Wavelengths

Volume 61 – Issue 4

Contents

Upcoming Events

We have a number of events coming up this month. Be sure to check out the Section Website: **https://r4.ieee.org/sem**
As well as vtools:
IEEE Region 4 - SE Michigan Section Upcoming
Listed below are some of the events, FYI.

Event	Date	Time
IEEE SEM Senior Member 'Roundup' (a Virtual Event!)	03 Apr 2021	10:00 AM
Clean Energy: Using Supercomputing Simulations to advance our understanding: E25	06 Apr 2021	04:00 PM
The Origins of Silicon Valley: Why and How It Happened	06 Apr 2021	06:00 PM
SEM Section ExCom Monthly Meeting (Teleconference)	07 Apr 2021	06:30 PM
Ch8: AdCom Teleconference	08 Apr 2021	11:00 AM
PES Day 2021: Quiz Contest	08 Apr 2021	06:00 PM
Micro Tutorial: Root Cause Analysis Skills (Online) : C16	10 Apr 2021	08:00 AM
Digital Storage and Memory for AI at the Edge : C16	13 Apr 2021	06:00 PM
ESD Protection for Automotive Interfaces : EMC27	15 Apr 2021	05:30 PM
Propane: A low carbon solution for the future : PE31/IA34/C16	16 Apr 2021	04:00 PM
Micro Tutorial: Introduction to Agile Methodology : E25	17 Apr 2021	08:00 AM
Advances in Automotive Design and Test for EMC Applications	22 Apr 2021	08:00 AM

Note: All times are EDT/EDT unless otherwise marked. Accurate at the time of going to press. If any events are missed do kindly bring them to the attention of wavelengths@ieee-sem.org. Thank you!

Chair's Message

Welcome to the April 2021 edition of Wavelengths. It's hard to believe that it has been over a year since we've held an in-person event in the Southeastern Michigan Section. The executive team is hopeful in the upcoming months we can hold a few events, but in the meantime the Section and Chapters continue to host several great virtual events.

In March the Section was well represented at the annual Engineering Society of Detroit's Gold awards. Kimball Williams was honored with the 2021 Ann O. Fletcher Award for Distinguished Service. Kimball has been a great volunteer for the Section for several years and is very deserving of this award. The entire event was livestreamed. Several other very deserving members of the SEM Section also won awards. I was very proud to take part in the event.

While you are browsing this month's newsletter, make sure to check out all the great conferences that are coming to our Section in the upcoming year. The IEEE International Midwest Symposium on Circuits and Systems is coming to Lansing in August. Section volunteers are actively aiding in the planning of this great event. More information is available in this edition.

I look forward to continuing to represent our Section and am excited about all the upcoming 2021 IEEE events. I hold out hope that I can see everyone soon. Until that time, stay safe and don't hesitate to reach out if you need anything.

David Mindham
dmindham -At- ieee.org

2021 Officer Training

During the Covid-19 lockdown and restrictions, we have not had an opportunity to hold any face-to-face meetings and certainly not any 'in person' training opportunities have been available.

Substitutions with 1:1 ZOOM training sessions with individual officers have had to compensate for the usual Section training opportunities. But they are not able to reach the majority of new officers and we see the lack of that training reflected in the less than stellar activity in the vTools reporting tools, and in our monthly updates from the Technical Activities Committee.
(see the insert at the right.)

The list shows those who have used the tools available to them to arrange virtual meetings of their administrative officers, and technical meeting for their members. Those Geo-units that are functioning are highlighted in Green.

Others have not even availed themselves of the many communication tools that we see being used by almost every person on this planet to overcome the effects of isolation due to these Covid-19 restrictions.

Ch's & AG's	Ave Tech Mtg. Attend	Ave Tech Mtg Guest	#L31 -Technical	#L31 -Admin	#L31 Professional	#L31 -Other	Geo-Unit Name
Cnslt	0	0	0	1	0	0	Consultants Network
LIFE	0	0	0	0	0	0	Life Members
WIE	0	0	0	2	0	0	Women In Engineering
YP	0	0	0	0	0	0	Young Professionals
1	0	0	0	0	0	0	Circuits & Systems, Signal Proc., Info Th.
2	0	0	0	0	0	0	Vehicular Technology
3	0	0	0	0	0	0	Aerospace & Elec. Sys., Communications
4	32	4	1	0	0	0	Trident (Ant, Elect Dev., uWave, Photo)
5	298	11	10	0	3	1	Computers
6	0	0	0	0	0	0	Geoscience & Remote Sensing
7	74	1	2	1	0	0	Power Engineering, Industrial App.
8	115	56	3	3	0	0	Electromagnetic Compatibility (EMC)
9	0	0	0	0	0	0	Power Electronics, Industrial Electronics
10	4	0	1	0	0	0	Engineering Management
11	0	0	0	0	0	0	Eng. in Medicine & Biology
12	0	0	0	0	0	0	Control Systems
13	72	5	3	0	0	0	Education
14	0	0	0	0	0	0	Robotics & Automation
15	168	103	2	0	0	0	Nuclear Plasma Science Society
16	0	0	0	0	0	0	Computational Intelligence / Sys.Man.Cyber.
17	64	51	3	0	0	0	Nano Technology Council
SEM	0	0	0	3	0	0	SEM (Section)
Tot	827	231	25	10	3	1	NOTE: Highlight Green = Active
		28%					NOTE: Highlight clear = Concern

So, why have so many failed to meet the test of our times with innovative thinking, and positive action in carrying out their responsibilities as IEEE officers? (I can't believe they have all succumbed to the virus.)

For any SEM officer that feels like they don't know what to do next, I have a suggestion:

1) Go to the SEM Website: **https://r4.ieee.org/sem/**

2) 'Click' on the '**About SEM'** TAB in the top row of the site.

3) When the dropdown list opens, select: '**Training Material'**.

4) Read the information at the top of the page, and follow the directions.

5) Complete the assignment built into that page and described in that paragraph.

When you have finished that assignment, if you still have questions about what to do next, please contact me so we can discuss this in person.

Kimball Williams:
SEM Information Management Coordinator
k.williams@ieee.org

kw

Senior Elevation Event!

IEEE SE Michigan Section
Presents
"Senior Membership Elevation Round Up"

IEEE Southeastern Michigan
Electrical and Electronic Engineers Creating Our Future

IEEE Southeastern Michigan Section will reprise its Senior Member Round up event, at Oakland University on April 3rd 2021 between 10 AM and 12 noon. Senior Member Reviewers will assist interested member candidates with significant years of experience in their profession.

The way it works is:

- At least a 10 years of significant experience with BS degree needs be established to initiate the senior membership elevation.
- If you have a PhD that is considered to be 5 years of significant experience, so you need 5 additional years beyond that.
- If you have a master's, that is considered to be 2 years of significant experience. So you will need 8 additional years to qualify.

There is no cost to becoming a Senior Member, and this step is a necessary prelude to seeking the IEEE 'Fellow' level. For a complete description of the Senior Member process and its benefits, see the link: http://www.ieee.org/membership_services/membership/grade_elevation.html

Potential senior members, please register on this site for the event and be ready with digital copies of your resume, and relevant supporting materials, to share with reviewers.

At Glance

- **When:**
  Date: April 3, 2021
  Time: 10 am to 12 noon
- **Where:**
  Online using Webex breakout rooms
- **Audience:** All Eligible Members, Senior members and Potential Members

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Sponsored by
IEEE
SE Michigan Section
Membership Development

Pre-Registration Required!

https://events.vtools.ieee.org/m/264729

IEEE
Advancing Technology for Humanity

E&H Committee Update

Education & Healthcare Facilities Committee

Mike Anthony & Jim Harvey

Many do not think of the elementary, secondary and higher education system in the United States as education as an "industry" as many understand the chemical, energy or mobility industries; all supported by the thirty-nine IEEE Technical Societies. However, the education "industry" lies at the foundation of all industries in every economic sector of every nation. It is closer to the mark to approach the education industry as a culture (or community). This community is approximately 8 percent of US Gross Domestic Product [1]; larger than the economic sectors serviced by all other IEEE Societies; notably energy and information and communication technology.

