing the use of unmanned aircraft in American civil airspace. On the same topic in the cover story of the July 2015 *IEEE Spectrum* T.J. Diaz discusses the applications of drone videography [Lights, Drone….Action: An Expert Guide to Drone Videography. pp.36-41]

And on an international note the 160-acre original Disneyland located in Anaheim, California turns 60 this year. Constructed in only one year, it opened to the public on July 18, 1955. In just seven weeks the park had received more than one million guests. Ever since, Disneyland Park has been a mandatory and unforgettable destination for individuals and families of all ages. Disneyland is also a magnet for visitors worldwide and a place where innovation reminds us of the past and inspires us to embrace an exciting future.Walt Disney had the vision and strength, courage, and determination to be the first to build what is considered the pinnacle theme park. His many achievements set the standard and is what others measure themselves against in family entertainment—truly a legacy of international importance, making the world a better place. One of the greatest eulogies that a person can receive is that their existence made the world a better place. Disneyland is truly "The Happiest Place on Earth." ■

For **Terrance Malkinson**'s biography please see page 30.

Success by the Sea at CCECE – thanks Canadian Atlantic Section!

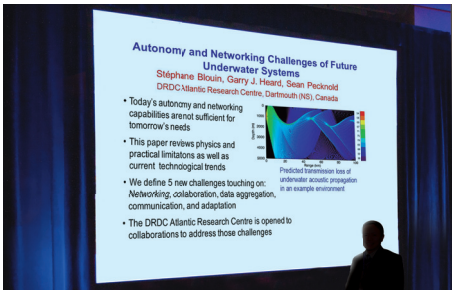
The wind was in the sails for presenters at the *28th Annual Canadian Conference on Electrical and Computer Engineering* in Halifax last May. And the organizers threw a pretty good party!

Photos: Martin Jardine

The theme of CCECE 2015 was *Electrical and Computer Engineering – Celebrating 30 Years of Ocean Frontiers*. From all reports, the technical sessions had depth, and everyone certainly had an ocean of fun!

The conference General Chair was Jason Gu (photo above); Honorary Chair was Mo El-Hawary (bottom right). The Technical Program Committee, led by Co-chairs Mae Seto and Ralph Bachmayer, drew almost 450 submissions from 29 countries and regions. After a rigorous full-paper peer review process, roughly 290 papers were accepted for oral presentation in 48 technical sessions. The full conference committee tallied about 200 volunteers, whose efforts showed with flying colours.

A highlight of each CCECE is the Annual Awards Banquet, where IEEE Canada recognizes the technical achievements and service excellence of its members. Shown to the right, IEEE Canada Administrator, Cathie Lowell, gives Lori Hogan of Newfoundland and Labrador Section a sneak preview of her J.J. Archambault Eastern Canada Merit Award. IEEE Canada President Amir Aghdam made the official presentation to her and the other Major Award recipients, assisted by Awards and Recognition Committee Chair Geza Joos. The evening was expertly choreographed by the conference Local Organizing Committee, led by Dirk Werle. An added touch was brought by a professional Master of Ceremony, who regaled the audience with humorous stories about events in the Halifax area. ■



IEEE Milestone celebrates **first digital processing of satellite-based radar data**

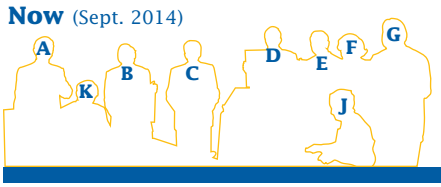
By **David G. Michelson**

The dawn of digitally processed satellite radar imagery was celebrated as an IEEE Milestone in Electrical Engineering and Computing in September 2014 in Vancouver at the headquarters of MacDonald, Dettwiler and Associates (MDA) Ltd. In November 1978, the Canadian company became the first to use a digital computer to reconstruct scenes from synthetic aperture radar (SAR) data (see B&W image on page 9). The SAR data was supplied from NASA's Seasat-A satellite.

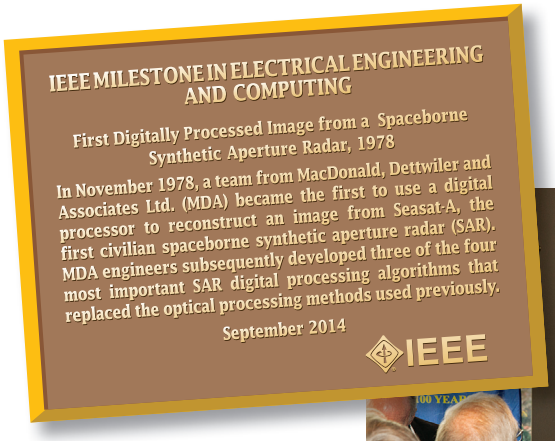
Milestones in Electrical Engineering and Computing are the highest form of historical recognition offered by IEEE. They are approved by the IEEE Board of Directors based upon recommendation of the IEEE History Committee. The vetting process is rigorous and can take more than a year to complete.

The Milestone dedication ceremony was attended by several members of the original MDA team, including John Bennett, Ian Cumming, Ron Fielden, Wayne Fung, Pete McConnell, Robert Orth and Pietro Widmer. MDA co-founder John MacDonald was also present. Among the dignitaries who offered comments and congratulations during the course of the event were Canadian Space Agency Vice-President Luc Brûlé, B.C. MLA Linda Reid, and IEEE Canada President Amir Aghdam.

Fundamental to their success, MDA engineers developed the necessary complex algorithms to manipulate the data, but which were still compatible with the low-processing-power computers of the time.



J **Luc Brûlé, V.P., Canadian Space Agency**
K **John S. MacDonald, Co-Founder, MacDonald, Dettwiler and Associates**



Amir Aghdam, IEEE Canada President 2014-2015, outlines the goals of the IEEE Milestone program. Standing to his left is Dave Michelson, who led the Vancouver Section Milestone proposal team.

Photos: MacDonald, Dettwiler and Associates Ltd. (MDA) unless otherwise noted

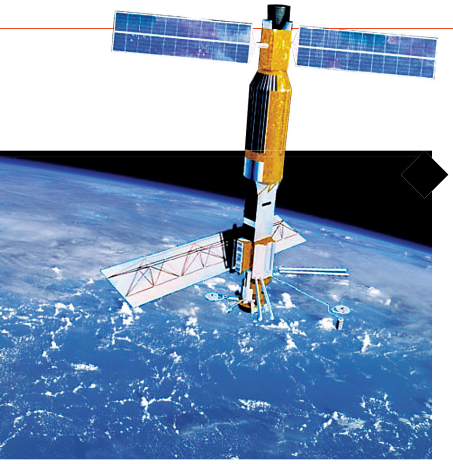


Photo: NASA

Seasat was the first satellite designed for remote sensing of the Earth's oceans with synthetic aperture radar (SAR). The mission was designed to demonstrate the feasibility of global satellite monitoring of oceanographic phenomena and to help determine the requirements for an operational ocean remote sensing satellite system. Specific objectives were to collect data on sea-surface winds, sea-surface temperatures, wave heights, internal waves, atmospheric water, sea ice features, and ocean topography. The mission ended on October 10, 1978 due to a failure of the vehicle's electric power system. Although only approximately 42 hours of real time data were received, the mission demonstrated the feasibility of using microwave sensors to monitor ocean conditions and laid the groundwork for future SAR missions.

First digitally processed Image from Seasat-A's synthetic aperture radar shows a portion of the St Lawrence River near the city of Trois Rivières, Québec. The satellite passed overhead at an altitude of 800 km and the L-band radar antenna had a boresight angle of 20 deg from the nadir. The data was recorded at the Shoe Cove, Newfoundland satellite receiving station and was first processed in November 1978 by MacDonald, Dettwiler & Assoc. , Ltd , of Richmond, British Columbia. The image covers an area 38 km along the river by 41 km.

Then (Nov. 1978)

A Wayne Fung
B Pietro Widmer
C John Bennett
D Ian Cumming
E Robert Orth
F Pete McConnell
G Ron Fielden
H Doug Seymour
I Robert Deane

Historical Significance

From the time that Carl A. Wiley of Goodyear Aircraft Co. introduced the synthetic aperture radar (SAR) concept in 1951, optical correlators based upon various combinations of exotic lenses and optical film had been used to reconstruct synthetic aperture radar imagery. While reconstruction could be accomplished in reasonable time using such techniques, the results suffered from various artifacts associated with slight physical imperfections in the optics and the limited dynamic range of the optical system. While the possibility of using digital technology to process SAR data had been recognized early on, the processing requirements greatly exceeded the capabilities of the general-purpose computers available to researchers in the 1950s and 1960s. The state of the art as of 1970 is summarized in [1].

At the same time, it had been recognized that a synthetic aperture radar carried by an orbiting satellite would offer many important advantages over airborne SARs. First, orbiting Earth observation satellites can achieve worldwide coverage with an ease that airborne platforms cannot match. Second, orbiting SARs are not buffeted by the atmospheric turbulence that shakes airborne SARs; the path they take through airless space is ultra smooth and highly predictable. These advantages are only partially offset by the reduced resolution and lower signal-to-noise ratio achievable with orbital SAR imagery due to their much greater height above the Earth's surface.

Tremendous advances in minicomputer technology during the early 1970s renewed interest in the possibility of placing synthetic aperture radar in low earth orbit and using general-purpose computers to produce high quality imagery from the downlinked data. NASA launched Seasat-A, the world's first orbital SAR, in 1978. Although it failed within 90 days of achieving orbit due to a power system defect, Seasat-A demonstrated the enormous potential of orbital SARs and ushered in three decades of

innovation that saw orbital SARs of ever increasing power and capability launched by NASA, the European Space Agency and the Canadian Space Agency.

Several teams competed to be the first to reconstruct a scene by digitally processing Seasat-A SAR data. However, the general-purpose minicomputers available to engineers in the late 1970s were only barely capable of supplying the enormous processing power required. It was widely expected that a large, well-funded team from NASA's Jet Propulsion Laboratory would prevail. Instead, a small, upstart team from Canada's MacDonald Dettwiler and Associates that had begun their task two years earlier won the race in November 1978 [2].

So significant was the accomplishment that this first image was featured in the 26 February 1979 issue of *Aviation Week and Space Technology* [3]. Details were reported at several conferences early in 1979 [4], [5]. In contrast, as recently as 1980, JPL was still reporting results that had been processed using the less capable optical techniques [6].

Lessons Learned

MDA's accomplishment underscored a lesson that would be repeated many times as the digital revolution progressed. Other teams had access to the same Seasat data and similar general-purpose digital computers. However, it was the MDA team's careful mastery of algorithm design and software engineering that allowed them to win the race.

It was widely expected that a large, well-funded team from NASA's Jet Propulsion Laboratory would prevail. Instead, a small, upstart team from Canada's MacDonald Dettwiler and Associates that had begun their task two years earlier won the race in November 1978.

MDA exploited their early success to become one of the most influential and prolific developers of digital SAR processing algorithms and digital SAR processors in the world. Teams at MDA developed three of the four common SAR processing algorithms in use today: Range/Doppler, Chirp Scaling, and SPECAN. MDA also developed the digital SAR processors used by such notable NASA, ESA and CSA programs as SIR-B, SIR-C, ERS-1, J-ERS-1, RADARSAT-1, ENVISAT and, most recently, RADARSAT-2 [7].

A Turning Point in the History of SAR

The events of November 1978 marked a turning point in the history of synthetic aperture radar. Demonstration that data from spaceborne SARs could be digitally processed using general-purpose digital computers helped to dramatically reduce the cost of SAR imagery and make it much more widely available for civilian applications. Until 1978, military applications of SAR were predominant. Since 1978, civilian applications of SAR have assumed steadily increasing importance. The reputation that MDA earned from this accomplishment fuelled its rapid growth into the world's largest supplier of SAR processors and Canada's largest space technology company. ■

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[1] R. O. Harger, Synthetic Aperture Radar Systems: Theory and Design. Academic Press, New York, 1970.

