Friday November 13, 2015
Guardian
Special Publications Unit (SPU)

IEEE

Trinidad & Tobago Section

celebrates its 10th Anniversary

IEEETT Section looks forward to continued growth as it celebrates 10th anniversary

The Institute of Electrical and Electronics Engineers (IEEE) is the world's largest professional association (over 400,000 members) dedicated to advancing technological innovation and excellence for the benefit of humanity. IEEE and its members inspire a global community through IEEE's highly cited publications, conferences, technology standards, and professional and educational activities. It is designed to serve professionals involved in all aspects of the electrical, electronic, and computing fields and related areas of science and technology that underlie modern civilization. IEEE's roots go back to 1884 when electricity began to become a major influence in society. IEEE, pronounced "Eye-triple-E," stands for the Institute of Electrical and Electronics Engineers. The association is chartered under this name and it is the full legal name. IEEE global headquarters is located in New Jersey, USA.

Dr. Sanjay Bahadoorsingh
IEEE Trinidad and Tobago Section Chair | 2014 - 2015

The IEEE in Trinidad and Tobago was formed on February 13th 2003 as a subsection of the Puerto Rico & Caribbean Section in Region 9 (R9 - Latin America and the Caribbean). The IEEE Trinidad and Tobago (IEEETT) Subsection was led by an interim steering committee based at the Department of Electrical and Computer Engineering, The UWI, that later became the first executive of the IEEETT Section led by electrical engineer and academic Alvin Lutchman. On November 12th 2005, the IEEE Board of Directors, based on the recommendation of the Region 9 Director approved the elevation of the IEEETT Subsection to Full Section status. The IEEETT Section remains the only native English speaking section in this region.

The IEEETT Section is a non-profit and wholly volunteer organisation. Today the IEEETT section comprises over 400 (professional and student grade) members with five societies, two affinity groups and a student branch. Our members are engineers, scientists, and allied professionals whose technical interests are rooted in electrical and computer sciences, engineering, and related disciplines. The society and its members are committed to continued professional development of its increasing membership, by hosting technical seminars and presentations as well as promoting careers in science, technology, engineering and mathematics (STEM). The IEEETT Section is committed to growing the engineering profession in Trinidad and Tobago.

I am very proud that within the last few years, the visibility and impact of the IEEE in the lives of our citizenry is positively increasing. In 2013, the Women in Engineering Affinity Group was formed and this team of dedicated volunteers (membership and participation is not exclusive to our dynamic female members) has been actively involved in outreach to secondary and tertiary institutions exciting our nation's young ladies about the prospect of a career in STEM. The IEEETT Section has also been steadily gaining recognition for our global contributions. In 2013, two of our very own young female engineering students were recipients of IEEE global awards (IEEE Power & Energy Society, T. Burke Hayes Student Prize Paper Award - Ms. Laurel Bhairosingh and IEEE Computer Society, Richard E. Merwin Award - Ms. Ambika Jagmohansingh). In 2014, past IEEETT Section Chair, Prof. Chandrabhan Sharma was presented with IEEE Education Activities Board Meritorious Achievement Award in Accreditation Activities. The UWI IEEE Student Branch also received the IEEE Darrel Chong Student Activity Award under the stewardship of Ms. Shalini Rampersad. The IEEETT Section has been actively partnering with other professional organizations and institutions to foster avenues for continued professional development. In 2015, the IEEE E-Scientia module will be delivered to Niherst to assist with STEM outreach. This self contained science exhibit will take pre-university students on an engineering-themed adventure using multimedia interactives and hands-on exploration of science and technology concepts. Trinidad and Tobago will now be one of seven E-Scientia locations worldwide. I am also very thrilled to announce that after approximately two years of dedicated preparation and lobbying, the IEEETT Section has emerged as the winning section to host the IEEE Region 9 2016 Regional Meeting (RM2016) in Port of Spain, Trinidad in March 2016. Hosting an event as RM2016 is a significant accomplishment for any engineering professional society within CARICOM. This is truly an exciting time for the IEEE within the region and especially Trinidad and Tobago.