Annual spend of the real assets in education communities alone are close to a half trillion $USD annually -- larger than the annual revenue of Wal-Mart, the world's largest company; almost larger than the $530B gross domestic product of Sweden [2]. So we use the word "community" as a term of art to resolve the difficulty many in and outside the US education system have with the word *industry*.

The surprising annual spend of these communities on electro technologies was the inspiration for the creation of the IEEE Education and Healthcare Facilities Committee (E&H) in 2016 -¬coupled with support from the University of Michigan.[3] Even though many technical challenges making these communities safer and more sustainable have long been informed by the work of many colleagues in the Industrial Applications Society; the attendees of the 2014 I&CPS Conference agreed to give *cross-cutting point of view* a try (a slice through the disciplinary silos created by energy, protection, grounding, motors, etc.). The hope was to bring new members into IEEE; particularly staff engineers involved with electro technologies in colleges, university healthcare systems and school districts.

There is a significant membership resource in the 200,000-odd school districts, and the 5000-odd colleges, universities and technical schools in the United States. These new members would have front line experience and data that can drive IAS research. We limited the scope of the E&H committee to the 200-odd university-affiliated healthcare systems because, apart from the presence of university owned district energy systems, and customer-owned power grids (some, nominally 250 MW in distribution capacity) there are scarce few differences in electro technologies with healthcare enterprises in the public sector.

Because much of the foundation put in place the University of Michigan the E&H committee provided expertise needed to make changes to the National Electrical Code that are noteworthy for having contributed to the University of Michigan goal of making educational campuses safer, simpler, lower-costing and longer-lasting and greater safety:

- Limitation of mandatory arc-flash hazard calculations in NEC Section 110. [4]
- Articulation of service point [5]
- Reduced lighting power densities in NEC Table 220-14 [6]
- Addition of aluminum wiring as a conductor choice in NEC Section 110-3 [7]
- Limitation of mandatory arc-flash hazard calculations in NEC Section 110. [8]
- Timers on receptacles required by ASHRAE [9]
- Emergency lighting for service switchgear [10]
- Referencing of IEEE 3000-Standards into the NEC [11]

Code changes do not happen overnight; especially when the user-interest in the US standards system is generally outmatched by the resources of conformance enterprises, manufacturers, insurance companies, labor unions and inspectors. Five to ten years is generally the norm. In the fullness of time we have found that many proposals that were rejected by technical committees were eventually adopted in another form in another section of the NEC.

Even proposals that failed to persuade technical committees eventually persuaded NFPA leadership that more research is needed. An example is the Feeder and Branch Circuit Study completed in 2017 by the Fire Protection Research Institute, catalyzed by the original University of Michigan enterprise and funded by six other educational institutions. [12]

A follow up research project for healthcare facilities funded by the American Society of Healthcare Engineers. A related study supported by the US Army Corps of Engineers is now underway; using some of the E&H network [13]

In 2014 a new President was installed at the University of Michigan and the resulting reorganization of all divisions did not include support codes and standards advocacy. Within 36 hours of that sudden change Standards Michigan was formed 36 hours after the reorganization and continues strong relationships with the original employees.
There is no shortage of challenges and opportunities for contributing to the safety and sustainability of this community; though the shortage of volunteer hours is a familiar one. Most electrical engineers are busy with "paying work" and conference budgets have been curtailed. We have seen only a modest increase of interest in IEEE IAS membership from electro technology staff in the education community though. We find much more interest in attending the 4 times monthly colloquia.

Getting education facility units to share data is also a problem that impedes research. [9] Most of our Research Agenda -- a living document that lists technical issues to be explored and problems to be solved -- remains incomplete. The E&H Committee has a few deliverables that appear to be useful: [14]

- College and University Design Guideline Library
- Power outage databases
- Bibliography of IEEE content relevant to education and healthcare communities.
- Consultation notices from power, ICT and healthcare standards developers - Relevant papers from IEEE conferences related to E&H domain
- IEEE TV Channel

It is difficult to imagine the transformation of the education "industry" without transformation built upon innovation and standardization inspired by IEEE societies. [15]

Campuses are perfect study units for cities of the future.

Michigan has 587 school districts, 93 colleges and universities, 31 community colleges, 28 trade schools and 6 university-affiliated medical research and healthcare delivery enterprises.

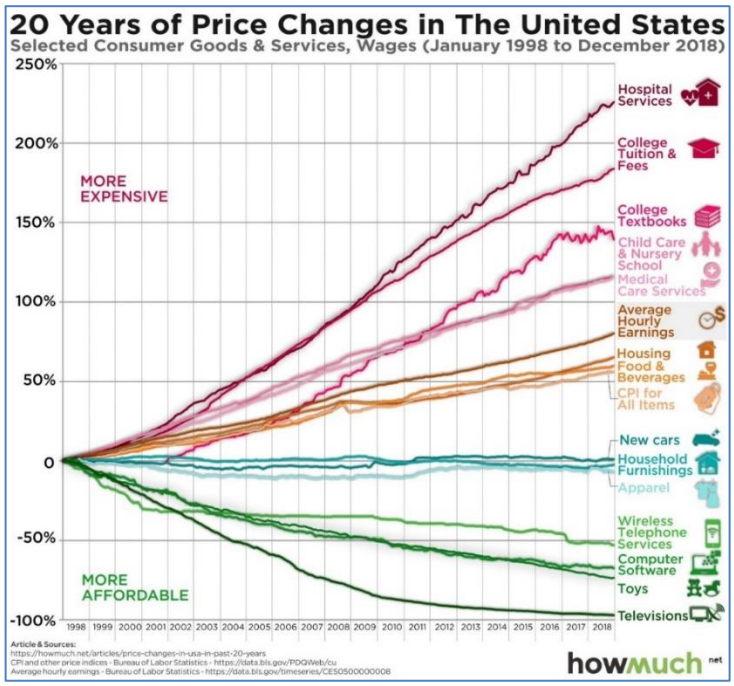


FIGURE:
https://howmuch.net/articles/price-changes-in-usa-in-past-20-years

{ Editor's Note: All the above mentioned *references* and more can be found at **https://site.ieee.org/icps-ehe/ieee-sem/ .** Further follow up can be done by contacting the Authors directly at **Mike Anthony:** maanthon@umich.edu and Jim Harvey: jharvey@umich.edu }