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[3] "Seasat Imagery Shows St. Lawrence," Aviation Week and Space Technology, 26 Feb. 1979. [Clipping Available Online.] http://rsl.ece.ubc.ca/AWST-Seasat-26Feb1979.png

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[5] John R. Bennett and Ian G. Cumming, "A Digital Processor for the Production of Seasat Synthetic Aperture Radar Imagery," LARS Symposia, Purdue Univ., 1979, Paper 316. [Available Online.] http://docs.lib.purdue.edu/lars_symp/316

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N.Ed. This is IEEE Canada's 15th Milestone; details of previous Milestones can be found at: http://www.ieee.ca/history/milestones/index.html

For the IEEE Milestone program criterion, please see: http://ethw.org/Milestones:IEEE_Milestones_Program

Please contact the IEEE Canada History Committee Chair for further information: d.kemp@ieee.org

About the Author

David G. Michelson is with the University of British Columbia, Department of Electrical and Computer Engineering in Vancouver, where he leads the Radio Science Laboratory. He currently serves as the Canadian Representative for Commission F (Radio Wave Propagation and Remote Sensing) of the International Union of Radio Science (URSI) and is Editor of the Wiley/IEEE Press Series on Vehicular Technology. He is a Member of the Boards of Governors of both the IEEE Communications and Vehicular Technology Societies, Corresponding Member of the IEEE History Committee, Member of the IEEE Canadian Foundation and Corresponding Member of the IEEE History Committee. He has championed more than one-quarter of Canada's IEEE Milestone recognitions. He can be reached at dmichelson@ieee.org

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Paper submission guidelines

Submitted papers must be unpublished and should not be submitted elsewhere at the same time. Accepted papers should not exceed 6 pages in two-column IEEE Transactions style. Accepted papers longer than 4 pages will be charged $100 for each extra page. Papers should be submitted as PDF files through the paper submission system *(https://edas.info/N21433)*. All submitted papers will be peer reviewed by at least three independent reviewers.

A number of best paper awards will be given. Also, arrangements are being made for publication of extended versions of selected papers in the *Canadian Journal of Electrical and Computer Engineering (CJECE)*. Conference content will be submitted for inclusion into *IEEE Xplore* as well as other Abstracting and Indexing (A&I) databases. There are additional eligibility requirements for publication of papers in *Xplore*. Please see the website for details.

Important Dates

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For sponsorships and industrial exhibits, please contact the Patronage/Exhibits Chair Bob Gill at bgill@ieee.org

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2015 IEEE Canada A.G.L. McNaughton Gold Medal
Médaille d'or A.G.L. McNaughton de l'IEEE Canada 2015

For outstanding contributions to pattern recognition and leadership in intelligent systems development
Pour ses contributions exceptionnelles à la reconnaissance des formes et son leadership dans le développement de systèmes intelligents

Mohamed Kamel (LFIEEE)

Mohamed Kamel (LFIEEE) is Professor of Electrical and Computer Engineering at the University of Waterloo, where he holds a University Research Chair in Cooperative Intelligent Systems and is the Director of the Centre for Pattern Analysis and Machine Intelligence. He received the Ph.D. from the University of Toronto. Before starting his academic career, he worked as senior principal engineer at NCR Canada and obtained an inventor award for his work on bar codes. Dr. Kamel is co-founder of Virtek Vision Inc. of Waterloo (acquired by Gerber Technology Co). He served as member of the board from 1992-2008 and VP research and development from 1987 to 1992.

Dr. Kamel has made solid contributions to research and education in image analysis, machine intelligence and pattern recognition. He pioneered the introduction of the concepts of cooperative and multi-clustering, feature-based aggregation and document index graph. Dr. Kamel has applied these contributions to engineering problems in data mining, financial document processing and robotics. He has published more than 500 peer-reviewed articles in journals and conference proceedings. Papers coauthored by Dr. Kamel and his students have received best paper awards in international journals and conferences.

Dr. Kamel's contributions and accomplishments have earned him recognition in international and national organizations. He is Fellow of the Royal Society of Canada, Life Fellow of IEEE, Fellow of the Engineering Institute of Canada (EIC), Fellow of the Canadian Academy of Engineering (CAE) and Fellow of the International Association of Pattern Recognition (IAPR). Dr. Kamel is a member of Professional Engineers Ontario.

Mohamed Kamel (LFIEEE) est professeur de génie électrique et informatique à l'Université de Waterloo. Il y est titulaire d'une chaire de recherche en systèmes intelligents coopératifs. Il y est également directeur du centre de recherche en analyse de formes et en intelligence artificielle. Il a obtenu son Ph.D. à l'Université de Toronto. Avant d'entamer sa carrière universitaire, il a travaillé comme ingénieur principal à NCR Canada et a obtenu un prix d'inventeur pour son travail sur les codes-barres. M. Kamel est cofondateur de la compagnie Virtek Vision inc. (faisant maintenant partie de Gerber Technology Co) à Waterloo. Il y a été membre du conseil d'administration de 1992 à 2008 et vice-président, Recherche et développement de 1987 à 1992.

M. Kamel a énormément contribué à la recherche et à l'éducation en matière d'analyse d'images, d'intelligence artificielle et de reconnaissance de formes. Il est parmi les premiers à s'intéresser aux concepts de classification multiple coopérative, d'agrégation par similarité de caractéristiques et d'indexage graphique de documents. M. Kamel a appliqué ses contributions aux problèmes d'ingénierie liés au forage de données, au traitement de documents financiers et à la robotique. Il a publié plus de 500 articles dans des revues et comptes rendus de conférences. Ses articles publiés en collaboration avec ses étudiants ont reçu des distinctions dans des conférences et des revues internationales.

Les travaux de M. Kamel lui ont valu la reconnaissance de diverses organisations nationales et internationales. M. Kamel est fellow de la Société royale du Canada, fellow à vie de l'IEEE, fellow de l'Institut canadien des ingénieurs (ICI), fellow de l'Académie canadienne du génie (ACG), et fellow de l'Association internationale pour la reconnaissance des formes (IAPR). M. Kamel est membre de Professional Engineers Ontario (PEO).

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2015 IEEE Canada Power Medal
Médaille d'électricité de l'IEEE Canada 2015

For outstanding contributions to the practice of power system protection and planning **Pour des contributions exceptionnelles à la pratiques en protection et en planification des réseaux électriques**

William Kennedy (LSMIEEE)

W.O. (Bill) Kennedy (LSMIEEE) is President and Principal of b7kennedy & Associates Inc., a consultancy he established in 2005 to provide service to companies connecting to the electric power grid. In addition to his consulting practice, Bill presents seminars on power system basics to non-power system engineers. Previously, he was a principal engineer for Alberta Electric System Operator (AESO) and director of measurement and protection at Electricity Supply Board International (ESBI) Alberta Ltd. Graduating in Electrical Engineering from the University of New Brunswick in 1969, he has since completed graduate courses in power system engineering and management.

Bill's ground-breaking accomplishments are seen throughout most of the Canadian electricity grid, having worked in nine provinces. He pioneered a procedure enabling distance relay-testing insitu at substations, rather than costly shop-floor assessment. On the 500 kV transmission line connecting Alberta to British Columbia, he demonstrated that import could be raised to 600 MW without the requirement for load shed in Alberta. Also in that province, he developed transmission required to incorporate 3,400 MW of wind-based energy into the grid, and developed the first protection standard, based on a stakeholder consultative approach. At Saskatchewan Power Corporation, Bill led the development of a 455 km 138 kV transmission line effectively incorporating northern communities into the SaskPower grid.

Bill served as President/Director for IEEE Canada/IEEE Region 7 for 2004-2005 and as IEEE Director Division VII (Power & Energy Society) for 2006/2007. He is a Fellow of the Engineering Institute of Canada (1998) and was the University of New Brunswick's Dineen Lecturer in 2009.

W.O. (Bill) Kennedy (LSMIEEE) est le président de b7kennedy & Associates Inc., une société de conseil qu'il a fondé en 2005 pour fournir des services aux entreprises de raccordement au réseau d'alimen-tation électrique. En plus de ses activités de consultant, Bill tient des séminaires, adressés aux ingénieurs d'autres disciplines, sur les concepts de base des réseaux électriques. Auparavant, il a été ingénieur principal à l'office de gestion du réseau électrique de l'Alberta (AESO) et directeur du département de mesure et protection au sein de l'ESBI (Electricity Supply Board International) Alberta Ltd. Diplômé de génie électrique à l'Université du Nouveau-Brunswick, en 1969, il a également suivi des cours supérieurs en génie et en gestion des réseaux électriques.

Bill a travaillé dans neuf provinces canadiennes et ses réalisations sont visibles dans le réseau d'électricité au Canada. Il est le pionnier d'une procédure permettant le test de relai à distance directement in situ dans les stations électriques plutôt qu'en atelier. Sur la ligne de transmission de 500 kV reliant l'Alberta à la Colombie-Britannique, il a démontré que l'importation pouvait être portée à 600 MW sans qu'il n'y ait de perturbation en Alberta. Dans cette province, il a développé la transmission requise pour intégrer 3 400 MW d'énergie d'origine éolienne dans le réseau électrique et mis sur pied la première norme de protection basée sur une approche consultative des parties prenantes. À la Saskatchewan Power Corporation, Bill a supervisé la construction d'une ligne de transmission de 455 km à 138 kV qui intègre les collectivités nordiques dans le réseau SaskPower.

Bill a été président et directeur de de la région 7 d'IEEE Canada entre 2004 et 2005 et de l'IEEE Division VII (Power & Energy Society) entre 2006 et 2007. Il est Fellow de l'institut canadien du génie (1998) et a été en 2009 le récipiendaire du prix Dineen de l'Université du Nouveau-Brunswick.

2015 IEEE Canada C.C. Gotlieb Medal
Médaille C.C. Gotlieb de l'IEEE Canada 2015

For exceptional contributions in wireless networks and mobile computing systems **« Pour contributions exceptionnelles aux réseaux sans fil et aux systèmes informatiques mobiles »**

Azzedine Boukerche (FIEEE)

Azzedine Boukerche (FIEEE) is a Professor of Computer Science and holds a Canada Research Chair Tier-1 position at the University of Ottawa. He is the Scientific Director of NSERC-DIVA Strategic Research Network and the Director of PARADISE Research Laboratory at the university.

Dr. Boukerche is an internationally recognized scholar and world-class authority in the area of distributed computing and mobile networking. For more than two decades, he has been pushing the knowledge frontiers on how wireless sensor networks, intelligent vehicular networking, wireless multimedia, smart cars and smart roads can further improve the design of the next generation of connected and autonomous vehicles and intelligent transportation systems. This technology will change the way we live and interact daily with our environment. He has also led innovations in augmented virtual reality technologies for the design of next-generation training facilities for first responders.

Dr. Boukerche has published extensively with 14 Best Paper Awards. He is the editor of three best-seller books on mobile computing, ad hoc and sensor networks. He is the recipient of the Cátedra de Excelencia from Universidad Carlos III de Madrid, the Ontario Distinguished Researcher Award, the Premier of Ontario Research Excellence Award, the G. S. Glinski Award for Excellence in Research, as well as the IEEE Communication Society (ComSoc) Leadership and Service Award, the IEEE Computer Society (IEEE CS) Golden Core Award, and a CS-sponsored IEEE Meritorious Service Award. Dr. Boukerche is Fellow of the IEEE, the Engineering Institute of Canada, the Canadian Academy of Engineering and the American Association for the Advancement of Science.

Azzedine Boukerche (FIEEE) est professeur d'informatique et titulaire d'une chaire de recherche (Tier 1) à l'université d'Ottawa. Il est le directeur scientifique du réseau de recherche stratégique NSERC-DIVA et le directeur du laboratoire de recherche PARADISE à Ottawa.

Dr Boukerche est un chercheur reconnu sur le plan international pour ses travaux dans le domaine de l'informatique distribuée et des réseaux mobiles. Depuis plus de deux décennies, il repousse les frontières des connaissances sur la façon dont les réseaux de capteurs sans fil, les réseaux de véhicules intelligents, le multimédia sans fil, les voitures et les routes intelligentes peuvent encore améliorer la conception de la prochaine génération de véhicules connectés et autonomes et des systèmes de transports intelligents. Cette technologie va changer la façon dont nous vivons et interagissons au quotidien avec notre environnement. Dr Boukerche a aussi innové en matière de réalité virtuelle augmentée pour la conception d'installations de formation des prochaines générations de premiers intervenants.