This year the IEEETT Section is celebrating its 10th anniversary! The Section has been progressively growing from strength to strength. This is a fantastic opportunity to say thank you to our members, friends and supporters and a very happy birthday to all our IEEE Trinidad and Tobago Section members. The road ahead is very electrifying and I look forward to your continued support. All are welcome to join the IEEE Trinidad and Tobago Section and be part of an extremely dynamic and exciting professional society. See our website www.ieee.tt for more details.

Sincerely,
Dr. Sanjay Bahadoorsingh
IEEE Trinidad and Tobago Section Chair | 2014 – 2015

The Impact of the IEEE on Everyday Life

Wayne Richard Small
IEEE Trinidad and Tobago Section Chair Elect| 2014 - 2015

The electronic alarm rings to wake you up at 5am. It's Monday again.

You reach to take the alarm off. Simultaneously, the television switches on automatically to the Morning News which you pre-programmed it to do. You get up, turn off the air conditioning unit with the remote, and head for the bathroom. You turn on the tap to brush your teeth with your electric toothbrush, and don't even notice the sound of the pump singing in the background providing you with the required water pressure.

You jump into the shower, and sigh in relief under the warm shower, the thermostat on the water heater set just right to wake your body up and allow you to face another day at work. You don't even think about the water heater as you have become so accustomed to it being part of your daily life.

You finish the shower, and maybe blow dry your hair with your blow-dryer plugged in to that different electrical outfit with the red button that you've never bothered to ask about, and get dressed for work.

Your landline phone rings. It's mom telling you 'Good morning' and reminding you to say your prayers before heading off to work.

You reach for your cell phone to see what messages you have missed while you were asleep. You notice both text messages, and instant messages, and start responding while walking to the kitchen. You switch on the percolator to brew a cup of coffee, and stick the leftover sandwich from last night into the microwave for breakfast this morning. You open the refrigerator and take out a miniature yogurt to snack on.

You pick up the tablet to read the morning newspaper, and access your email, both personal and work to see what to expect when you get into work today. Again, you don't pay attention to the number of bars on your tablet, as you take it for granted that your wifi works.

Your cell phone rings, and your ride to work calls to say that they shall be there in ten minutes. He/she sends a picture of the new fitness gear band on their wrist. You can't wait to see the gadget in person.

Your ride arrives, you grab your laptop case and you jump in the car, bump fists, and listen to the jokes on the car radio, while catching up on what you both did on the weekend.

By 6 am you would have interacted with products around the home, made up of electronic and electrical hardware and software, that would have been manufactured according to over 100 standards set by the Institute of Electrical and Electronic Engineers Standards Association.

The Institute of Electrical and Electronics Engineers Standards Association (IEEE-SA) is an organisation within IEEE that develops global standards in a broad range of industries, including: power and energy, computer science, industry automation, home automation, telecommunications, transportation and many more. These standards drive the functionality, capabilities and interoperability of a wide range of products and services that transform the way people live, work and communicate.

Today the IEEE SA is working on setting standards for the next generation technology. These include smart cars, smart cities, autonomous vehicles, solar technology, green buildings, GPS mapping and directions, just to name a few.

IEEE-SA has developed standards for over a century, through a program that offers balance, openness, consensus, and fair procedures. Technical experts from all over the world participate in the development of these IEEE Standards.

IEEE-SA is not a body formally authorised by any government, but rather a community working on Advancing Technology for Humanity, which is the IEEE motto.

Imagine daily living without the impact of the IEEE.

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The Mission of the Joint Computer and Communications Society

The Joint Computer and Communications Society (JCCS) covers two important technology areas, namely Computer Science and Communications Systems. It is therefore a very active Society and organizes several events per year on topics of interest to the public. Most people are familiar with the term Information and Communications Technology (ICT), which is typically used in the media to refer to any technology in this field. However ICT deals primarily with the practical aspects of Computers and Communications. Since ICT is more applicable to issues dealt with in the public domain it has wider coverage. However, it does not cover the more theoretical aspects. At a high level one can think of the ICT sector as being responsible for the "deployment and management" of these technologies whereas Computer Science and Communications Engineering are focused more on the "design, prototyping and innovation" aspects.