Profile: Section Vice-Chair

Introducing our Section Vice-Chair for 2021: Sharan Kalwani

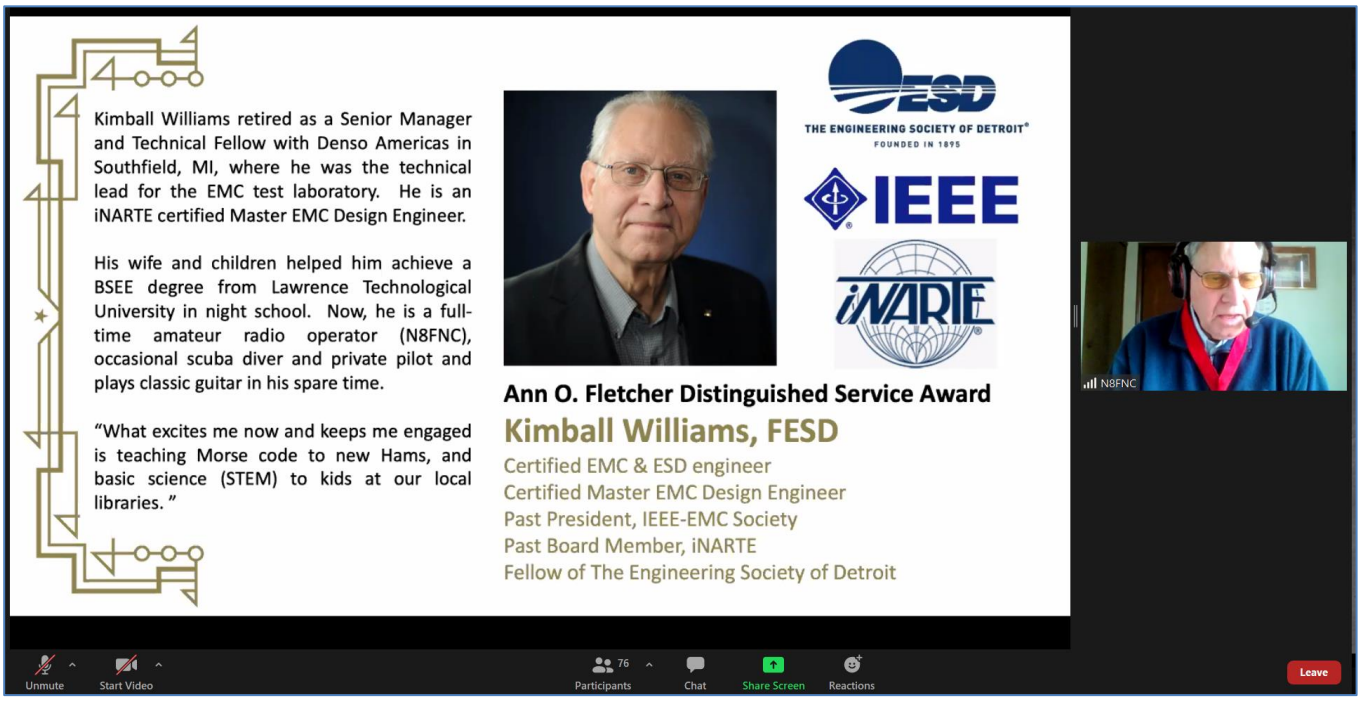
Sharan is an HPC specialist with 25+ years of experience. Sharan has degrees in both Engineering and Computer Science. He has worked in IT architecture, systems deployment, software development, OS kernels, he used to write device drivers for a while, computer network troubleshooting/debugging and tinkering with compilers. He has also supported several CAE codes, special purpose engineering, technical & scientific applications. Sharan has worked with several computing suppliers such as Cray Research, Silicon Graphics Inc. (SGI), etc. He has also managed several very large HPC sites with corporate organizations such as General Motors (GM) and research universities (KAUST). Sharan is a senior member of IEEE-Computer Society, IEEE-Vehicle Tech Society, currently serves as the Vice-Chair of the SE Michigan Section these days. He has been serving as the Vice-Chair of the Computer Society SE Michigan Chapter (aka Chapter 5) since 2017 and Chair of the Education Society SE Michigan Chapter (aka Chapter 13) since 2018. Outside of the IEEE, he plans to apply for senior elevation in the ACM, is an Emeritus member of Michigan!/usr/user group (mug.org), one of the oldest UNIX/Linux user groups in Michigan (established in 1985) and leads the SIG-Linux section of SEMCO.

Sharan has vast writing, editorial, desktop publishing and editing experience. His interest in the printed sheet began back in high school as both writer and newsletter printer, when he first wrote biographies on scientists, engineers and later on recent developments in Nuclear Energy during those days. The printing process used back then was called “cyclo-styling” and many a day was spent with tubes of ink gels, smeared across hands and chins (not to mention clothes, earning the wrath of the laundry machine and other family members). Later he was the campus editor of the Wayne State University’s Computing student newsletter. He has also been published and delivered many a tutorial and invited guest lectures, is Adjunct Faculty at educational & academic sites in the Mid-West and internationally as well.

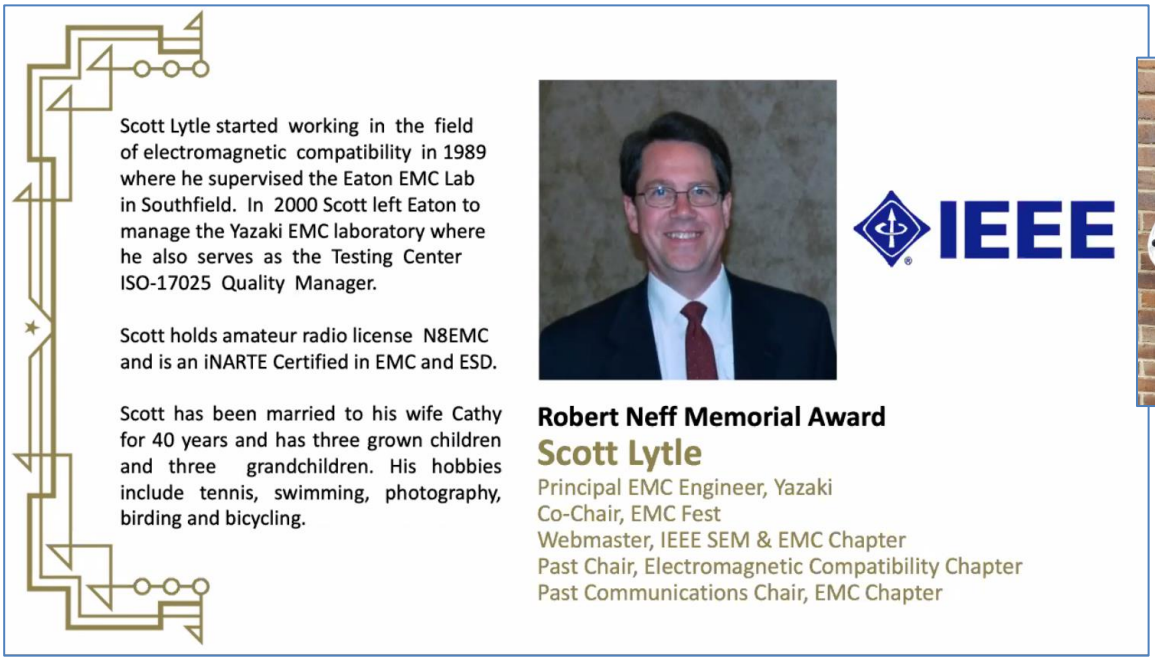
In his spare time (if he has any left), he enjoys watching Formula1 Grand Prix racing, European soccer, cricket, movies (including documentaries). Lately he has re-kindled his boyhood passion for science fiction. Occasionally he has been known to share a good tip on fine Italian red wines, especially from the Tuscany region, for example Chianti. He is fluent in Hindi, Sindhi, German and can squeak by with a tiny smattering of the Punjabi language.

ESD Gold Awards 2021

Each February/March (usually at a special banquet, but understandably none this year), the ESD Affiliate Council (made up of 92 societies) presents its most prestigious tribute, The Gold Award, to honor an outstanding engineer or scientist. Each society may nominate one individual; all nominations received are then judged by a group comprised of past Affiliate Council presidents. The ESD Gold Awards 2021 took place on-line this year. This year it was awarded to Janice Means of ASHRAE. The ESD Affiliate Council also honored our very own Kimball Williams with the Ann O. Fletcher award for distinguished service.