Dr Boukerche a publié de nombreux articles parmi lesquels on compte 14 prix de meilleur article. Il est l'éditeur de trois livres à succès traitant de l'informatique mobile, des réseaux ad hoc et des réseaux de capteurs. Il est le récipiendaire du Cátedra de Excelencia de l'université Carlos III de Madrid, du prix Ontarien du chercheur émérite, du prix d'excellence en recherche du premier ministre Ontarien, du prix G. S. Glinski pour excellence en recherche, du prix de leadership et de service de la société de communication de l'IEEE, du prix d'or de la société informatique de l'IEEE. Il est également le récipiendaire d'un prix du service méritoire sponsorisé par la société informatique de l'IEEE, et d'un prix pour service exceptionnel et reconnaissance de leadership sponsorisé par la société de communication de l'IEEE. Dr Boukerche est Fellow de l'IEEE, de l'Institut canadien des ingénieurs, de l'Académie Canadienne du Génie, et de l'association américaine pour l'avancement de la science.

2015 IEEE Canada J.M. Ham Medal
Médaille J.M. Ham de l'IEEE Canada 2015

For establishing a world class teaching and research program in applied electromagnetic engineering
« Pour la mise sur pied d'un programme d'enseignement et de recherche de classe mondiale en électromagnétisme appliqué »

Yahia Antar (LFIEEE)

Yahia Antar (LFIEEE) is the Canada Research Chair in Electromagnetic Engineering. He is a professor at the Royal Military College of Canada (RMCC), Vice Dean for defence and security research. He holds a cross-appointment at Queen's University. Before joining RMCC, Dr. Antar worked at NRC from 1979-1987. He received the B.Sc. (Hons.) degree in 1966 from Alexandria University, Egypt, and the M.Sc. and Ph.D. degrees from the University of Manitoba, in 1971 and 1975, respectively, all in electrical engineering.

Dr. Antar's commitment to mentoring his graduate students has earned him the profound admiration of both his peers and those he teaches. In 2012 he was honoured by the RMCC Class of 1965 with its Teaching Excellence award. He has supervised and co-supervised more than 85 Ph.D. and M.Sc. theses, of which several have received the Governor General of Canada Gold Medal, as well as many best paper awards in major international symposia. As an IEEE Antennas and Propagation Society (IEEE APS) Distinguished Lecturer, he generously accepts invitations from ECE departments across the country, and from Chapters worldwide.

A recipient of the IEEE Canada Fessenden Medal (2014), Dr. Antar is a Life Fellow of the IEEE; he is also Fellow of the Engineering Institute of Canada and the Electromagnetic Academy. He was elected by the Council of the International Union of Radio Science as Vice President in 2008, and again in 2014. In 2011, Dr. Antar was appointed Member of the Canadian Defence Science Advisory Board. In 2012 he received the Queen's Diamond Jubilee Medal.

Yahia Antar (LFIEEE) est titulaire de la chaire de recherche du Canada en électromagnétisme. Il est professeur au Collège militaire royal du Canada (CMRC) et vice-doyen de la recherche en défense et sécurité. Il a également un poste à l'Université Queens. Avant de rejoindre le CMRC, M. Antar a travaillé au NRC de 1979 à 1987. Il a obtenu son B.Sc. (avec mention) à l'Université d'Alexandrie en Égypte, et sa maitrise puis son doctorat en génie électrique à l'Université du Manitoba en 1971 et 1975 respectivement.

L'engagement de M. Antar dans la supervision des travaux de ses étudiants gradués est une source d'admiration tant de la part de ses pairs que de ses étudiants. En 2012, il a obtenu le prix d'excellence en enseignement décerné par la promotion 1965 du CMRC. Il a supervisé et co-supervisé plus de 85 étudiants au doctorat et à la maîtrise parmi lesquels on compte plusieurs récipiendaires de la médaille d'or du gouverneur général du Canada, ainsi que plusieurs lauréats d'un prix du meilleur article présenté dans des conférences prestigieuses. En tant que conférencier émérite de l'Antennas and Propagation Society de l'IEEE (IEEE APS), il est régulièrement invité par les départements de génie électrique et d'informatique du pays et les sections IEEE de divers endroits du monde.

M. Antar a reçu la médaille Fessenden 2014 de l'IEEE Canada. Il est fellow à vie de l'IEEE ainsi que fellow de l'Institut canadien des ingénieurs et de l'Académie électromagnétique. En 2008, puis en 2014, il a été élu vice-président de l'Union internationale radio-sciences. En 2011, M. Antar a été nommé membre du Conseil consultatif canadien en sciences de la défense. En 2012, il a reçu la médaille diamant du jubilé de la Reine.

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CANADIAN HEADS OF ECE/DIRECTEURS CANADIENS DE GEI

2015 IEEE Canada W.S. Read Outstanding Service Award
Prix d'excellence de service W.S. Read de l'IEEE Canada 2015

For outstanding and sustained dedication in serving IEEE Canada and its members Pour son dévouement exceptionnel et soutenu à l'IEEE Canada et à ses membres

Raed Abdullah (SMIEEE)

Raed Abdullah (SMIEEE) is currently a Strategic Planning Engineer with the Hydro Ottawa Assets team. He received the B.Sc. in Electrical Engineering from the University of Ottawa in 1989. With Hydro Ottawa since 1991, he has spearheaded many initiatives in a wide variety of roles. Raed is an active member of high-profile working groups in Smart Grid, Distributed Generation, and plug-in EV Readiness and served on the Standard Council of Canada's Smart Grid Task Force.

Raed has been an active IEEE Canada volunteer for more than 15 years. A co-founder of the Electrical Power Symposium in 2001, he was the symposium's engineering chair from 2002-2005 and education activities chair in 2006. The highly successful conference continually increased its scope and attendance, becoming EPEC in 2007; it is now an IEEE Canada-sponsored annual conference. Raed served as Region 7 secretary from 2011-2013 and was also a member of the MGA Individual Benefits and Services Committee, 2011/2012. He was the Vice-Chair of the inaugural IHTC 2014 conference and is serving again on IHTC 2015. He has taken a strong leadership role on numerous Ottawa section committees and societies. As chair of Ottawa section in 2009 and 2010, he led the section in winning the 2010 MGA Large Section Award.

Raed is the recipient of the 2014 IES/PES Chapter Outstanding Engineering Award and 2011 MGA Achievement Award. He is currently the IEEE Canada External Relations Chair, Chair of the Reliability and Power Electronics Society Joint Ottawa chapter and treasurer of the Ottawa chapter of PES.

Raed Abdullah (SMIEEE) est ingénieur en planification stratégique dans l'équipe des biens d'Hydro Ottawa. Il a obtenu son diplôme en génie électrique de l'Université d'Ottawa en 1989. Employé d'Hydro Ottawa depuis 1991, il a été le fer de lance de nombreuses initiatives dans une variété de fonctions. Raed participe à des groupes de travail de haut niveau portant notamment sur les réseaux électriques intelligents, la production décentralisée, et la disponibilité de recharge des véhicules électriques. Il a aussi fait partie du Groupe de travail sur les réseaux électriques intelligents du Conseil canadien des normes.

Bénévole actif à l'IEEE Canada depuis plus de 15 ans, Raed a cofondé le Symposium sur la puissance électrique en 2001. Il en a présidé le volet génie de 2002-2005 et les activités éducatives en 2006. Très populaire, le symposium a continuellement élargi sa portée jusqu'à devenir le Congrès sur l'énergie et la puissance électriques en 2007, activité parrainée depuis par l'IEEE Canada. Raed a été secrétaire de la région 7 de 2011-2013 et membre du Comité des activités géographiques des membres (MGA) sur les services et les avantages individuels en 2011-2012. Il a été vice-président du premier Congrès international sur la technologie humanitaire 2014 et a répété l'expérience l'année suivante. Il a contribué à plusieurs comités et sociétés de la section d'Ottawa. Président de cette section en 2009-2010, il l'a menée à l'obtention du prix des grandes sections MGA 2010.

Raed a reçu le prix d'excellence du génie IES/PES 2014 et le prix de distinction honorifique MGA 2011. Il préside actuellement le Comité des relations extérieures de l'IEEE ainsi que le chapitre conjoint Ottawa/Société de la fiabilité et de l'électronique de puissance, et agit comme trésorier au sein du chapitre d'Ottawa de la PES.

SPONSORED BY / COMMANDITÉ PAR **IEEE CANADIAN FOUNDATION / FONDATION CANADIENNE DE L'IEEE**

2015 IEEE Canada E.F. Glass Western Canada Merit Award
Prix d'excellence E.F. Glass de l'ouest du Canada de l'IEEE Canada 2015

For exemplary and long service to the Vancouver Section and chapters Pour contributions exemplaires et de longue durée à la section de Vancouver et à ses chapitres

Ljiljana Trajkovic (FIEEE)

Ljiljana Trajkovic (FIEEE) received the Dipl. Ing. degree from University of Pristina, Yugoslavia, the M.Sc. degrees in electrical engineering and computer engineering from Syracuse University, NY, and the Ph.D. degree in electrical engineering from University of California at Los Angeles. She is currently a Professor in the School of Engineering Science at Simon Fraser University.

Active in the IEEE Circuits and Systems (CAS) Society since 1995, soon after coming to Vancouver in 1998, Dr. Trajkovic worked on bringing the IEEE International Symposium on Circuits and Systems (ISCAS) to the city. To support the bid, she founded a joint Chapter with Victoria Section. She and her team led a very successful ISCAS 2004 and since then have received the IEEE Vancouver Section 2013 and 2012 Small Technical Chapter Awards and the 2014 IEEE CAS Society Regions 1-7 Chapter of the Year Award. Dr. Trajkovic also organized and chaired other international conferences and workshops such as Tesla Day at SFU in 2006. For her contributions, Vancouver Section has recognized her with its 2012 Centennial Volunteer and 2010 Outstanding Service Awards. She is President of the IEEE Systems, Man, and Cybernetics (SMC) Society and Past President of the IEEE CAS Society.

Dr. Trajkovic's additional honours include: the Canadian Pacific Railway Medal (2007) from The Engineering Institute of Canada, a Research Fellowship of the BC Advanced Systems Institute, Fellowship of the Japan Society for the Promotion of Science, National Science Foundation Visiting Professorship for Women Grant, Zonta International Amelia Earhart Fellowship, and IIE Fulbright Fellowship.

Ljiljana Trajkovic (FIEEE) est titulaire d'un diplôme d'ingénieure de l'Université de Pristina (Yougoslavie), d'une maîtrise en génie électrique et informatique de l'Université de Syracuse (New York) et d'un doctorat en génie électrique de la University of California (Los Angeles). Elle enseigne à l'école de génie et des sciences de l'Université Simon-Fraser (SFU).

Membre active de la Société des circuits et systèmes de l'IEEE depuis 1995, elle a travaillé dès son arrivée à Vancouver en 1998 à la venue dans cette ville du Symposium international de l'IEEE sur les circuits et systèmes. Pour y pavenir, elle a fondé un chapitre conjoint avec la section de Victoria. Son équipe et elle ont organisé un symposium particulièrement réussi en 2004 et ont reçu depuis les prix de la section de Vancouver de l'IEEE 2013, du petit chapitre technique 2012, et du chapitre de l'année 2014 des régions 1-7 de la Société des circuits et systèmes. Mme Trajkovic a également organisé et présidé d'autres congrès et ateliers internationaux comme Tesla Day à la SFU en 2006. La section de Vancouver l'a honorée des prix du centenaire des bénévoles 2012 et d'excellence du service 2010. Elle préside la Société Systèmes, homme et cybernétique de l'IEEE et est présidente sortante de la Société des circuits et systèmes.

Parmi les honneurs supplémentaires de Mme Trajkovic, mentionnons : la médaille du Chemin de fer Canadien Pacifique 2007 de l'Institut canadien des ingénieurs, une bourse de recherche du BC Advanced Systems Institute, une bourse de recherche de la Société japonaise de promotion des sciences, une bourse de professeure invitée de la National Science Foundation, la bourse Amelia Earhart de la Zonta International Foundation et la bourse Fulbright de l'Institute of International Education.