Typical jobs in the ICT sector include System Administrators, Database Managers and Network Administrators. Computer Scientists focus more on areas such as development of algorithms, computer networking and large-scale software development. Computer Engineers focus on computer hardware research, design and development. Communications Engineers focus on design of computer and cellular networks as well as the associated network protocols (i.e. how devices talk to each other) and resource management issues. These distinctions are important when we start having a national conversation on how we create an innovative society to compete at the International level. APP development, for example, requires minimal programming skills but the design of algorithms for the processing of data requires more advanced skills.

Many countries are presently attempting to duplicate the successes of companies such as Apple, Google and Facebook. These companies are well known for their innovation and, because of their innovative solutions, have been extremely successful. However, one must note that while the operational aspects fall within the ICT sector, the designs and innovation require more advanced knowledge and hence are done by the Computer Scientists and Engineers. For example, if we consider Google, their initial claim to fame was their novel search engine algorithms. Those with backgrounds in either Computer Science or Mathematics develop such algorithms. Similarly patents generated by companies in cellular networking and broadband communications are obtained in the design of algorithms, controls and protocols, which is the domain of Electrical Engineers. Hence if we are to compete internationally in these fields we must go beyond simple development of APPs and focus on the more advanced topics.

Of course, not any Computer Scientist, Electrical Engineer or Mathematician can come up with these innovative solutions to problems but training in these areas are a prerequisite. In addition, the educational system (from preschool to tertiary) will need to be updated to allow students to be more creative and be given more design type assignments. The JCCS is therefore committed to help develop a truly technically innovative society by informing the Government, the public and private sector of what needs to be done.

Another JCCS objective is the education of the public on the latest technologies and the policy issues that have surfaced because of them. Such issues we have addressed in the past include Network Neutrality, Over the Top Services, Internet Services and Cyber security. Some of these have been done in collaboration with the TTCS and ISOC-TT.

> **"... one must note that while the operational aspects fall within the ICT sector, the designs and innovation require more advanced knowledge and hence are done by the Computer Scientists and Engineers."**

Prof Patrick Hosein
Joint Computer and Communications Society Chair | 2014 - 2015

She's an Engineer!

Alana Friday | *Women In Engineering Chair| 2014 - 2015*

Although, the profession of an engineer and the term engineering acquired their current connotation and usage recently in the nineteenth century, the principles of engineering have been modernizing our world since the middle ages

The teaching of engineering as a formal academic discipline began in the late 18th and early 19th centuries, however, only in the early years of the twentieth century, were few women admitted to engineering programs. They were generally looked upon as curiosities by their male counterparts.

Studies from the National Science Foundation (NSF) shows that, the number of women earning degrees in engineering has increased in the past 20 years but women's participation remains well below that of men at all degree levels and in all fine fields of engineering. The proportion of women is lowest in engineering, computer sciences, and physics.

It is no secret that engineering is a male dominated field; however, there are many initiatives to promote engineering to women. They all seek in some way to encourage more women to choose science and engineering as a career path. One group championing this cause is the IEEE Women in Engineering (WiE).

The IEEE-WiE is the largest international professional organization dedicated to promoting women engineers and scientists and inspiring girls around the world to follow their academic interests to a career in engineering.

The mission of IEEE-WiE is to gather and disseminate information regarding the status of women and initiatives for, by and on behalf of women in engineering and science. The group fosters mentoring and education programs within IEEE and makes available information regarding gender related educational issues which may improve the entry into, and the retention of women in engineering programs.

The IEEE-WiE Trinidad and Tobago Affinity Group has been involved in many events centered on promoting women in the Science, Technology, Engineering and Mathematics (STEM) fields and educating girls about the many disciplines under the STEM umbrella.

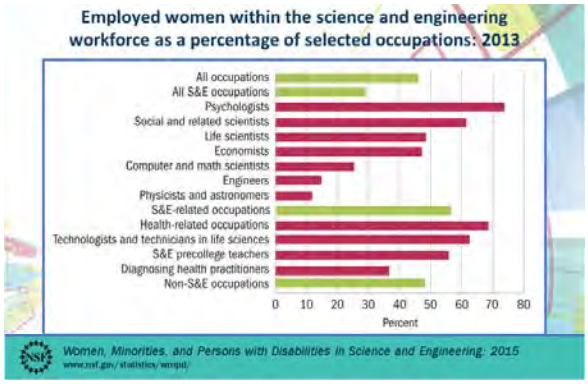
In the Caribbean, women have certainly fared better in this quest for equality than women in some developing regions, and the academic performance of girls today is on par with, if not exceeding that of boys.