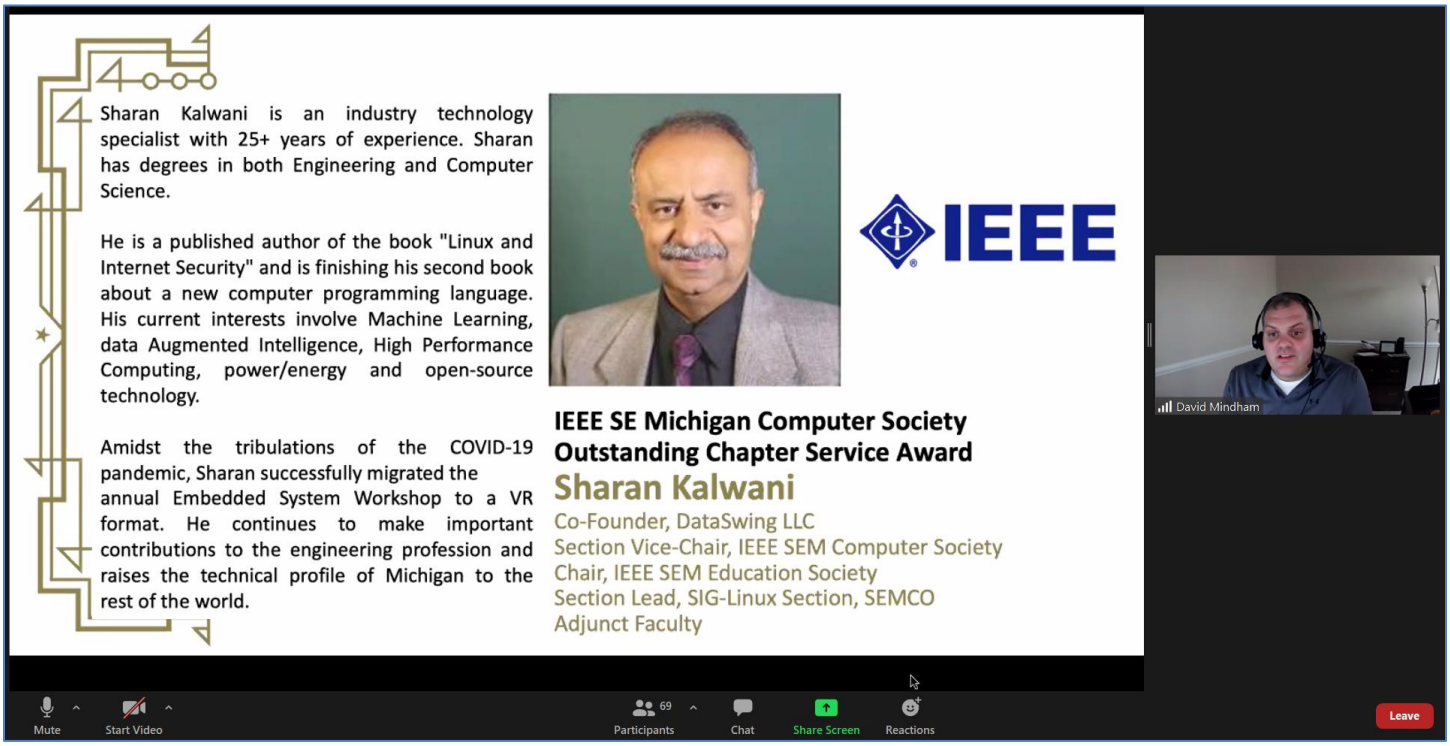


In addition, the IEEE SE Michigan Section took the opportunity to also honor several of its own chapter members. These were: Scott Lytle with the Robert Neff Memorial Award, which was instituted last year and given out for the first time this year.



Chapter 5 also awarded Amar Dabaja (Lawrence Technological University) for her role as the most outstanding Student Branch member, the Outstanding Chapter Chair award went to Subramaniam Ganesan (Oakland University). Enclosed are a few screen shots from the event.

The Computer Society Chapter's Outstanding Service Member Award was given to Sharan Kalwani and presented by our Section Chair – David Mindham.



A streaming video of the event (approximately 1.5 hours long), will be made available later this year. To see a list of past ESD Gold Award recipients, use this web link.

EIT 2021 CFP

IEEE

2021 IEEE INTERNATIONAL CONFERENCE on ELECTRO/INFORMATION TECHNOLOGY

May 13 – 15, 2021, Central Michigan University, Mount Pleasant, MI

Format: Hy-Flex (in-person and remote)

eit 2021

www.eit-conference.org/eit2021

Call for Papers

Feb 08	Mar 15	Mar 29	Apr 15
Draft full paper due	Draft acceptance Extended abstract & Tutorials due	Final paper due	Early Registration

The 2021 IEEE International Electro/Information Technology Conference, sponsored by the IEEE Region 4 (R4), in collaboration with Central Michigan University (CMU) is focused on basic/applied research results as they relate to Electrical and Computer Engineering, Information Technology, and related applications.

Contribution Categories:

Full paper
Extended abstracts
Tutorials/Workshops
12-hour Hackathon

Topics of interest:

- Ad Hoc and Sensor Networks
- Artificial Intelligence & Deep Learning
- Big Data Processing
- Biomedical Applications, Telemedicine
- Biometrics and Bioinformatics
- Cloud, Mobile, and Distributed Computing
- Computer Vision
- Control Systems and System Identification
- Cyber Physical Systems & Security
- Distributed Data Fusion and Mining
- Diversity, Equity, and Inclusion in Engineering
- Embedded Systems
- Engineering Education
- Intelligent Systems and Multi-agent Systems
- Internet of Things
- Machine Learning
- Micro Electromechanical Systems
- Nanotechnology
- Optics & Photonics
- Power Systems and Power Electronics
- Reconfigurable and Embedded Systems
- Robotics and Mechatronics
- Signal/Image and Video Processing
- Software Engineering and Middleware Architecture
- Smart Grid
- Sustainable Computing and Systems
- Wireless communications and Networking
- 5G and Multi-Gigabit Communications

Organizing Committee:

R4 Conference Committee Rep to EIT
James Riess
EIT Conferences Founding General Chair
Hossein Mousavinezhad, Idaho State University
2021 Conference General Chair
Kumar Yelamarthi, CMU
Program Chairs
Ahmed Abdelgawad, CMU
Constantin Apostoaia, Purdue University Northwest
Hackathon Chairs
Subra Ganesan, Oakland University
Prasanth Yanambaka, CMU
Finance Chair
Steve Kerchberger, IBM
Professional Development Program Chair
Tarek Lahdhiri, General Motors
Exhibits/Industry/Sponsorship Chair
Hamid Vakilzadian, University of Nebraska Lincoln
Publicity Chair
Ahmed Abdelgawad, CMU
Local Arrangements Chair
Prasanth Yanambaka, CMU
Registration Chair
Prasanth Yanambaka, CMU
Publications Chair
Afshin Izadian, Indiana University Purdue University Indianapolis
International Liaisons
Peter Dittrich, Hongwei Zhang, Hsiao-Hwa Chen, Deepak Puthal
Webmaster
Bob Evanich, Duke Energy
Awards co-Chairs
Sat Basu
Hossein Mousavinezhad, Idaho State University

All accepted papers will be published in the conference proceedings, and full papers will be published in IEEE Xplore

www.eit-conference.org/eit2021

Circuits Symposium 2021

2021 IEEE 64th International Midwest Symposium on Circuits and Systems

~~Lansing, Michigan, USA~~ | **Aug. 9-11, 2021**

Now Fully Virtual & On-line!

Greetings from the IEEE CAS MWSCAS 2021,

We have extended the submission deadlines in response to numerous requests. See Important Dates below.

We warmly invite you to submit original contributions to the 2021 Symposium. *This year's theme is artificial intelligence (AI) and autonomous circuits and systems. Please visit the website mwscas2021.org for current information.*

MWSCAS2021 General Chair
Fathi M Salem
& the Organizing Committee of MWSCAS 2021

Important Dates (submission deadlines)

April 5, 2021 - Special Sessions Proposals

April 12, 2021 - Regular Paper (Lecture & Posters)

May 3, 2021 - Tutorial Session Proposals ((including Live Demos)

May 24, 2021 - Notice of Paper Acceptance

June 7, 2021 - Camera-Ready Paper Due

Circuits Symposium 2021 (continued….)

The IEEE International Midwest Symposium on Circuits and Systems (MWSCAS) is the oldest, and now the flagship, Circuits and Systems symposium. The 64th meeting of the MWSCAS is being hosted by Michigan State University, in East Lansing, Michigan, USA, and technically co-hosted with Wayne State University in Detroit, Michigan, from Aug 8-11, 2021. The MWSCAS 2021 has pivoted to fully virtual symposium to add a sense of certainty. Live presentations will be supported and managed by the convenient CONFlux virtual platform. It will include oral and poster sessions, a student paper contest, keynote addresses, regular and special sessions, and tutorials presented by world experts in wide range of circuits and systems topics.

Prospective authors are invited to submit a full paper (4 pages) describing original work through the on-line submission system for the conference through a link on the MWSCAS 2021 conference web- site. Papers should follow the formatting instructions given in the author's kit on the website. Papers will be accepted for either lecture or poster presentation. Review criteria for both lecture and poster presentation formats are identical; the presentation format will be chosen to facilitate topical session grouping and time constraints. Students are encouraged to participate in the Best Student Paper Award contest. Submissions of demos and proposals for tutorials and special sessions are also solicited. Accepted papers will be published in the MWSCAS 2021 Proceedings subject to advance registration of at least one of the authors at the author rate. All papers published in the MWSCAS 2021 Proceedings will be submitted for inclusion into IEEEXplore.

Moreover, three special issues will be streamlined from papers presented and appearing in the proceedings. Two cutting-edge special issues will be published in the IEEE transactions on circuits and systems (CAS_I and TBioCAS) based on extended versions of selected symposium papers; and a special issue will be published in the Springer Journal of Analog Integrated Circuits and Signal processing also based on extended versions of selected symposium papers.