2015 IEEE Canada M.B. Broughton Central Canada Merit Award
Prix d'excellence M.B. Broughton du centre du Canada de l'IEEE Canada 2015

For excellent service to the Toronto Section and chapters **« Pour d'excellents services rendus à la section de Toronto et à ses chapitres »**

Alexei Botchkarev (SMIEEE)

Alexei Botchkarev (SMIEEE) is a Senior Information Management Advisor with the Health Data Branch, Ministry of Health and Long-Term Care (Government of Ontario), and an Adjunct Professor with the Computer Science Department at Ryerson University. He holds B.Eng. five-year degree from the Kiev Aviation Engineering Academy, Ukraine (1975) and Ph.D. from the aerospace R&D Institute, Russia (1985). Alexei is a public service practitioner, consultant and researcher with contributions to simulation, implementation and evaluation of complex systems in information management and aerospace. Results of his research are published in more than 70 journal papers, professional magazine articles, technical reports and chapters in three books.

A passionate and committed IEEE volunteer, Alexei has been a member of the IEEE Toronto Section Executive Committee for more than 10 years. In 2008-2009, as Section Chair, he spearheaded preparations and delivery of the 2009 IEEE Toronto International Conference – Science and Technology for Humanity; it was an IEEE "first" -- using web conferencing to seamlessly integrate on-site and on-line participation. He serves as Founding Chair of the Toronto Section Systems Chapter, since 2011. Alexei's long-standing contributions to the Section were recognized through receipt of its Exemplary Service Award in 2013. IEEE's publications also draw his support. He was IEEE Canada Newsletter Editor in 2006/2007, and is currently a member of the IEEE The Institute's Editorial Advisory Board.

Alexei is a Project Management Professional (PMP) certified by the Project Management Institute, and is a member of the Institute for Operations Research and the Management Sciences, and the Statistical Society of Canada.

Alexei Botchkarev (SMIEEE) est conseiller principal en gestion de l'information au ministère de la Santé et des Soins de longue durée de l'Ontario et professeur adjoint au Département d'informatique de l'Université Ryerson. Il possède un baccalauréat en ingénierie de l'Académie du génie de l'aviation de Kiev (1975) et un Ph.D. de l'Institut de recherche aérospatiale russe (1985). Chercheur, consultant et spécialiste de la fonction publique, Alexei a contribué à la simulation, à la mise en œuvre et à l'évaluation de systèmes complexes en gestion de l'information et en aérospatiale. Les résultats de ses recherches ont été publiés dans plus de 70 articles de revues professionnelles, rapports techniques et chapitres (de trois livres).

Bénévole passionné et dévoué de l'IEEE, Alexei a siégé au comité exécutif de la section de Toronto de l'IEEE pendant plus de dix ans. En 2008-2009, à titre de président de la section, il dirigea l'organisation de la Conférence internationale 2009 de l'IEEE à Toronto ayant pour thème « La science et la technologie pour l'humanité ». L'utilisation de cyberconférences à cette occasion fut une première à l'IEEE. Alexei est président fondateur du chapitre sur les systèmes de la section de Toronto depuis 2011. Ses contributions de longue date à la section ont été reconnues par la remise du prix pour services exemplaires en 2013. Alexei a été rédacteur en chef du bulletin de l'IEEE Canada en 2006-2007 et est actuellement membre du comité consultatif de rédaction de la revue The Institute de l'IEEE.

Certifié par le Project Management Institute comme professionnel de la gestion de projets, Alexei est membre de l'Institute for Operations Research and the Management Sciences et de la Société statistique du Canada.

2015 IEEE Canada J.J. Archambault Eastern Canada Merit Award
Prix d'excellence J.J. Archambault de l'Est du Canada de l'IEEE Canada 2015

For exemplary service to Newfoundland and Labrador Section and the IEEE Canadian Foundation
Pour service exemplaire à la section Terre-Neuve-et-Labrador et à la Fondation canadienne de l'IEEE

Lori Hogan (MIEEE)

Lori Hogan (MIEEE) is the Project Manager of OmOptics AIF, an optical communications project, at Memorial University, Newfoundland. Previously, Lori was a project engineer at C-Core, working on software development for remote sensing applications from 2006 to 2014. Lori graduated with the Bachelor of Engineering in Computer Engineering in 2003 from Memorial University.

Lori's high activity in IEEE began as a student at Memorial University and has never stopped. She was Student Branch Vice-Chair 1999/2001; her leadership earned her the IEEE Newfoundland and Labrador Section Award in 2003. Since graduating she has taken on important roles at both the regional and section levels. She was the Newfoundland-Labrador GOLD/WIE representative in 2006/2007 culminating in becoming the Region 7 GOLD Coordinator for 2007. Lori was Chair of the IEEE Newfoundland and Labrador Section in 2010/2011, having been vice-chair in 2008/2009. She was also an MGA History Committee Member for 2008/2009. She is currently the section WIE representative and a member of the IEEE Canadian Foundation since 2011. Beginning January, 2015 she is the Region 7 Student Activities Committee Chair, being very familiar with student branch needs, having been Region 7 Student Rep in 2004/2006.

Lori was the recipient of the 2006 IEEE Canada Women in Engineering Prize, which recognizes female IEEE Canada members who received their first professional degree within the last ten years and are active in IEEE activities. In addition to her involvement in IEEE, Lori is the current President of Women in Science and Engineering (WISE) Newfoundland and Labrador and was a Director from 2003-2006.

Titulaire depuis 2003 d'un diplôme d'ingénieure en génie informatique de l'Université Memorial (Terre-Neuve), Lori Hogan (MIEEE) est depuis peu gestionnaire du projet de communications optiques OmOptics AIF, mené à cette même université. Elle a travaillé de 2006 à 2014 comme ingénieure pour C-Core en développement de logiciels destinés à des applications de télédétection.

Ayant commencé à participer aux activités de l'IEEE alors qu'elle était étudiante à Memorial, Lori n'a jamais arrêté. Elle a été vice-présidente de la branche étudiante de 1999 à 2001, en démontrant des compétences de leadership qui lui ont valu le prix de la section Terre-Neuve-et-Labrador de l'IEEE en 2003. Une fois diplômée, elle a assumé d'importantes responsabilités régionales ainsi qu'à l'échelle des sections. Elle a représenté Terre-Neuve-et-Labrador au sein du groupe GOLD/WIE (Women in Engineering) en 2006-2007 et est devenue coordonnatrice de la région 7 GOLD en 2007. Elle a ensuite été présidente de section, après avoir été vice-présidente en 2008-2009. Elle a aussi été membre du comité MGA History en 2008-2009. Elle représente actuellement la section WIE et est membre de la Fondation canadienne de l'IEEE depuis 2011. Depuis janvier 2015, elle préside les activités étudiantes de la région 7, connaissant très bien les besoins de la branche étudiante puisqu'elle a été représentante des étudiants de la région 7 de 2004 à 2006.

Lori a reçu en 2006 le prix des femmes ingénieures de l'IEEE Canada, qui reconnaît les membres féminines actives de l'IEEE Canada ayant reçu leur premier diplôme professionnel au cours des 15 dernières années. En plus de son engagement au sein de l'IEEE, Lori préside l'organisme Women in Science and Engineering (WISE) Newfoundland and Labrador au sein duquel elle a assumé des fonctions de direction de 2003 à 2006.

IEEE Canada Members elected as 2015 IEEE Fellows

AZZEDINE BOUKERCHE (FIEEE) — Ottawa, ON
for contributions to communication protocols for distributed mobile computing and wireless sensor networks

JOSEF DROBNIK (FIEEE) — Kingston, ON
for development of high performance power converters in industrial applications

RANDY ELLIS (FIEEE) — Kingston, ON
for contributions to image guided surgical technology

EKRAM HOSSAIN (FIEEE) — Winnipeg, MB
for contributions to spectrum management and resource allocation in cognitive and cellular radio networks

SAFA KASAP (FIEEE) — Saskatoon, SK
for contributions to photoconductive sensors for x-ray imaging

DEEPA KUNDUR (FIEEE) — Toronto, ON
for contributions to signal processing techniques for multimedia and cyber security

GERARD LACHAPELLE (FIEEE) — Calgary, AB
for contributions to signal processing for global navigation satellite systems

HENRY LEUNG (FIEEE) — Calgary, AB
for contributions to chaotic communications and nonlinear signal processing

BAOCHUN LI (FIEEE) — Toronto, ON
for contributions to application-layer network protocols and network coding

JOHN LONG (FIEEE) — Delft, The Netherlands
for the development of on-chip and silicon radio-frequency integrated circuits

SYLVAIN MARTEL (FIEEE) — Montreal, QC
for contributions to medical micro- and nano-robotics

LUIS MARTI (FIEEE) — Toronto, ON
for contributions to modeling and simulation of electromagnetic transients

RASHEEK RIFAAT (FIEEE) — Calgary, AB
for contributions to protection of industrial power systems

SAFIEDDIN SAFAVI-NAEINI (FIEEE) — Waterloo, ON
for contributions to gigahertz to terahertz integrated antenna systems

RICHARD SCHREIER (FIEEE) — Toronto, ON
for contributions to delta-sigma data converters

GREGORY STEWART (FIEEE) — North Vancouver, BC
for contributions to model-based control of industrial systems

YU SUN (FIEEE) — Toronto, ON
for contributions to automated manipulation of biological cells

RIDHA TOUZI (FIEEE) — Ottawa, ON
for contributions to design and calibration of polarimetric synthetic aperture radar

GAOZHI XIAO (FIEEE) — Ottawa, ON
for contributions to the development of safety and security monitoring instrumentation and measurement technologies

NAVID ZARGARI (FIEEE) — Cambridge, ON
for contributions to medium voltage drive technologies and applications

IEEE Control Systems Award

BRUCE FRANCIS (LFIEEE) — Toronto, ON
for pioneering contributions to H-infinity, linear-multivariable, and digital control

Membres de l'IEEE Canada élus Fellows de l'IEEE 2015

AZZEDINE BOUKERCHE (FIEEE) — Ottawa, ON
Pour contributions aux protocoles de communications pour l'informatique mobile distribuée et les réseaux de capteurs sans-fil

JOSEF DROBNIK (FIEEE) — Kingston, ON
Pour le développement de convertisseurs de puissance hautes performances dans les applications industrielles

RANDY ELLIS (FIEEE) — Kingston, ON
Pour contributions aux techniques de chirurgie guidée par l'image

EKRAM HOSSAIN (FIEEE) — Winnipeg, MB
Pour contributions à la gestion du spectre et à l'allocation des ressources dans les réseaux radio cellulaires et cognitifs

SAFA KASAP (FIEEE) — Saskatoon, SK
Pour contributions aux capteurs photoconducteurs pour l'imagerie par rayons X

DEEPA KUNDUR (FIEEE) — Toronto, ON
Pour contributions aux techniques de traitement du signal appliquées au multimédia et à la cyber-sécurité

GERARD LACHAPELLE (FIEEE) — Calgary, AB
Pour contributions au traitement du signal pour les systèmes globaux de navigation par satellite

HENRY LEUNG (FIEEE) — Calgary, AB
Pour contributions aux communications chaotiques et au traitement non linéaire du signal

BAOCHUN LI (FIEEE) — Toronto, ON
Pour contributions aux protocoles réseau à couche d'application et au codage réseau

JOHN LONG (FIEEE) — Delft, The Netherlands
Pour le développement de circuits intégrés radiofréquences sur puces au silicium

SYLVAIN MARTEL (FIEEE) — Montreal, QC
Pour contributions à la micro et la nano robotique médicale

LUIS MARTI (FIEEE) — Toronto, ON
Pour contributions à la modélisation et à la simulation de l'électromagnétisme transitoire

RASHEEK RIFAAT (FIEEE) — Calgary, AB
Pour contributions à la protection des systèmes d'alimentation industriels

SAFIEDDIN SAFAVI-NAEINI (FIEEE) — Waterloo, ON
Pour contributions aux systèmes d'antennes intégrés gigahertz à térahertz

RICHARD SCHREIER (FIEEE) — Toronto, ON
Pour contributions aux convertisseurs delta-sigma

GREGORY STEWART (FIEEE) — North Vancouver, BC
Pour contributions au contrôle, à base de modèle, des systèmes industriels