Many Caribbean-rooted icons in STEM have broken ranks. NASA's Camille Wardrop Alleyne is a brilliant aerospace engineer whose accomplishments in that field have been astonishing; The UWI's Dr. Kim Mallalieu is an internationally recognised engineering educator and a communications systems guru who has pioneered in mobile applications development, telecoms regulation and Open Data initiatives.

Although, 92.5 percent of the global IEEE's membership (approx. 430,000), is male, on October 9th, 2015, The IEEE members elected Karen Bartleson as the 2016 IEEE President-Elect – the second woman in The IEEE's history to attain this position. She's the Senior Director of Corporate Programs and Initiatives, at Synopsys - an electronic design automation company.

Women's voices are essential to problem-solving and innovation, which is, the heart of engineering. When women design new products or services, they bring a different perspective that too often hasn't been considered before. The lack of women in STEM means, the perspectives of half the world's population are not considered.

Societies must continue to find ways to encourage girls to engage in mathematics and science in school, to support women pursuing engineering degrees in university, and to provide women with opportunities to thrive in their workplaces. There is a need to re-imagine what an engineer and a leader looks like so that we can tap into this critical half of the human talent pool.



Government of the Republic of Trinidad and Tobago
Ministry of Education

NIHERST

FABLAB

FABRICATION LAB

WHO IS THE LAB FOR?

Students | Teachers | Designers (graphic, industrial etc.) | Artists and artisans
Hobbyists | Engineers | Inventors | Makers of all things

STUDENT SCHEDULE

Workshops	Age Group	Number of students	Cost	Workshop Days	Available Sessions
LittleBits	Std. 4 and up	16	All student workshops are $40 per student, Teachers are free	Tuesday, Thursday and Friday	9:00am-11:30am 1:00pm-2:30pm
Computer Aided Design	Form 1-6	16			9:00am-11:30am 1:00pm-2:30pm
Computer Aided Manufacturing	Form 3-6	16			9:00am-11:30am 1:00pm-2:30pm
Robotics	Form 1-6	16			9:00am-11:30am 1:00pm-2:30pm
Arduino	Form 6	16	*Fees subject to change		9:00am-11:30am

PUBLIC SCHEDULE

Tuesday, Thursday and Fridays	**8:30a.m. - 10:30a.m. 10:30a.m. - 12:00p.m. 1:00p.m. - 2:30p.m.**
Wednesday	**Public Machine Bookings**
	Introductory sessions on Basic Lab Safety, CAD, CAM, 3D printing or vinyl cutting (required before booking machines)

For workshops or machine bookings please contact:

Creative Design Lab: 642-6112 ext. 240 or 257
email: cdl-staff@niherst.gov.tt

niherst.gov.tt

NIHERST

NIHERST AND IEEE COLLABORATION

E-scientia container.

E-scientia module.

Arduino workshop.

E-scientia students

NIHERST has been a pioneer and trendsetter in non-formal STEM education supporting classroom and life-long learning with its trademark of highly interactive, often entertaining teaching strategies that illustrate science concepts and their application in daily life and technological innovation. A new milestone was achieved this year with its partnership agreement with the Institute of Electrical and Electronics Engineers (IEEE) and the IEEE Trinidad and Tobago Section that provides local students, teachers and the public with access to the educational programs, exhibits and materials of the IEEE.

The first fruit of this partnership is the donation of the E-Scientia Exhibit, currently being installed at the National Science Centre in D'Abadie. The exhibit and its accompanying educational programmes will expose learners to the application of engineering and computing to solve problems. Learners will engage in solving challenges posed during a simulated space flight, receiving real-time training on how to address them in terms of energy, monitoring and detection, sensing of the environment, communication, and biomedical measurements, as well as the use of circuit components and devices to implement hardware solutions, an experience that can open young minds to consider future studies and careers in engineering and computing.