IEEE Movie Week

Sharan Kalwani understands the joy of being an engineer – taking pleasure in understanding whether the Shannon or Nyquist limits are going to be used. This is what led Sharan to bring us enjoyable series of documentaries to the Southeastern Michigan IEEE Section membership. The documentaries were:

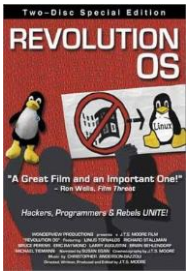
Day One: Bombshell: The Hedy Lamarr Story;
Day Two: Claude Shannon: Father of the Information Age;
Day Three: CODE RUSH;
Day Four: REVOLUTION OS.

It was a wonderful week! THANKS! What follows are capsule reviews of each, in the order they were presented.

During her whole life - Hedy Lamarr was a gorgeous inventor. Inventing and taking things apart was in Hedy's blood, as when at the age of five, she took apart a music box and put it back together. This was encouraged by her father, who told her how things worked. Sadly, even now, it is hard for engineers to believe that she understood enough to conceive of frequency hopping. According to the Smithsonian magazine in November 2017 – Bombshell Director Alexandra Dean could not get experts she consulted with concerning the movie - to believe that this beautiful woman – along with composer George Antheil - had developed frequency hopping - until she found film footage of Hedy discussing it. Hedy would continue to invent new things until her death in January 2000. It is a wonderful story – that provokes wonder on where the next new frequency hopping type invention might come from.

Claude Shannon is the Father of Digital Logic. Claude Shannon received his undergraduate from Michigan University in Ann Arbor. Then he went to MIT, later to Bell Labs, and back to MIT. His 1936 thesis on Boolean Algebra undergirds all digital computing. It elucidates how Boolean Algebra's AND, OR, NAND, and NOR gates, can be used in information theory. Shannon was engaged in cryptography, data compression, game theory, entropy, noise, and juggling, just to name a few of his strengths. One of his famous concepts is the Shannon Channel Limit or Shannon Capacity, which determines how much data can safely run through a channel This documentary left us breathless with amazement! The documentary was funded by the Computer Society of the IEEE.

Code Rush was seen on the third night. It is a documentary that focusses on Mozilla/Netscape during their turbulent journey. The documentary follows a team of engineers as the company releases Mozilla source code to allow many people to join in programming the internet, and thus save their company. (As a tangent, it covers some interesting views, such as how technology has become the new god of our society and will we allow a small group of technocrats to tell us how we can live?) It is awe inspiring to see how they combine the code and strengthen the Open Source movement.



Revolution OS is a documentary on the Open Source and Free Software movement and how it is changing our world. Narrated by Eric Raymond, hacker and author of The Cathedral and the Bazaar. Richard Stallman, the founder of the Free Software Foundation, explains the basis of the Free Software, the Open Source movement, and his GNU project. Richard Stallman explained that Free Software refers to the ability to change software freely, it doesn't mean that the software does not cost anything. The documentary covers the Netscape/Mozilla decision to release their source code, and their rationale that they would make money by releasing it. Linux software and founder, Linus Torvalds tells a little about his development of the Linux kernel. Interestingly, in the documentary, Bruce Perens, the author of the Open Source Definition, says that both abortion providers and anti-abortion activists should be able to use Open Source software. It is wonderful that they believe that political and world views can't bar someone from using Open Software! The documentary ends with a song by Richard Stallman, and his thoughts that Open Software will make a better world.

--Candace R Suriano, PhD, Suriano Solutions

Verses I love:
This I recall to my mind,
Therefore have I hope.
It is of the Father's mercies that we are not consumed,
Because His compassions fail not.
They are new every morning:
Great is thy Faithfulness.

PES Day Celebrations

IEEE PES Day 2021 has organized a lot of educational global events for members as well as non-members to explore and enjoy free of cost.

A calendar with all the event details is available for anyone to download and add it to their personal calendar. It is located on our website **https://site.ieee.org/pes-day/**

EVENTS-> GENERAL EVENTS -> EVENT CALENDAR
Here is our list of global events (dynamically being updated, check web site for the latest!):

Event	Date	Time
PES Day opening ceremony - Keynote speaker: Dr. Kandeh Yumkella	April 1	3 PM GMT
Engaging IEEE PES members in humanitarian activities	April 2	2 PM GMT
Panel discussion on Career guidance in IEEE Region 9	April 3	9 AM Panama time
Clean Energy: Using Supercomputing Simulations to advance our understanding	April 6	4 PM EDT
Entrepreneurship Workshop by Melissa Sassi	April 6	9 AM EDT
Nuclear energy: The Need, the perception and the reality	April 9	11:30 AM EDT
Future of Offshore Wind Investments in US	April 10	11 AM EDT
Face of Energy Poverty in US, Canada and Europe	April 11	2 PM GMT
Clean Energy Policy and Grid Reliability	April 15	3 PM EDT
What's trending in EV industry	April 17	11 AM EDT
Meet your WiP mentors	April 18	9 AM EDT
Entrepreneurship in Energy Sector by Wanda Reder	April 19	11 AM EDT
Experiences and Learned Lessons from an Air Free-Cooled Tropical Data Center Testbed	April 20	9 AM GMT+8
Panel discussion on Career guidance in IEEE Region 1 to 7	April 21	11 AM EDT
Future Trends in Alternate Fuels	April 22	11 AM EDT
The importance of Solar Resource Assessment and Monitoring in PV Power Plant Performance	April 23	9:30 AM EDT
Panel discussion on Career guidance in IEEE Region 8	April 24	7 PM GMT
Panel discussion on Career guidance in IEEE Region 10	April 28	5 AM EDT
Electric vehicles and the electric grid	April 29	11 AM EDT
Humanitarian opportunities in power and energy in the African continent	April 30	2 PM GMT

PES Day 2021


Clean Energy: Using Supercomputing Simulations to advance our understanding
IEEE PES Day 2021
Clean Energy Revolution
Abstract:
Supercomputing has come a long way from simple weather forecasting to advanced predictions about many phenomena, such as ocean, atmospheric, land, high altitude and critical land-water-air ecosystems. A lot of this became possible thru giant strides in computer calculation power, connection capability as well as improved scientific models and extensive simulation supporting software. In this talk we will learn a little bit about how, when all this is combined with ever growing data plus expert domain knowledge, it can be employed to better explore and design clean energy solutions and its potential impact on our society.
April 6, 2021
4 PM US Eastern (GMT-4)
bit.ly/webinar-supercomputing-simulations
Sharan Kalwani
Industry Specialist
Sharan Kalwani is an industry technology specialist with 25+ years of experience. Sharan has degrees in both Engineering and Computer Science and has worked in many diverse areas. He is a senior member of IEEE-Computer Society, IEEE-Education Society & IEEE-Vehicle Tech Society, an Emeritus member of Michigan!UNIX/user group, Association for Computing Machinery (ACM) and also leads the SIG-Linux section of SEMCO. He enjoys teaching, holds an adjunct position at several universities. He has published a book on "Linux and Internet Security" and is now working on his second about a new computer programming language. He is also the recipient of the IEEE MGA Achievement award for his contributions to IEEE activities in 2018.
/ieeepesday

Propane, a low carbon fuel?

IEEE SE Michigan

Presents

"Propane: A low carbon solution for the future"

In this talk, the speaker will provide an overview of the advantages of using propane as a low carbon fuel source for several applications including distributed generation, micro grids, medium-duty vehicles, and as a complement for renewables in stationary and transportation applications. In addition, emerging propane technologies (e.g. renewable propane) will be presented.

Speaker Bio:
Gokul Vishwanathan serves as the Director of Research and Sustainability at PERC, where he leads initiatives to grow propane demand through research, technology development, and sustainability programs. Before joining PERC, Gokul was a Senior Lead Engineer at Booz Allen Hamilton and served as a technical advisor for the U.S. Department of Energy's Advanced Research Projects Agency–Energy (ARPA-E) and Energy Efficiency and Renewable Energy (EERE) Advanced Manufacturing Office (AMO) for various technologies including combined heat and power, internal combustion engines and hybrid electric vehicles, pumped thermal energy storage, carbon capture, and connected and automated vehicles.