YU SUN (FIEEE) — Toronto, ON
Pour contributions à la manipulation automatisée des cellules biologiques

RIDHA TOUZI (FIEEE) — Ottawa, ON
Pour contributions à la conception et à l'étalonnage des radars à synthèse d'ouverture par polarimétrie

GAOZHI XIAO (FIEEE) — Ottawa, ON
Pour contributions au développement d'instruments de surveillance et de technologies de mesure de la sureté et de la sécurité

NAVID ZARGARI (FIEEE) — Cambridge, ON
Pour contributions aux technologies et applications d'entraînement en moyenne tension

Prix IEEE 2015 en systèmes de contrôle

BRUCE FRANCIS (LFIEEE) — Toronto, ON
Pour contributions innovatrices aux systèmes de contrôle Hinfini, linéaires multi-variables et numériques

IEEE Canada Members elected as 2015 EIC Fellows

RAMACHANDRA ACHAR (FIEEE)—Ottawa, ON
for contributions to the advancement of computer-aided design tools and methodologies for high-speed electronic designs

AMBRISH CHANDRA (FIEEE)—Montreal, QC
for advancement of theory and control algorithms for power electronics converters and integration of renewable energy

COLIN CLARK (SMIEEE)—Ottawa, ON
for leadership in the design and operation of renewable energy systems

BRANISLAV DJOKIC (FIEEE)—Ottawa, ON
for contributions to high precision electrical metrology at low frequencies

RICHARD HORNSEY (SMIEEE)—Toronto, ON
for exceptional leadership in engineering education and research in integrated image-sensor systems

ANDREW ORVILLE JONES (LSMIEEE)—Stony Plain, AB
for management of all phases of the design, procurement, construction and commissioning of thermal generating stations

AMIR KHAJEPOUR (MIEEE)—Waterloo, ON
for contributions to vehicle mechatronics

PETER XIAOPING LIU (SMIEEE)—Ottawa, ON
for leading research in haptics and teleoperation

MANOJ SACHDEV (FIEEE)—Waterloo, ON
for exceptional contributions to integrated circuit design and manufacturing

JOHN YEOW (SMIEEE)—Waterloo, ON
for leadership and education in the development of nanotechnology-based multi-modality imaging systems

ZENG HONG ZHU (SMIEEE)—Toronto, ON
for contributions to dynamics and control of tethered spacecraft systems and engineering mechanics

Membres de l'IEEE Canada élus Fellows de l'ICI 2015

RAMACHANDRA ACHAR (FIEEE)—Ottawa, ON
Pour contributions à l'avancée des outils de conception assistée par ordinateur et des méthodologies de conception en électronique haut débit

AMBRISH CHANDRA (FIEEE)—Montreal, QC
Pour avancées dans la théorie et dans l'algorithmique de contrôle des convertisseurs électroniques de puissance et dans l'intégration des énergies renouvelables

COLIN CLARK (SMIEEE)—Ottawa, ON
Pour leadership dans la conception et l'exploitation des systèmes d'énergies renouvelables

BRANISLAV DJOKIC (FIEEE)—Ottawa, ON
Pour contributions à la métrologie électrique de haute précision des basses fréquences

RICHARD HORNSEY (SMIEEE)—Toronto, ON
Pour leadership exceptionnel dans l'enseignement de l'ingénierie et dans la recherche dans les systèmes de capteurs d'images intégrés

ANDREW ORVILLE JONES (LSMIEEE)—Stony Plain, AB
Pour la gestion de toutes les phases de la conception, de l'approvisionnement, de la construction et de la mise en service des centrales thermiques

AMIR KHAJEPOUR (MIEEE)—Waterloo, ON
Pour contributions à la mécatronique du véhicule

PETER XIAOPING LIU (SMIEEE)—Ottawa, ON
Pour la recherche de pointe en haptique et en téléopération

MANOJ SACHDEV (FIEEE)—Waterloo, ON
Pour contributions exceptionnelles dans la conception et la fabrication des circuits intégrés

JOHN YEOW (SMIEEE)—Waterloo, ON
Pour leadership et enseignement dans le développement des systèmes d'imagerie multimodes basés sur les nanotechnologies

ZENG HONG ZHU (SMIEEE)—Toronto, ON
Pour contributions à la dynamique et au contrôle des systèmes spatiaux captifs et au génie mécanique

Julian C. Smith Medal

ALBERTO LEON-GARCIA (FIEEE) — Toronto
for contributions to application platforms and smart infrastructure, and for authoring leading textbooks in the area

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Médaille Julian C Smith

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Pour contributions aux plates-formes d'applications et aux infrastructures intelligentes, et pour la rédaction des principaux manuels dans le domaine

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The annual IEEE Canada Electrical Power and Energy Conference (EPEC2016) will take place in Ottawa, Ontario, Canada from October 12-14, 2016. As the capital of Canada and located between Toronto and Montreal, Ottawa is easily accessible.

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IEEE Member and Geographic Activities recognizes outstanding Region 7 volunteers

The awards and recognition program of the IEEE Member and Geographic Activities Board (MGA) is designed to promote, recognize and reward excellence in the MGA operations and IEEE Geographic Unit Activities (Regions, Geographic Councils and Areas, Sections, Chapters, Student Branches, and Student Branch Chapters).

By **Vawn Himmelsbach**

Alfredo Herrera

MGA Achievement Award, 2014

Alfredo Herrera's father worked for the United Nations in Africa and it was Herrera's dream to follow in those footsteps. In 2009, he attended a conference in Washington, D.C., on the Humanitarian Technology Challenge, sponsored in part by the United Nations Foundation along with the IEEE. And that's when his dream started to become a reality.

Herrera, who enjoys working on complex problems and helping others, has worked for Ericsson in various capacities since 2009 — most recently as part of the radio systems design team, where he's grown his knowledge of radio technology, system design and performance.

"My dream was to eventually work on humanitarian projects," says Herrera, who was a recipient of a 2014 MGA Achievement Award for his efforts in delivering open source humanitarian technology. "If IEEE is working on humanitarian technology innovation, I felt we should be doing so openly so all of humanity will benefit."

Herrera has been pivotal in developing a framework around open hardware for humanitarian technology within the IEEE. The former vice-chair and chair of the IEEE Ottawa chapter of the Technology Management Council also founded the IEEE Canada Humanitarian Initiatives Committee (HIC) in 2009, after being inspired in Washington.

Since then, Herrera has facilitated the creation of active HIC groups and SIGHT (Special Interest Group on Humanitarian Technology) groups in several IEEE Canada sections. He also developed a strategy for delivering the IHTC14 conference program that galvanized HIC and SIGHT teams to deliver on humanitarian initiatives locally and globally. And he engaged

Continued on page 22 ›

Le père d'Alfredo Herrera travaillait pour les Nations Unies en Afrique et Alfredo rêvait de suivre ses traces. En 2009, il a assisté à Washington (D.C.) à un congrès sur le défi de la technologie humanitaire qui était parrainé par la Fondation des Nations Unies et l'IEEE. C'est alors que son rêve commença à se réaliser.

Alfredo, qui adore travailler à des problèmes complexes et aider les autres, travaille pour Ericsson depuis 2009 – il y a exercé diverses fonctions, mais se trouve actuellement au sein de l'équipe de conception des systèmes radio, où il a parfait ses connaissances en technologie radio, en conception de systèmes et en rendement.

« Je rêvais de travailler à des projets humanitaires », raconte le récipiendaire du prix de distinction honorifique du MGA 2014 pour ses efforts à fournir une technologie humanitaire libre. « Si l'IEEE travaille à l'innovation en matière de technologie humanitaire, j'ai le sentiment que nous devrions le faire de la manière la plus libre possible, de sorte que toute l'humanité puisse en bénéficier. »

Alfredo a joué un rôle clé dans l'élaboration d'un cadre de travail pour un matériel libre et une technologie humanitaire au sein de l'IEEE. L'ancien vice-président et président du chapitre d'Ottawa de l'IEEE du Conseil de gestion de la technologie a aussi fondé le Comité des initiatives humanitaires (HIC) de l'IEEE Canada en 2009, en s'inspirant de ce qu'il a appris à Washington.

Depuis lors, il a facilité la création de groupes HIC actifs et de groupes ayant un intérêt spécial pour la technologie humanitaire (groupes SIGHT) dans différentes sections de l'IEEE Canada. Il a aussi élaboré une stratégie pour que le programme du congrès IHTC14, qui a galvanisé les équipes HIC et SIGHT, soit livré dans le cadre

Le bureau des activités géographiques des membres de l'IEEE (MGA) reconnaît

l'excellence du travail des bénévoles de la région 7

Le programme des prix du bureau des activités géographiques des membres de l'IEEE (MGA) est conçu pour promouvoir, reconnaître et récompenser l'excellence dans les activités du MGA et des unités géographiques (régions, conseils et zones géographiques, sections, chapitres, branches étudiantes et chapitres de branches étudiantes).

Par **Vawn Himmelsbach**

Mathew Carias

MGA Young Professionals Achievement Award, 2014

Mathew Carias didn't study broadcast journalism. But this PhD student at the University of Toronto — who is conducting research into medical biophysics at Sunnybrook Research Institute — has developed a popular webinar series and engaging online personality through his work at the IEEE.

And his efforts earned him a 2014 MGA Young Professionals Achievement Award.

Carias is the vice-chair of the IEEE Young Professionals Toronto Affinity Group, who also serves as a team member of the Member Products & Services focus area of the global MGA Young Professionals Committee.

That's in addition to his day job, where he's working with the focused ultrasound group at Sunnybrook to develop new tools for treating cardiac arrhythmias. For his graduate work there, he was awarded the prestigious Vanier Canada Graduate Scholarship.

"The webinars started out as an information delivery method to members," says Carias. "When we had the name change from GOLD to Young Professionals, I thought, 'let's open up the webinars to broader topics; let's talk about cool tech.'"

The webinars include both technical and professional development topics — from using sensors to unleash the power of your smartphone, to balancing a career with volunteer activities. Carias is also working closely with other groups, such as Women in Engineering, to bring IEEE activities to a broader audience.

Mathew Carias n'a pas étudié en radiotéléjournalisme. Néanmoins, cet étudiant au doctorat de l'Université de Toronto – qui fait des recherches en biophysique médicale au Sunnybrook Research Institute – a mis au point une série de webinaires très populaires et s'est développé une personnalité en ligne engageante grâce à son travail à l'IEEE.

Ses efforts lui ont d'ailleurs valu le prix de l'accomplissement Jeunes professionnels MGA 2014.

Mathew, qui est vice-président du groupe d'affinité de Toronto Jeunes professionnels de l'IEEE, est aussi membre du domaine d'intérêt Produits et services des membres du comité mondial Jeunes professionnels MGA.

Cet engagement s'ajoute à son travail quotidien au sein du groupe ultrason de Sunnybrook pour y mettre au point de nouveaux outils de traitement de l'arythmie cardiaque. Pour son travail de diplômé à cet endroit, il a d'ailleurs reçu la prestigieuse bourse d'études supérieures du Canada Vanier.

« Les webinaires ont commencé sous forme de rappel d'information aux membres », explique Matthew. « Lorsque le nom GOLD a été remplacé par Jeunes professionnels, j'ai eu l'idée d'ouvrir les webinaires à des sujets plus vastes et de parler de technologies attrayantes. »

Les webinaires incluent des sujets techniques et de perfectionnement professionnel – de l'utilisation de senseurs à l'exploitation des potentialités de son téléphone intelligent, en passant par la confection d'une carrière laissant une place importante aux activités de bénévolat. Matthew travaille aussi de près avec d'autres groupes, tels que Women in Engineering (WIE), afin de faire connaître les activités de l'IEEE à un vaste auditoire.

Continued on page 23 ›

› Alfredo Herrera, continued from page 20

with affinity humanitarian organizations — including UNICEF, EWB and Open Street Maps — to develop members' capabilities in the humanitarian realm.

"His greatest achievement for IEEE has been in participating, defining and refining activities and strategies aligned with the IEEE humanitarian tagline and initiatives," says Raed Abdullah, strategic planning engineer at Hydro Ottawa and volunteer with IEEE Ottawa Section. "He helped launch five open source humanitarian technology projects in Canada that have involved more than two dozen new-to-the-scene IEEE members, plus many more who have been involved in IEEE activities."