The partnership also allowed a cadre of local CAPE and university students to gain basic training in the Arduino open-source electronics platform from 24-26 August 2015. Based on easy-to-use hardware and software, Arduino is affordable, flexible and designed for anyone involved in interactive projects including engineers, teachers, students, artists, designers and techies. NIHERST plans to use Arduino technology to educate and inspire students to invent new products and create solutions to existing community/societal problems. The technology will be incorporated into its hands-on science, technology, engineering, arts and mathematics (STEAM) camps, clubs, design challenges at the Caribbean Youth Science Forum (CYSF), Community-Centred Design and Innovation (COMDESI) programme, and more.

An exciting new initiative is YOUTHBUILD, a project inspired by the COMDESI programme and the IEEE training workshop on Arduino, executed in partnership with Scoda Serv Limited and the BG Group. This project plans to engage 250 secondary students in creative-thinking, problem-solving, innovation and invention, prototyping, civic engagement and social responsibility. Students and counsellors alike will be drawn together by a shared delight in the excitement of tinkering and creating, utilising technology through experimentation, exploration, problem-solving, and collaboration. These are the very ingredients that make for inspired and passionate STEM learners and practitioners. The project will provide opportunities for experiential and action-learning to address community needs while fostering social networks that allow youth to develop leadership skills and validate their vital contribution to community service through their connection with others. Students will engage with members of various communities, identifying problems and potential solutions to meet their needs.

With a focus on inspiring the next generation of engineers and scientists, NIHERST and the IEEE Trinidad and Tobago Section hope to unfold other STEAM programmes on world-changing technologies - from computing and sustainable energy systems to aerospace, communications and robotics.

Professional Communication and Trinidad and Tobago

"Professional Communication" as used by the IEEE, and elsewhere termed "Technical Communication", is a discipline concerned with the production and consumption of technical information. Technical information targets a specific audience for a stated purpose. The manual that comes with your printer is one example of a technical communication product.

You wouldn't curl up with the manual for your night-time reading, but would consult the manual when you have particular needs—How to install the printer? How to replace the ink cartridges? Professional Communication is an enabler of the applied sciences, like engineering and medicine, and technological enterprise. Professional Communication, at first glance, may appear to be on the periphery of 'hard-core' engineering and science, but in fact cannot be excised from these, for it is communication that gives shape and form to thought. If we agree that information is only valuable if it can be understood, then the ability to communicate undergirds all human endeavour.

'Professional Communicators' are occupational writers whose primary responsibility is writing, as distinct from professionals who write as part of their occupation. The Professional Communicator is the resource person that uses the theory and practice of effective writing, design, and presentation to produce an array of documentation such as research grant applications, user manuals and the informational insert that comes with your tube of ointment. The Professional Communicator participates in every phase of product development. Similarly, engineers and scientists use the theory and practice of technical communication in their workplaces. Communicating in the sciences is its own art, for scientific discourse has unique features—tending always to be evidence-based in its argumentation; and preferring simple and succinct ways of conveying information.

The IEEE Professional Communication Society (IEEE PCS) supports the work of both groups—those who are communicators in technical fields, and technically trained personnel who communicate as part of their job. The work of the IEEE PCS gains particular significance when we consider (1) the responsibilities of engineers and scientists and (2) the role of technology in an economy like Trinidad and Tobago's.

In the first matter, the ability to communicate clearly, comprehensively and appropriately is central to ethical engineering practice and scientific endeavour. When engineers and scientists fail to communicate effectively the results can be catastrophic—the health and safety of others are at risk, for example. Secondly, if we agree that Trinidad and Tobago needs to diversify its economy, then well-trained engineers and scientists become even more critical, for they are needed to invent and develop technologies, spawning home-grown economic activity. And in the matter of innovation and the commercialisation of technologies, Professional Communicators will be needed to produce the documentation for and generated by every phase of product development.

How then is the work of the IEEE PCS helping to achieve these ends in Trinidad and Tobago? The pedagogy of technical communication informs our teaching. The BSc. Electrical and Computer Engineering offered by The University of the West Indies, for example, provides communication intensive instruction and assessment in every semester of the programme. Secondly, there is a small but growing cadre of Professional Communicators, drawing on the work of the IEEE PCS, who provide a range of technical communication services—content management; usability testing; instructional design and learning. The IEEE PCS remains an invaluable resource—one which offers training to communicators, engineers and scientists for their ongoing professional development. And, the Society is a thriving community of practice with globally recognised publications, where academics and practitioners alike can access and publish cutting-edge professional communication research.