At Glance

- **When:**
  Date: April 16, 2021
  Time: 4:00 – 6:30 PM EST/EDT
- **Where:**
  Online (requires a pre-confirmed registration)
- **Audience:** All eligible members and potential members (only if slots available)

*

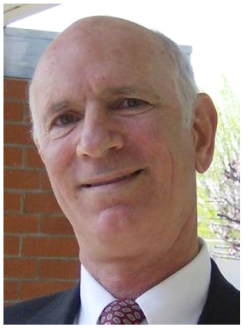
Sponsored by IEEE SE Michigan EduSoc, CS, PES Chapters & SW Coast Florida Section

Pre-Registration Required!

https://events.vtools.ieee.org/m/263414

Talk on Silicon Valley

IEEE SE Michigan
Presents
"The Origins of Silicon Valley: Why and How It Happened"



Silicon Valley is commonly acknowledged as the tech capital of the world. When most people think of the Valley, they probably recall semiconductors, personal computers, software, biotech and self-driving cars. How did Silicon Valley come into being, and what can we learn? This talk will give an exciting and colorful history of device technology development and innovation. *[Key 10-minute extension]* Paul will briefly discuss the key technologies that he expects to be the most important during the 2020's, including autonomous vehicles, virtual and augmented reality, artificial intelligence, and industrial IoT and analytics.

Speaker Bio:
Paul Wesling has observed the Valley for decades as an engineer, executive, resident, and educator. He received degrees in electrical engineering and materials science from Stanford University. Paul retired from HP in 2001, then served as "Mr. IEEE" for the San Francisco Bay Area for 10 years. He is a Life Fellow of the IEEE. He received the IEEE's Centennial Medal, the Board's Distinguished Service award, the Society Contribution Award, and the IEEE's 3rd Millennium Medal. He edits the IEEE/ASME/SEMI Heterogeneous Integration Roadmap for prediction of technology directions in electronics packaging.

At Glance

- **When:**
  Date: April 6th, 2021
  Time: 6 – 7:30 PM EST/EDT
- **Where:**
  Online (requires a pre-confirmed registration)
- **Audience:** All eligible members and potential members (only if slots available)

*

Sponsored by IEEE SE Michigan Education Society & Computer Society Chapters

Pre-Registration Required!

https://events.vtools.ieee.org/m/267924

IEEE Advancing Technology for Humanity

Future of Computer Storage

IEEE SE Michigan
Presents
"Digital Storage and Memory for AI at the Edge"

IEEE Southeastern Michigan
Electrical and Electronic Engineers Creating Our Future

Applying AI at the edge and endpoints often requires working under non-data center environments and in power constrained conditions. AI inference also requires significant memory to hold weighting values from training. New non-volatile memories can help provide more memory in a given device die and use less power than NOR flash, SRAM or DRAM. This presentation will talk about changes in the memory/storage hierarchy and how it will change memory and storage in data centers and embedded devices to support energy efficient and low latency AI applications.

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Speaker Bio:
Tom Coughlin, President, Coughlin Associates is a digital storage analyst and business and technology consultant. He has over 40 years in the data storage industry with engineering and senior management positions at several companies. Coughlin Associates consults, publishes books and market and technology reports *(including The Media and Entertainment Storage Report and an Emerging Memory Report),* and puts on digital storage-oriented events. He is a regular storage and memory contributor for forbes.com and M&E organization websites. He is an IEEE Fellow, Past-President of IEEE-USA and is active with SNIA and SMPTE. For more information on Tom Coughlin and his publications and activities go to www.tomcoughlin.com.

At Glance

- **When:**
  Date: April 13th, 2021
  Time: 6:00 – 7:20 PM EST/EDT
- **Where:**
  Online (requires a pre-confirmed registration)
- **Audience:** All eligible members and potential members (only if slots available)

*

Sponsored by IEEE SE Michigan Education Society & Computer Society Chapters

Pre-Registration Required!

https://events.vtools.ieee.org/m/256647

IEEE Advancing Technology for Humanity

IEEE COMPUTER SOCIETY

PES Day 2021 Quiz

IEEE SE Michigan
Presents
"PES Day 2021 Quiz: Clean Energy Revolution"

IEEE Southeastern Michigan
Electrical and Electronic Engineers Creating Our Future

In 2008, The former IEEE PES President Wanda Reder announced at the IEEE PES Transmission and Distribution Conference in Chicago, Illinois the new name of PES- Power and Energy Society. This day has been officially commemorated as "PES Day" for the past three years. Every year, a theme is selected, and celebrations, including educational and humanitarian activities, youth programs, and technical contests, are organized for members. Usually, all chapters or local units organize activities during the month of April to celebrate this event. PES Day goal is to engage the PES volunteers with PES history and vision. This year it is "Clean Energy Revolution".

The theme of this event will be an online quiz contest to test the knowledge of the participants in this field. The platform is kahoot and all contestants have to choose the single wrong answer. Each question is timed, so extra points for rapidity are there. Good luck!

At Glance

- **When:**
  Date: April 8th, 2021
  Time: 6:00 – 7:45 PM
- **Where:**
  Online via Webex (to be shared only after you have a confirmed registration)
- **Audience:** OPEN to ALL*

Sponsored by IEEE SE Michigan

Pre-Registration Required!

https://events.vtools.ieee.org/m/266796

IEEE
Advancing Technology for Humanity

Officer Appointments 2021

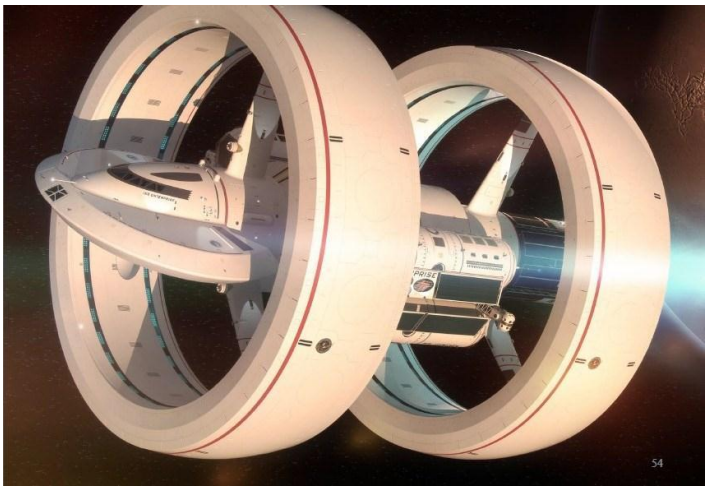
Note: All **standing committee** positions are 'appointed' and not 'elected'.

Contact the current Committee Chair to discuss volunteer options. Committee Chairs are appointed by the Section Chair. Each Committee Chair has the authority to appoint all the members of his/her committee directly.

See the SEM Officer Roster posted in the SEM Website for details of each committee.
https://r4.ieee.org/sem/wp-content/uploads/sites/6/2021/02/Organization_Roster_2.26.2021.pdf

K.williams@ieee.org
Chair: N&A Committee.

Warp Drive



As a non-physicist techno-geek I look at the current debates running around the folks interested in space travel, and in particular, travel to other stellar planetary systems, and my mind drifts.

I drift back to the early 1940's when our family lived in Kansas and my dad (an aeronautical engineer) worked for the CAA (Civil Aeronautics Administration).

I remember Sunday's when he and his co-workers would come over and play chess and argue back and forth as to whether it was actually possible to travel 'Faster than Sound!'
That was the big 'barrier' of the day.

No one knew 'for sure' because it was still years before Chuck Yeager's famous flight. I sat on the floor under our kitchen table while the adults debated that 'question of the day'.

Today I am reminded of the quote from Jules Verne; "What one man can imagine, other men can do." And I think of those who, before the Wright brothers flew at Kitty Hawk, had 'proved' that heavier than air flight was impossible.

Albert Einstein's special theory of relativity famously dictates that no known object can travel faster than the speed of light in vacuum, which is 299,792 km/s. This speed limit makes it unlikely that humans will ever be able to send spacecraft to explore beyond our local area of the Milky Way.