> "If IEEE is working on humanitarian technology innovation, I felt we should be doing so openly so all of humanity will benefit."
> – **Alfredo Herrera**

For Herrera, it's been a journey. "Right now there are no projects designed purely in this way — it's a new idea." But open source software is already being used as an effective technology to address humanitarian needs in developing countries. Herrera believes the adoption of open hardware — as an alternative to commercial off-the-shelf products — may be another effective solution to global development challenges, helping to reduce costs and increase innovation.

Herrera hopes that by providing a framework to members, this will open the door to innovation in humanitarian technology.

Herrera has launched the IEEE Open Source Peer Review, designed to engage and empower local citizens in under-served communities to develop sustainable, scalable social entrepreneurship by using open-source solutions to grow their business and re-invest profits into the community. He has also provided resource leads for IEEE's initiatives in Haiti and Africa, and launched the first open source humanitarian technology program.

"Due to Herrera's efforts, we're seeing beneficial change in SIGHT," says Abdullah. "His open source strategy will help IEEE provide more services to members and prospective members. And he did all this while growing his family and hosting his elderly parents at home — and getting a promotion at Ericsson."

"IEEE is a great place to volunteer because you can actually pursue something that is fairly new that no one else is doing," says Herrera. "I feel fortunate to work on these ideas — it's rewarding to make this work and connect with other people in IEEE who have a similar passion for humanitarian work."

Having also just completed a Masters program at the University of Ottawa, Herrera says an unexpected benefit of his IEEE volunteering has been to open the door for a PhD. ■

d'initiatives humanitaires locales et mondiales. Et il s'est engagé auprès d'organisations humanitaires ayant des affinités communes – incluant l'UNICEF, Ingénieurs sans frontières et OpenStreetMap – à accroître les compétences des membres en matière humanitaire.

« Sa plus grande réalisation à l'IEEE a été de mener, de définir et de raffiner des activités et des stratégies axées sur des principes et des initiatives humanitaires endossées par l'IEEE », souligne Raed Abdullah, ingénieur en planification stratégique à Hydro Ottawa et bénévole à la section d'Ottawa de l'IEEE. « Alfredo a aidé au lancement de cinq projets de technologie humanitaire libre au Canada qui ont mobilisé plus d'une vingtaine de nouveaux membres de l'IEEE, ainsi que de nombreux autres qui avaient déjà participé à des activités de l'IEEE. »

Pour Alfredo, c'est une belle aventure. « Il n'y a encore aucun projet expressément conçu en ce sens – l'idée est nouvelle. » Mais les logiciels libres sont déjà utilisés comme une technologie efficace pour répondre à des besoins humanitaires dans les pays en développement. Alfredo croit que la création de matériel libre comme solution de remplacement aux produits disponibles dans le commerce peut être une autre solution efficace aux défis de développement mondiaux et aider à réduire les coûts et à accroître l'innovation.

Alfredo espère que le fait de fournir un cadre de travail aux membres ouvrira la porte à l'innovation en technologie humanitaire.

Alfredo a lancé la révision par les pairs libre à l'IEEE, conçue pour engager et former des citoyens locaux dans des collectivités sous-desservies afin de développer un entrepreneuriat social durable et évolutif en utilisant des solutions libres pour développer leur activité commerciale et réinvestir les profits dans la collectivité. Il a aussi facilité des initiatives de l'IEEE en Haïti et en Afrique, et lancé le premier programme de technologie humanitaire libre.

« Grâce aux efforts d'Alfredo, nous avons vu des changements bénéfiques dans SIGHT », rapporte Abdullah. « Sa stratégie libre aidera l'IEEE à fournir plus de services aux membres présents et prospectifs. Et il a fait tout cela en s'occupant de sa famille et en hébergeant ses parents âgés à son domicile – et tout en obtenant une promotion à Ericsson! »

« L'IEEE est un endroit formidable pour faire du bénévolat parce que vous pouvez vous consacrer à un projet relativement nouveau », explique Alfredo. « Je me sens comblé de développer ces idées – c'est gratifiant de faire ce travail et de rencontrer d'autres gens de l'IEEE qui partagent ma passion pour le travail humanitaire. »

Tout juste diplômé d'un programme de maîtrise de l'Université d'Ottawa, Alfredo ajoute qu'un des avantages inattendus de son bénévolat à l'IEEE a été de le conduire tout naturellement à un doctorat. ■

***Vawn Himmelsbach** is a freelance writer who has written about business and technology for close to 20 years.*

Tushar Sharma

MGA Young Professionals Achievement Award

2015

The University of Calgary's iRadio Lab is where this doctoral student is based. But his message about the opportunities with Young Professionals goes around the world, just like the intelligent radio networks he is helping advance. At IEEE Southern Alberta Section, the innovative events he led garnered Best Canadian Young Professionals Group of 2014. In 2015, he launched a program of events for Young Professionals within the IEEE Microwave Theory and Techniques Society. More to come about Tushar's activities in the next issue!

› Mathew Carias, continued from page 21

"We get 500 to 1,000 views on any video we post," he says. Currently, there are around 100 videos including webinars available on-demand to members around the world.

Carias' past experience as secretary of the GOLD Toronto Affinity Group gave him a unique perspective on the challenges associated with the former branding, and inspired him to raise awareness of the new Young Professionals name and its significance for students and early-career professionals.

"Mathew embodies the fundamental mission of the IEEE through his academic research and lifestyle. He finds purpose by giving back."

– **Mario Milicevic** global chair of IEEE Young Professionals

He played a pivotal role in pioneering the new Young Professionals brand by helping organize high-impact networking events, workshops and seminars. As webinar specialist, he is responsible for administering and hosting the monthly webinar series, which is broadcast live and made available for on-demand viewing on YouTube and IEEE.tv. The previous webinar platform was clunky, so Carias moved to Google Hangouts and started a new registration process using Google Forms.

"Through his efforts, Mathew has helped revitalize the webinar series, and his engaging style has made the series exciting to watch," says Mario Milicevic, global chair of IEEE Young Professionals. "The growth in live and on-demand viewership of the monthly webinars is a testament to his natural ability to engage members through an accessible platform."

Carias has also been heavily involved in the marketing and logistics behind numerous networking mixer events and workshops for students and early-career professionals.

The Young Professionals Toronto Affinity Group organized several networking mixers in 2013 and 2014 that attracted anywhere from 250 to 350 participants at trendy venues in downtown Toronto.

"Mathew's efforts have helped launch the new IEEE Young Professionals brand, build a well-connected Young Professionals community in Toronto, and improve the global reach to IEEE members through the new IEEE Young Professionals monthly webinar series. He has also played a pivotal role in advancing the quality of the member experience," says Milicevic.

"Mathew's mature attitude and integrity are, in my opinion, key pillars of an individual who is dedicated to advancing technology for humanity," he added."He embodies the fundamental mission of the IEEE through his everyday academic research and lifestyle. He is passionate about improving human health and patient care and finds purpose in his work and life by giving back." ■

« Chacune des vidéos mises en ligne est vue de 500 à 1000 fois », se félicite-t-il. Nous avons actuellement une centaine de vidéos, y compris des webinaires, disponibles sur demande pour les membres partout dans le monde.

Le travail accompli dans le passé par Matthew comme secrétaire du groupe d'affinité de Toronto GOLD lui a permis de comprendre sous un jour unique les défis associés à l'ancien nom et l'ont motivé à faire connaître le nouveau nom, Jeunes professionnels, et sa signification auprès des étudiants et des professionnels en début de carrière.

Matthew a joué un rôle central dans la mise en marché du nouveau nom Jeunes professionnels, en aidant à l'organisation d'événements de réseautage, d'ateliers et de séminaires à impact important. En tant que spécialiste des webinaires, il est en charge de l'administration et de l'hébergement de séries de webinaires mensuels, diffusés en direct et rendus disponibles pour un visionnement sur demande sur YouTube et IEEE.tv. La plateforme de webinaire précédente était maladroite, ce qui a amené Matthew à passer à Google Hangouts et à amorcer un nouveau processus d'inscription avec Google Forms.

« Par ses efforts, Matthew a aidé à revitaliser la série de webinaires, et son style engageant les a rendus très attrayants », remarque Mario Milicevic, président mondial de Jeunes professionnels IEEE. « La croissance des visionnements en direct et sur demande des webinaires mensuels atteste de son talent naturel pour attirer les membres au moyen d'une plateforme accessible. »

Matthew s'est aussi entièrement engagé dans la mise en marché et la logistique entourant de nombreux événements de réseautage et ateliers pour étudiants et jeunes professionnels en début de carrière.

Le groupe d'affinité de Toronto Jeunes professionnels a organisé de nombreux événements de réseautage en 2013 et 2014 qui ont attiré chacun de 250 à 350 participants dans des lieux branchés du centre-ville de Toronto. « Par ses efforts, Matthew a aidé à lancer le nouveau nom Jeunes professionnels de l'IEEE, à bâtir une communauté de jeunes professionnels bien connectés à Toronto et à améliorer la portée mondiale des membres de l'IEEE au moyen de la nouvelle série de webinaires mensuels des Jeunes professionnels de l'IEEE. Il a aussi joué un rôle clé dans l'amélioration de la qualité de l'expérience des membres », confirme Milicevic.

« L'attitude mature et l'intégrité de Matthew sont, d'après moi, les piliers d'une personne dévouée à une utilisation humaine de la technologie », ajoute-t-il. « Matthew incarne la mission fondamentale de l'IEEE par ses recherches universitaires quotidiennes et son style de vie. Il se passionne pour l'amélioration de la santé humaine et des soins aux patients, et il donne un sens à son travail et à sa vie en donnant en retour. » ■

Vawn Himmelsbach est une auteure indépendante qui a écrit sur les affaires et la technologie pendant près de 20 ans.

L'iRadio Lab de l'université de Calgary est l'endroit où travaille cet étudiant de doctorat. Mais son message au sujet des occasions que représentent les Jeunes professionnels fait le tour du monde, tout comme les réseaux de radio intelligente qu'il s'applique à faire progresser. Avec la section de l'IEEE du sud de l'Alberta, les activités novatrices qu'il a dirigées ont reçu la mention Meilleur groupe Jeunes professionnels du Canada en 2014. En 2015, il a lancé un programme d'activités pour Jeunes professionnels au sein d'IEEE-MTT-S. Plus de nouvelles sur les activités de Tushar dans le prochain numéro!

Tushar Sharma

Prix de l'accomplissement Jeunes professionnels MGA

2015

IEEE Canadian Foundation

FROM THE PRESIDENT—We want to thank you again, and recognize your support to the IEEE Canadian Foundation in 2014. Our generous donors pay forward to programs that benefit present and future electrical engineers and engage IEEE technical expertise to provide humanitarian benefit to society.

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- **Vancouver Section Scholarship Fund –** supports scholarships awarded by the IEEE Vancouver Section
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We appreciate your past support and urge you to continue to do so and increase your contributions where possible. If you have not yet made a donation, please join your peers— this is your opportunity to stand with others who choose to make a difference. We could do so much more with your support. All the different ways to give and donor recognition programs are fully described on our website.

The IEEE Canadian Foundation wants to hear from you – if we can better engage and support our community, please let us know. (president@ieeecanadianfoundation.org).

Many IEEE members in Canada contribute to the all-volunteer effort that is the IEEE Canadian Foundation, including the invaluable assistance of Luc Matteau, John Mowbray and many others in the preparation of this 2014 Honour Roll of Donors.

Yours sincerely,

David H. Whyte
President, IEEE Canadian Foundation

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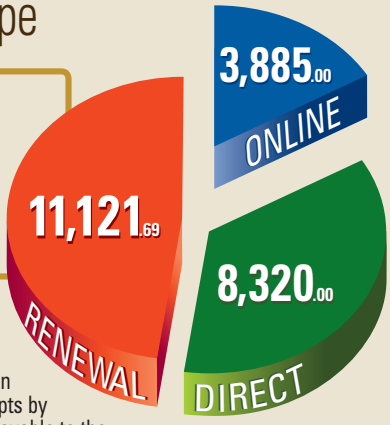

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Fondation canadienne de l'IEEE

MOT DU PRÉSIDENT—J'aimerais vous remercier à nouveau et reconnaître le soutien que vous avez apporté à la Fondation canadienne de l'IEEE en 2014. Par vos dons généreux, vous rendez possibles des programmes destinés aux ingénieurs électriques d'aujourd'hui et de demain qui engagent l'expertise technique de l'IEEE dans le but de procurer des bénéfices humanitaires à la société.