Crista Mohammed | *IEEETT member*

Influencing the Leaders of Tomorrow

The leaders of tomorrow are the students of today

A student's membership in a professional association informs the career trajectory that he or she will take.

The IEEE, the world's largest technical society, puts its student members in an enviable position for early career development. The international organization, IEEE, our local section, IEEETT, and The UWI Student Branch are ideal avenues for a student to construct his or her career path.

As a student member you enjoy the privilege of a monthly subscription to IEEE Spectrum. The IEEE Spectrum is a magazine that features research and development in the engineering domain. A student can use the IEEE Spectrum to keep abreast of the latest technological developments, and explore his or her research interests. Other benefits of being a student member include access to webinars, a wide range of student competitions and the opportunity to win prestigious IEEE awards and scholarships.

Networking is an integral part of a successful career and being the largest technical society in the world, the IEEE is second to none in providing opportunities to students to build networks within the engineering profession.

IEEE's student members are exposed to a treasure trove of networking opportunities such as event organizing. Student volunteers work and cooperate with technical professionals both locally and globally. Through event planning, active members have the opportunity to interact with experts and established professionals from various fields in the industry. The contacts that are made through these interactions are invaluable to those intent on a career in engineering. The opportunities for formal and informal mentorship abound.

Sanjeev Kerron Ramesar
IEEE UWI Student Branch Chair
2015 - 2016

Sanjeev Kerron Ramesar
IEEE UWI Student Branch Executive
2015 - 2016

Students at the Department of Electrical and Computer Engineering.

The IEEE mounts conferences and workshops that not only serve as networking opportunities but allow learning about and experiencing of new technologies. Students also have the opportunity to interact with professionals from the various disciplines of electrical, electronics and computer engineering.

Invaluable networking can also be achieved through the many IEEE societies that are open to student membership. Student members can become part of societies that range from the Power and Energy Society to the Computer Society where they can participate in online training, certification programs, webinars and conferences.

The IEEE also molds and guides its student members to not only become well prepared professionals in the working world but sensitive the need to promote human welfare. A suitable example is the recently concluded "Introduction to Arduino Technology" - workshop held on the 24th to 26th August. This event was hosted by the Student Branch in collaboration with NIHERST and directed at the CAPE level students. With total of 18 participants, the workshop sought to inspire the CAPE level students to pursue a career in the STEM faction of education.

The Student Branch of the IEEETT Section, provides a training ground for engineering student to build leadership and team skills. Students of The Student Branch have the opportunity to self-organize events and provide an avenue for which students can learn new knowledge through these events hosted. The events hosted by the Student Branch are simply to provide the students with an appreciation of what lies ahead of them.

We have tried to describe a few of the benefits that the IEEE offers to its student members. For further reading, please see "Global Benefits Finder" at ***www.ieee.org/benefits***.

Acknowledgement of our IEEE higher-grade members

The IEEE Trinidad and Tobago Section acknowledges our members who have achieved the higher membership grades. These grades are Life Senior, Life Member, Senior Member and Life Fellow.

IEEE Current Grade Description	Full Name	Cumulative Years of Service
Life Fellow	Kenneth Julien	
Life Member	Rowdan K Maharaj	38
	Ralph H Jaikaransingh	37
	Neil L McConnie	30
Life Senior	Alvin C Lutchman	37
	Lyndon E Lindsay	37
	Clarence L Blanchfield	36
Senior Member	Chandrabhan Sharma	34
	Patrick A Hosein	32
	Indarjit Singh	32
	Peter R Sammy	31
	Anthony T Chadee	26
	Wayne R Small	23
	Stephan J Gift	22
	Trevor Babwah	21
	Ravi Shukla	21
	Srinivasan Partheeban	20
	Sachin R Ganpat	15
	Kit Fai Pun	13
	Sanjay G Bahadoorsingh	12
	Brian Copeland	12
	Musti KS Sastry	11
	Tagore Ramlal	10
	Adel Elgammal	6
	Roger Joseph Vieira	5
	Jason Vishnu Ramsingh	2

Prepared by ***Daniel Ringis***
IEEE Trinidad and Tobago Section Membership Development Officer | 2014 - 2015