However, new research by Erik Lentz at the University of Göttingen suggests a way beyond this limit. The catch is that his scheme requires vast amounts of energy and it may not be able to propel a spacecraft.

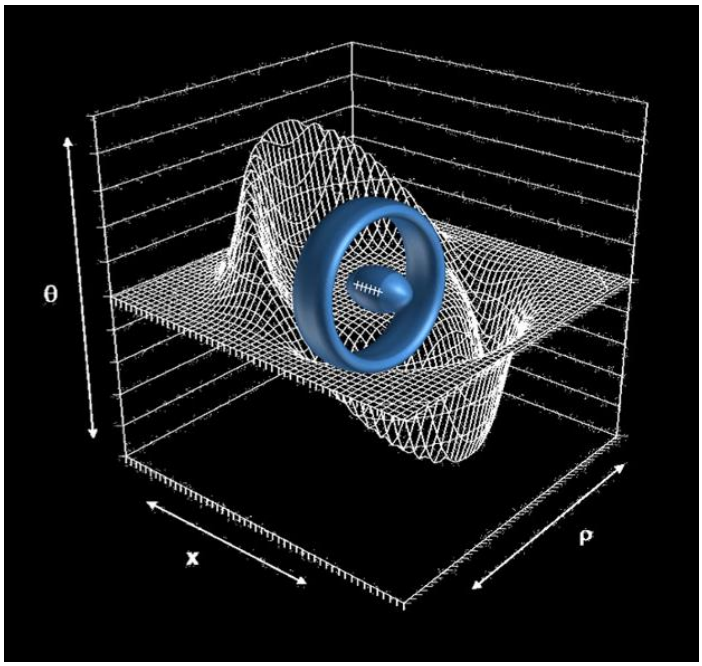
Lentz proposes that conventional energy sources could be capable of arranging the structure of space–time in the form of a soliton – a robust singular wave. This soliton would act like a "warp bubble'", contracting space in front of it and expanding space behind. Unlike objects within space–time, space–time itself can bend, expand or warp at any speed. Therefore, a spacecraft contained in a hyperfast bubble could arrive at its destination faster than light would in normal space without breaking any physical laws, even Einstein's cosmic speed limit.

Negative energy
The idea of creating warp bubbles is not new, it was first proposed in 1994 by the Mexican physicist Miguel Alcubierre who dubbed them "warp drives" in homage to the sci-fi series Star Trek. However, until Lentz's research it was thought that the only way to produce a warp drive was by generating vast amounts of negative energy – perhaps by using some sort of undiscovered exotic matter or by the manipulation of dark energy. To get around this problem, Lentz constructed an unexplored geometric structure of space–time to derive a new family of solutions to Einstein's general relativity equations called positive-energy solitons.

Though Lentz's solitons appear to conform to Einstein's general theory of relativity and remove the need to create negative energy, space agencies will not be building warp drives any time soon, if ever. Part of the reason is that Lentz's positive-energy warp drive requires a huge amount of energy. A 100 m radius spacecraft would require the energy equivalent to "hundreds of times of the mass of the planet Jupiter", according to Lentz. He adds that to be practical, this requirement would have to be reduced by about 30 orders of magnitude to be on par with the output of a modern nuclear fission reactor. Lentz is currently exploring existing energy-saving schemes to see if the energy required can be reduced to a practical level.

Any warp drive would also need to overcome several other serious issues. Alcubierre, who regards Lentz's work as a "significant development", cites the "horizon problem" as one of the most pernicious. "A warp bubble travelling faster than light cannot be created from inside the bubble, as the leading edge of the bubble would be beyond the reach of a spaceship sitting at its centre," he explains. "The problem is that you need energy to deform space all the way to the very edge of the bubble, and the ship simply can't put it there."

Spacecraft doubts



Lentz describes his calculations in Classical and Quantum Gravity, where other recent research on the topic is outlined in an accepted manuscript from Advanced Propulsion Laboratory researchers Alexey Bobrick and Gianni Martire. The duo describes a general model for a warp drive incorporating all existing positive-energy and negative-energy warp drive schemes, except Lentz's which they say "likely forms a new class of warp drive space–times".

However, they argue that a Lentz-type warp drive is like any other type of warp drive in the sense that, at its core, it is a shell of regular material and therefore subject to Einstein's cosmic speed limit, concluding that "there is no known way of accelerating a warp drive beyond the speed of light".

Though he recognizes these huge hurdles to building a warp drive, Lentz feels they are not insurmountable. "This work has moved the problem of faster-than-light travel one step away from theoretical research in fundamental physics and closer to engineering," he says.

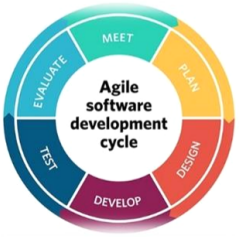
After addressing energy requirements, Lentz plans to "devise a means of creating and accelerating (and dissipating and decelerating) the positive-energy solitons from their constituent matter sources", then confirm the existence of small and slow solitons in a laboratory, and finally address the horizon problem. "This will be important to passing the speed of light with a fully autonomous soliton," he says.

The bulk of this was: **Reprint from 'Physics World'**
Interested in the math? Check out: **https://en.wikipedia.org/wiki/Alcubierre_drive**

So, after all this, my mind still drifts back to pre- 'sound barrier' days and sitting under our kitchen table listening to my dad and his friends debating if FTS (Faster than Sound) was possible, and I wonder what everyone will say when someone who does not know that it is impossible, goes ahead and does it anyway.

Agile Course

IEEE SE Michigan CS Chapter
Presents
"An Introduction to Agile Scrum Methodology"



Agile is a software development methodology to build a software incrementally using short iterations, so that the development is aligned with the changing business needs. This simple tutorial uses appropriate examples to help you understand agile development in a general and quick way.

Audience

This tutorial has been prepared for beginners to help them understand the basics of Agile principles and its implementation. After completing this tutorial, you will find yourself at a moderate level of expertise, from where you can advance further.

Prerequisites

Attendees need a basic knowledge of software development concepts such as software requirements, coding, testing, etc.

Speaker: Sharan Kalwani

Biography: With over 30+ years' experience, in various aspects of hardware, software has evolved. You can expect a unique perspective on the whole evolution of development in software creation, testing and deployment. The speaker has presented at numerous conferences and is viewed as an active evangelist in his areas of expertise.

- **When? Where? …**
- **Date:** April 17th 2021
- **Time:** 8 AM ➔ 11 AM
- **Audience:** All Students, Members, Professionals and Industry Techs
- **Where:** Online via Webex

Sponsored by IEEE SE Michigan Computer Science Chapter

Pre-Registration Required!

https://events.vtools.ieee.org/m/264746

Root Cause Course

SE Michigan CS Chapter
Presents
"Root Cause Analysis Skills"

These days practically all engineering work requires one to address issues or troubleshoot events post facto. Many work environments then employ RCA (root cause analysis) to deal with this. RCA seeks to identify the origin of a problem. It uses a specific set of steps, with tools such as the 5 Whys and Cause & Effect Diagram, to find the primary cause of the problem, so that you can determine what happened, why it happened and figure out what to do to prevent its recurrence.

Young engineers or folks who have moved from a different environment will benefit from picking up this skill.

Audience

This tutorial has been prepared for beginners to help them understand the basics of root cause analysis. After completing this tutorial, you will find yourself at a moderate level of expertise, from where you can advance further.

Prerequisites

A fee of $25 (IEEE members) is required to cover materials postage/handling, printing, etc. CEU/PDH certificates will be awarded to those who complete the entire session.

Instructor: Sharan Kalwani

Biography: With over 30+ years' experience, in various aspects of hardware, software. The speaker has presented at numerous conferences and is viewed as an active evangelist in his areas of expertise.

- **When? Where? …**
- **Date:** April 10th 2021
- **Time:** 8 AM ➔ 11 AM
- **Audience:** All Students, Engineers, Professionals and Industry Techs
- **Where:** Online via Webex

Sponsored by
SE Michigan Chapter
Education Society
Computer Society

Pre-Registration Required!

https://events.vtools.ieee.org/m/264745

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Advancing Technology for Humanity

MetroCAD 2021

The Fourth International Conference on Connected and Autonomous Driving (MetroCAD 2021)

Detroit USA, April 28-29, 2021



HOME Committees Call for Papers

With the burgeoning of Edge Computing and 5G technologies, we envision future vehicles will serve as a computing platform for a variety of services such as autonomous driving, remote real-time diagnostics, on-board entertainment, and a variety of third-party services, such as public safety. To realize the vision of connected and autonomous driving, researchers and practitioners in the community have to address several challenges, such as communication systems, data analytics platforms, novel algorithms and applications, security, to name a few.