Vos dons nous ont permis d'améliorer l'expérience d'étudiants en génie électrique, en génie électronique et en génie informatique grâce aux programmes de nos Centres McNaughton, situés dans des établissements partout au pays, et à nos bourses.

Des étudiants et d'autres bénéficiaires ont également profité du cofinancement de projets spéciaux visant le perfectionnement des connaissances et le développement de l'enthousiasme en ingénierie à tous les niveaux. De plus en plus, ces projets utilisent la technologie pour le bien de l'humanité. Les histoires de réussite publiées sur notre site Web et dans cette revue démontrent le vaste éventail d'occasions de perfectionnement technique et professionnel que nous soutenons, toutes tirées des rapports d'achèvement des travaux soumis à notre attention par les bénéficiaires de subventions spéciales.

Essentiel pour alimenter notre capacité à fonctionner d'année en année, notre Fonds général est constitué de vos dons à usage non déterminé.

Nos Fonds dotés permettent d'accorder un grand éventail de prix et de bourses. N'hésitez pas à faire un don pour financer un prix d'IEEE Canada ou créer un nouveau prix de votre choix.

Vous pouvez également contribuer à financer l'un des fonds suivants de la FCI:

- **Fonds général –** finance les Centres des ressources éducatives IEEE McNaughton au Canada, les bourses connexes et les subventions spéciales;
- **Fonds membres à vie canadien –** finance les activités d'intérêt pour les membres à vie, les ingénieurs en puissance et des étudiants en ingénierie;
- **Fonds de technologie pour l'humanité –** finance les projets nouveaux et innovateurs visant l'application de la technologie au bénéfice de l'humanité;
- **Fonds de bourses d'études de la section de Vancouver –** finance les bourses d'études décernées par la section de Vancouver de l'IEEE;
- **Fonds de bourses d'études canadiennes Plus de l'IEEE PES –** finance les bourses d'études décernées aux étudiants de programmes de production d'électricité au Canada.

J'apprécie votre soutien et vous invite à maintenir vos contributions voire à les augmenter, dans la mesure du possible. Si vous n'avez pas encore fait de don, je vous invite à imiter vos pairs – vous avez là l'occasion de faire avec d'autres un geste concret pour changer les choses. Nous pourrions faire tellement plus avec votre appui. Reportez-vous à notre site Web pour connaître les différentes façons de donner et en savoir plus sur notre programme de reconnaissance des donateurs.

La Fondation canadienne de l'IEEE cherche sans cesse à mieux soutenir sa communauté et accepte donc avec plaisir tous les commentaires et propositions à cet égard.

president@ieeefondationcanadienne.org

De nombreux membres de l'IEEE au Canada consacrent généreusement une partie de leur temps à la Fondation canadienne de l'IEEE. Je suis également reconnaissant à Luc Matteau, à John Mowbray et à plusieurs autres pour la préparation de cette liste d'honneur des donateurs 2014.

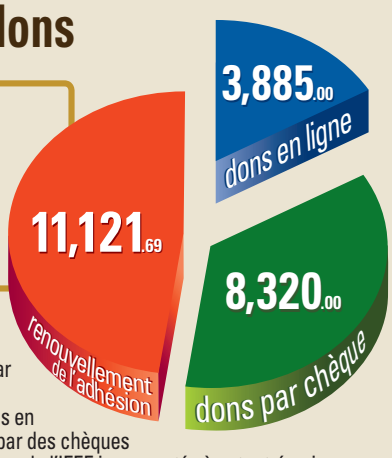
Veuillez agréer mes meilleures salutations,

D H Whyte

David H. Whyte
Le président de la Fondation canadienne de l'IEEE

Répartition des **dons**

$23,326
en dons reçus de particuliers en **2014**



Ce diagramme illustre la répartition des dons des membres effectués par le processus de renouvellement de l'adhésion, par notre service de dons en ligne (avec reçus électroniques) et par des chèques à l'ordre de la « Fondation canadienne de l'IEEE inc. » postés à notre trésorier.

En 2014, les contributions des donateurs ont aidé à soutenir :

- **13** subventions McNaughton pour des centres de ressources éducatives IEEE (11 améliorations et 2 nouveaux centres à l'Université de Moncton et à l'Université Simon Fraser)
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  - Prix d'excellence de service W.S. Read,
  - Prix des télécommunications R.A. Fessenden, (commandité par Telus)
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  - le Prix d'excellence en leadership industriel R.H. Tanner
- **5** bourse d'étude de la Fondation canadienne de l'IEEE
- **19** subventions spéciales de la Fondation canadienne de l'IEEE (dont 4 subventions humanitaires)
- **2** prix Expo-sciences Québec de la Fondation canadienne de l'IEEE

Chaque don compte. Le Tableau d'honneur reconnaît officiellement tous les donateurs ayant versé 25 $ ou plus.
La Fondation tient à remercier également tous les donateurs qui n'y figurent pas.

IEEE Canadian Foundation
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The Expert

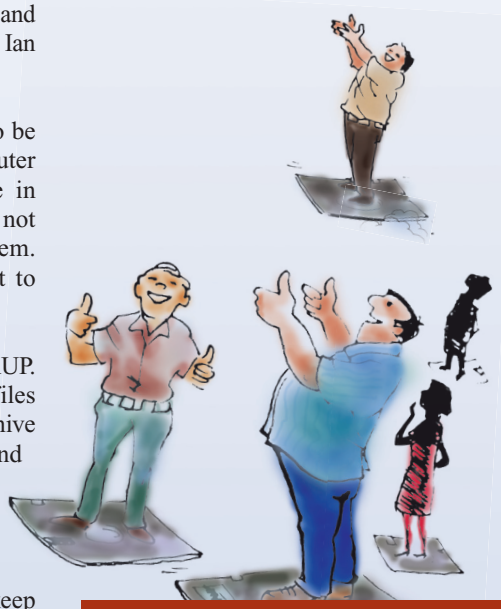
By **Elmer Bourque** and **Ian MacPherson**

IT WAS THE BEGINNING of desktop computers, and files and file management on desktop computers. Ian MacPherson was in Load Forecasting and was one of the lucky ones who had a computer assigned to his job position. Since he took care of lots of important files and more and more of them were on the computer, Ian decided he needed to have a reliable backup.

It was widely recognized that files needed to be backed up as Windows 3.1, and early computer equipment were not always totally reliable in keeping things safe. Also, 5 1/4" floppies did not always release the files entrusted to them. Indeed, even the hard drives were more apt to fail than today.

So Ian sat down and wrote a nice "BACKUP.BAT" file. This batch file looked at all the files in the monitored directories and if the archive flag was not set the batch file would set it and copy the file in the backup location. This program worked very well. People started hearing about Ian's backup program.

I set up the program on my computer to keep track of a few (user selected) directories. Some of my co-workers did the same. Soon MacPherson at head office was the expert. He was being consulted by even the highly skilled and highly paid staff of the Point Lepreau Nuclear Generating Station. From far and wide within NB Power, the MacPherson backup was getting considerable acceptance.



So I approached Ian and asked how he had become such an expert as to be consulted by the whole company. Well, he said, I needed a backup and looked around to see how to do it and this is what I came up with, after I read what the DOS instructions could do. It works. All the tools are there: attribute tests, and pipes to transfer files that have changed since the last backup. I'm not an expert, Ian said, I was simply the first one to read the book and do it. They think I'm an expert, but that is only because I was the first to do it in our company.

I went back to my desk and dug up the DOS manual. Just like Ian said, it was pretty clear what could be programmed into a .BAT file. With the right commands, new files could be automatically copied to the designated drive, or existing ones revised. The essence of a backup.

So there you have it. The expert is simply the one who does work that needs to be done. Then, because he knows how, he becomes ipso facto, the expert. ■

Elmer Bourque *(LSMIEEE) is currently associated with Kestrel Power Engineering of Toronto as a senior engineer. Following graduation he developed numerical control software for the New Brunswick Research and Productivity Council. In 1974, he joined New Brunswick Power where he worked for 31 years as a system performance engineer responsible for power system stability and proper control by commissioning and maintaining fault recording equipment, area generation control, generator excitation, stabilizers, and governor systems. He is recipient of the 2012 IEEE Canada J.J. Archambault Eastern Canada Service Medal.*

Ian MacPherson *is a retired accountant with over 30 years of experience at NB Power and the New Brunswick System Operator. At various times he worked in the Distribution, High Line Construction, and Rates & Load Forecasting areas. His longest stint was as the Senior Load Forecaster, developing computer models to forecast the long-term demand for electricity in the province.*

N.Ed. "Experiential Learning" shares the real-life lessons of our readers that only experience can teach. If you have a tale to tell, then target it to Bruce Van-Lane, **vanlane@ieee.org**. It can be about your "schooling," or that of a colleague's – all we ask is that it be **true!**

No prerequisites required

A student member recounts her experiences of growth and satisfaction in volunteering at last June's International Humanitarian Technology Conference (IHTC 2015) in Ottawa.

By **Alise Wang**

Last year, if you were to tell me that I would be one of the Masters of Ceremony at an international conference banquet, I'd laugh and tell you that you must be crazy. Needless to say, it felt surreal being on the podium this past June at IHTC, speaking to some of the most educated and intellectual individuals I've met. Looking back, I wonder how I even got there.

I was your stereotypical introverted first year nerd when I started school at the University of Ottawa for chemical engineering in 2014. I stepped into school every day with my head down, holding my textbooks like a bulletproof shield against my chest with one hand and my calculator in the other, speed-walking to the nearest table so I could sit down and study. I remember asking myself "so this is it?! This is what my life is going to consist of for the next four years? Just moulding in this library? There has to be more to engineering than these tiresome trigonometric integrals…"

"My dream is to go to a developing country and improve their water filtration system in a way that'll give them independence and self-sufficiency."

Although, yes, it is sadly true that integrals take up a lot of the math in engineering, but this major isn't just about the math: it's about the connecting with the people doing the math, and communicating to non-engineers in a way that makes them understand the math.

I came to university with ambitions of getting involved with humanitarian work after my degree, and applying my engineering knowledge for philanthropic purposes. My dream career is to help a developing country improve their water filtration systems in a way that'll give them independence and self-sufficiency. I had no idea how to start this journey, but the IEEE provided me with the initiative to take the first steps towards my goal. I was fortunate enough to attend the STRAT 24 cocktail event in January and learn about this organization's vision. STRAT 24 was a student competition hosted by Enactus UOttawa and the IEEE Ottawa Section, sponsored by uOttawa and CISCO. A selected number of students in small groups were given a case study written by Alfredo Herrera and Joan Kerr about IEEE Humanitarian Initiatives, and were locked in hotel rooms for twenty four hours to research and give a well thought-out presentation to the judges. I was so inspired listening to the students' presentations that I immediately became an IEEE student member as soon as I got home.

A few weeks later, I attended SPAC, an annual conference specializing in helping students net-

Photo: Glenn McKnight

Winning participants and organizers of the IHTC 2015 Student Competitions receive some well-deserved recognition. *Left to Right:* Simona Verga (DRDC), Alexander Poultney (Villanova University), Michael Benson (Villanova University), Sawsan Abdul-Majid (University of Ottawa), Mahmoud Kabalan (Villanova University), Maaz Irfan (University of Ottawa), Reem W. I. Alanqar (University of Ottawa), Joan Kerr, (FBSC), Zaeem Queshi (University of Ottawa)

Summary of IHTC Student Activities

by Sawsan Abdul-Majid

Student activities at IHTC 2015 were organized in two streams:

1. Student competition, Oral and Poster *(mainly post-graduate students)*
Students' papers with international submissions were peer-reviewed. Accepted papers were judged during the conference; six judges were invited to form two judging committees.

Oral presentations and posters were judged using the following criteria:

- Originality, complexity, usefulness of the product,
- Clarity of link to humanity,
- Alignment with the conference theme, and
- Presentation skills.

Awards presented to students were funded by the IEEE Canadian Foundation, and the IEEE Region 7 Humanitarian Initiatives Committee.

Three oral presentation winners were selected and money awards of $400, $300, and $200 were granted with Certificates to first-, second-, and third-placed Oral presenters accordingly.

Additionally, the first-placed poster presentation winner received $300.

2. STRAT 24—Take Two students special panel, undergraduate students *(faculty of Engineering at UOttawa)*
This panel was presented with a challenging case history written by veteran HIC committee members Alfredo Herrera and Joan Kerr, and asked to present their individual solutions.

No easy assignment, as the case history had alreay been piloted in January by IEEE Ottawa Section and Enactus UOttawa at the STRAT 24 Student Competition; UOttawa, and CISCO were among the sponsors for that event.

Dr. Abdul Majid, IHTC 2015 Students Activities chair, as well as a few IHTC 2015 Board members acted as judges, with 24 students participating.The success of this earlier competition was the inspiration for the IHTC 2015 student special panel. IHTC 2015 invited and sponsored a team of STRAT 24 students to present enhanced solutions by reviewing the same case study used at STRAT 24 competition.

The panel moderators for STRAT 24—Take Two were Dr. Sawsan Abdul-Majid, Ms Joan Kerr and Alfredo Herrera.

work with working professionals in the technological field, hosted by the IEEE UOttawa and Carleton student branches. Through this conference, I was able to step out of my shell and network for the first time. I was even lucky enough to meet an IEEE Ottawa Section member, Wolfram Lunscher, and learn about volunteering for future IEEE events! It was extremely nerve-wracking but eased me into the idea of being social.

A few months later, I was introduced by Wolfram to the International Humanitarian Technology Conference, where I met Dr. Sawsan Abdul-Majid, one of the chairs of the Technical and Student Activities Committees. I spent the next couple of months attending meetings, working with talented professionals in the committee, and making a plethora of spreadsheets via Excel to organize information about the oral paper presentations. When I found myself standing on that banquet podium, I realized that, through this conference, I've gained more organizational and interpersonal skills than I ever did in a lecture hall.

Volunteering for the IHTC was one of the best experiences I've ever had, and one of the bravest decisions I've ever made. Through IHTC, I met even more professionals and academics, learned about many intelligent technologies from presentations, and was given the amazing opportunity to be a part of the executive team of the IEEE UOttawa student branch, a group of some of the smartest and perseverant students I've ever met. None of this would have happened if I decided to stay home that night of STRAT 24 because I wouldn't have met such brilliant individuals like Sawsan Abdul-Majid, Maria Rey, Raed Abdullah, Wolfram Lunscher, Pritpal Singh, Alfredo Herrera, Richard Pommainville, and the rest of the committee, that I am now proud to call my colleagues and friends.

"IEEE provided me with the initiative to take the first steps towards my goal."

I cannot begin to explain how important it is for students to be more involved with events through IEEE. There is no better way to meet influential academics and professionals than to work with them firsthand or start a conversation with them at a conference. As a shy and introverted student myself, I can completely relate to anyone who finds difficulty networking; and as a student who's ambitious to learn for the future, I will tell you that networking is one of the most important assets you will need to have a successful career, so go slap on a tie or a pair of heels and a crisp dress shirt, put your textbooks down, and get yourself out there! ■

About the Author

Alise (Hui) Wang was born in Beijing and moved to Calgary, Alberta when she was four years old. She is currently a second year undergraduate Chemical Engineering, Engineering Management and Entrepreneurship student at the University of Ottawa. After volunteering for IHTC, she joined the IEEE UOttawa Student Branch Executive Committee as VP Secretary. Alise is also an active member of Engineers Without Borders and Kin Canada. After graduation, she hopes to use her degree towards philanthropic projects across the world, specifically in water treatment.

IEEE Canada Humanitarian Initiatives Committee (HIC) Activities

by Ferial El-Hawary

The IEEE Canada Humanitarian Initiatives Committee (HIC) was established to promote IEEE's core value of service to humanity. Towards this goal it: raises awareness of how IEEE Canada can best use its strengths and relevant technologies to address societal problems; provides leadership, encouragement, and support to Sections and Chapters and members who are interested in conducting humanitarian initiatives; identifies humanitarian activities across Canada; and coordinates activities with IEEE world-wide humanitarian committees and initiatives. Supporting the objectives of this committee, numerous activities took place in 2015, many of which will continue in 2016.

1 Our major initiative over the period 2014 -2015 was to gain the support of Region 7 sections and the Region to be co-sponsors and host the International Humanitarian Technology Conference (IHTC) 2015, held in Ottawa, running May 31 to June 4.

2 During 2015, we have been successful in implementing some of our new initiatives such as a Student Paper competition and conducting a panel discussion during IHTC.Thanks to the IEEE Canadian Foundation who supported this project, covering some of the students' expenses and awards for the winners.

3 Working on establishing section-level HIC groups where humanitarian activities would take place through Special Interest Group on Humanitarian Technology (SIGHT) Chapters. A new SIGHT Chapter has been established in the Toronto Section, joining established ones in Montreal and Ottawa Sections. More are in the process of approval (Northern Canada and Vancouver Sections.)

4 Progress has been made towards updating the HIC Web Site; some work has been done by an HIC volunteer. Visit: http://www. hic.ieee.ca/. Continuous maintenance work is still needed (a student may be engaged to complete the work).

5 Continue to implement some of the recommendations that came out of IHTC'2014. The two major ones of interest to IEEE Region 7 (R7) for implementation are:

- An MOU between UNICEF and R7 indicating areas of collaboration (leaders are: Amir Aghdam, Witold Kinsner, Alfredo Herrera, and Ferial El-Hawary and other volunteers).
- HAM Radio Course (leaders are: Witold Kinsner and volunteers from various IEEE Sections).

6 Continue cooperation with IEEE Region 6 in participating at the annual Global Humanitarian Technology Conference.

7 Many new initiatives resulted out of IHTC 2015 held in Ottawa. I would like to express my gratitude for all the hard work of Maria Rey and her team for the major accomplishments, and for facilitating strong cooperation with the IEEE Humanitarian Activities Committee through a new subcommittee (TIGER Team). The Tiger Team's mission is to leverage Government, Industry, Academia, NGOs and IEEE Canada capability to deliver tangible effects on the ground in recipient communities.

The very successful IHTC conference held this past May in Ottawa built on the achievements of IHTC 2014 in Montreal. My thanks to all the volunteers from both conferences.

I would also like to express my sincere thanks to the University of Ottawa and other sponsors including TELUS for their generosity.

Photo: Glenn McKnight

TIGER Team Members, Left to Right: Amir Aghdam (IEEE Canada 2014-15 President), Rabiz Foda (IHTC 2015), Maria Ray (IHTC 2015 Chair), Ferial El-Hawary (IHTC 2014 Chair and IEEE Canada HIC Chair) and Mike Lightner (IEEE Humanitarian Activities Committee Chair)

What's New in the Literature?

by Terrance Malkinson

The editors of *MIT Technology Review* provide their listing of top companies that they believe have truly innovative technology and a business model that is both practical and ambitious. ["The 50 Smartest Companies." 118(4):45-47. July-August, 2015 www.technologyreview.com]. Leading the list is Tesla Motors with its spin-off extending its battery technology to applications which have the goal of remaking the energy grid for industry, utilities and residences. In their analysis the editors believe that biomedicine has had an outstanding year turning basic research breakthroughs into disease treating application success stories for patients. This is in contrast to the energy industry which was seen to be less innovative.

In today's world we are surrounded by noise. M. Charles Liberman in his article "Hidden Hearing Loss." [*Scientific American*. 313(2):48-53. August 2015. www.scientificamerican.com] discusses how common sources of noise in everyday life can cause irreparable damage to our ears in unexpected ways. The author discusses current research on the subject and how even temporary short exposure to loud noise can result in immediate and irreversible damage to fibers in the auditory nerve which conveys sound information to the brain. They call this hidden hearing loss because a normal audiogram test will not detect the nerve damage. This is not just a problem of the elderly but the damage is being discovered in the young. The author provides information on how to protect your hearing and links to further information.

The cover story in *Railway Age* is on passenger rail as a safe, reliable, and growing method of transportation. Carolina Worrell and William Vantuono provide in their article "2015 Passenger Rail Guide." [pp. 34-44. June 2015. www.railwayage.com] dozens of examples of North American cities and larger jurisdictions who have developed outstanding rail systems. As world population grows and more and more people live in dense urban areas it is inevitable that automobile transport will not be feasible and rail systems will be the mobility method of choice by most individuals.

Establishing and running a new business is challenging, exciting, and filled with opportunities and hazards. In "How I Spot Winners," [*Inc*. pp. 86-102. July-August, 2015. www.inc.com] twelve of Americas most successful founders describe how they became successful. You will draw inspiration and obtain valuable insights from their experiences. Continuing on with the theme of how to achieve success Joe Robinson in his article "Where There's Willpower There's a Way" [Entrepreneur. pp. 50-54. July, 2015. www.entrepreneur.com] discusses how steely resolve and self-control can help you overcome challenges on your path to entrepreneurial success. Case studies and strategies to enhance your "willpower success" are provided. The author compares entrepreneurs to scientists who have multiple laboratory failures but realize that failure is part of the process to success.

Dangerous infections that are resistant to antibiotics are spreading and growing stronger. In "How to Stop a Superbug: Part I" [*Consumer Reports*. 80(8):20-26. August, 2015. www.consumerreports.org] important issues related to the seriousness of the problem, how superbugs spread through a community, the misuse of antibiotics, and the quest for new drugs are discussed. Interesting insets provide information on how to avoid infections, myths about antibiotics, and when to say no to a prescription.

Digital overload is fast becoming the number one problem in today's world. Information overload resulting from a plethora of media is making it increasingly difficult to find focus on a task. In "Conquering Digital Distraction," [*Harvard Business Review*. 93 (6):110-113. June 2015. www.hbr.com] Larry Rosen and Alexandra Samuel provide two viewpoints, discussing the issues and providing strategies to bring balance to your life while effectively using these essential tools for today's workplace and personal life activities.

The cover story and spotlight of the July-August, 2015 issue of *Harvard Business Review* discusses the revolutionary concept "It's Time to Blow up HR and Build Something New: Here's How" [93(7/8). July-August, 2015]. Three articles "Why We Love to Hate HR…and What HR Can Do About It," "People Before Strategy: A New Role for the CHRO," and "Bright, Shiny Objects and the Future of HR" investigate topics such as identifying and separating best practices from worthless ones, bringing HR into the inner organizational circle, and setting the stage while applying new ideas that have true impact.

McKinsey & Company [www.mcinsey.com] is a leading global management consulting firm that serves businesses, governments, non-governmental organizations, and not-for-profits who over nearly a century have helped companies improve their performance and realize their goals. They are also an important publisher on management. Recent, [July, 2015] articles include 1). "What 'Digital' Really Means." Karel Dörner and David Edelman suggest that digital is about unlocking growth now and having a clear understanding of what digital means allows business leaders to develop a shared vision of how it can be used to capture value. 2). "Getting a Better Handle on Currency Risk." Marc Goedhart, Tim Koller, and Werner Rehm discuss the volatility of exchange rates and provide strategies on how to minimize potential losses by hedging their risks. and 3). "Growing Beyond the Core Business" where the key findings from a 2014 survey of 1,143 executives of large diverse companies on how they expand into product or service categories beyond their core business are provided. ■

About the Author

Terrance Malkinson is a communications specialist, business analyst and futurist. His career path includes technical supervisor and medical researcher at the University of Calgary, business proposal manager for the General Electric Company, and research administrator with the School of Health and Public Safety at SAIT Polytechnic in Calgary. He is currently an international correspondent for IEEE-USA *Today's Engineer*, contributing editor for *IEEE Canadian Review*, and a member of the editorial advisory board of IEEE *The Institute*. He was Vice-Chair of the IEEE-USA Communications Committee (2004-2010), and editor-in-chief of IEEE-USA Today's *Engineer Digest* (2004-2008). He was an elected Governor of the IEEE Engineering Management Society as well as past editor of *IEEE Engineering Management*. He is the author of more than 500 earned publications, and an accomplished triathlete. **malkinst@telus.net**

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