The Fourth International Conference on Connected and Autonomous Driving aims to bring together the researchers and practitioners on connected cars, autonomous driving, transportation systems and ride-sharing platforms to address core challenges with vehicle connectivity and autonomous driving. The conference will include invited speakers, panels, paper presentations, tutorials, and real-vehicle demos. The goal is to discuss and exchange ideas in this area and stimulate the collaboration between academia and industry partners. The topics include, but are not limited to:

- Perception, localization, mapping, planning and control, action prediction for autonomous driving.
- Consumer services, include Internet- and cloud-based digital services that add to the driving experience.
- Connected Vehicle packages, using advanced features to improve or help manage the car's operation and autonomous driving.
- Connected vehicle data operations of various data sources and latency requirements.
- Artificial Intelligence approaches for control and coordination of traffic leveraging V2V and V2X infrastructures.
- Security, privacy, ethics, human interaction related with autonomous driving
- Enabling technologies for Autonomous Driving.
- Social and human impact of CAVs.

Previous Events
MetroCAD 2020
MetroCAD 2019
MetroCAD 2018

Important Dates
Paper Submission: Jan. 24, 2021
Acceptance Notifications: **Feb. 26, 2021**
Camera-ready Papers Deadline: **Mar. 12, 2021**
Conference: **Apr. 28-29, 2021**
Contact Email:
Metrocad@groups.wayne.edu

Join us on

In Cooperation

IEEE computer society

IEEE COMPUTER SOCIETY AUTONOMOUS DRIVING TECHNOLOGIES Special Technical Community

Conference Sponsorship

WAYNE STATE College of Engineering

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Space Weather

Most of us think of weather in terms of 'will it rain today, or can I leave the umbrella at home?' This is a reasonable question for our daily lives. But we rarely consider the influence of the vast amounts of energy striking the earth's atmosphere and the planet from the Sun as the main driver of our terrestrial weather systems.

The National Oceanic and Atmospheric Administration (NOAA)
https://www.noaa.gov/
And the National Weather Service (NWS)
https://www.weather.gov/
keep an active and continuous watch on the Sun, and its local 'weather'.

VIRTUAL 2021 SPACE WEATHER WORKSHOP! APRIL 20-22, 2021

About Space Weather Workshop (https://cpaess.ucar.edu/space-weather-workshop-2021)

Space Weather Workshop is an annual conference that brings industry, academia, and government agencies together in a lively dialog about space weather. What began in 1996 as a conference for the space weather user community, Space Weather Workshop has evolved into the Nation's leading conference on all issues relating to space weather.

The conference addresses the remarkably diverse impacts of space weather on today's technology. The program highlights space weather impacts in several areas, including communications, navigation, spacecraft operations, aviation, and electric power. The workshop will also focus on the highest priority needs for operational services that can guide future research and new high-value capabilities that can be transitioned into operations. The conference fosters communication among researchers, space weather service providers, and users of space weather services.

Space Weather Workshop is organized by the University Corporation for Atmospheric Research (UCAR) Cooperative Programs for the Advancement of Earth System Science (CPAESS), along with a community-based organizing committee and co-sponsored by the NOAA Space Weather Prediction Center, the NSF Division of Atmospheric and Geospace Sciences, and the NASA Heliophysics Division.

See prior workshop presentations and more information about UCAR Space Weather Workshop

Meeting Information
The meeting will span 3 days, Tuesday-Thursday, April 20-22, 2021. Each day will have sessions from 10:00 - 12:00 EDT, 13:00 - 14:30 EDT, and 15:00 - 16:30 EDT with posters from 17:00 - 18:30 EDT.

This meeting will be held virtually. Information about the virtual platform and instructions to login to the workshop will be provided to registrants as the workshop date approaches.

Student Networking Session: *This special session will be held on April 19, in the evening.*

Registration Information
Registration Deadline: ***April 9, 2021***

(No Registration fee for 2021)

*Register using the link to the Workshop (**https://cpaess.ucar.edu/space-weather-workshop-2021**)*

Higher Math

On the Tolerance of Resistors in Parallel

Julian Jove

Calculating the equivalent resistance of resistors in parallel is a common task in any electronics work. Most of us know the difference between impedance and admittance parameters when doing electrical network analyses, but what about resistor tolerances? For example, paralleling two resistors, R_1 with 1% tolerance and R_2 with 5% tolerance, we find that we can apply the Product Over the Sum Rule that we learned in First Grade but later forgot when we became a radio astronomer. The tolerance of our two parallel resistors in this example simply is

$$R_{||}(Tol) = \frac{R_1(Tol)\cdot R_2(Tol)}{R_1(Tol)+R_2(Tol)} = \frac{1\%\cdot 5\%}{5\%+1\%} = \frac{5\%^2}{6\%} = \frac{5\%}{6} = 0.833\%$$

We observe that the tolerance of the resistor combination (that is, the *equivalent resistance*) is lower than the tolerance of the best resistor. Note that we had to invoke the *wind-over-water* Kelvin-Helmholtz Instability Criterion in order to divide a percentage number by an ordinary number. We can extend this concept to any parallel combination of resistors using Admittance Tolerance Principles. Let us examine the general case and then work an example:

$$\frac{1}{R_{||}(Tol)} = \frac{1}{R_1(Tol)} + \frac{1}{R_2(Tol)} + \ldots + \frac{1}{R_n(Tol)}$$

Say we have four resistors with tolerances $R_1(1\%)$, $R_2(2\%)$, $R_3(2\%)$, and $R_4(10\%)$. For this we find that

$$\frac{1}{R_{||}(Tol)} = \frac{1}{R_1(Tol)} + \frac{1}{R_2(Tol)} + \frac{1}{R_3(Tol)} + \frac{1}{R_4(Tol)} = \frac{1}{1\%} + \frac{1}{2\%} + \frac{1}{2\%} + \frac{1}{10\%}$$

$$\frac{1}{R_{||}(Tol)} = \frac{1}{\%} + \frac{0.5}{\%} + \frac{0.5}{\%} + \frac{0.1}{\%} = \frac{2.1}{\%}$$

and

$$R_{||}(Tol) = \frac{\%}{2.1} = 0.4762\%$$

Again, we invoked the Kelvin-Helmholtz Instability Criterion. Also note that the Inversion Principle came into play here, and that the resulting tolerance is not lower than the best resistor. This obviously can be explained by the inescapable Johnson Noise Anomaly, which puts the resistors in a thermally-permissive, current-robbing, shoulder-fired, gas-operated state.

In spite of the pseudo-complications of various criteria, principles and anomalies, the above-described concept has far-reaching applications: We can get any tolerance we want – as small or as big as we want – simply by selecting resistors with the appropriate tolerances and wiring them in parallel.

....

QED (loosely translated, *only a complete fool would believe this nonsense*), this 1st day of April 2020.

Reprinted by permission:

Radio Astronomy: Journal of the Society of Amateur Radio Astronomers - Mar-Apr 2020

Science Fair Report

IEEE Awards at the 2021 SEFMD
By Don C. Bramlett, LSM IEEE

The 64th Science and Engineering Fair of Metropolitan Detroit (SEFFMD) (also referred to as the Science Fair) was held March 4 -10, 2021, with professional organization award judging March 7-9. Due to the pandemic, the Science Fair was conducted in a virtual format in 2021. Normally the Science Fair is held at the TCF Center (previously known as Cobo Hall) in downtown Detroit.

Comment: Last year judging for the Science Fair was held in-person at the TCF Center March 10, 2020, the day before Michigan initially entered quarantine for the pandemic, just over a year ago.

This is the 26th straight year that the IEEE-SEM Section has provided judging and sponsored professional organization awards for projects associated with electrical, electronic computer engineering and IEEE related fields. Providing input this year for judging of pertinent projects were IEEE members, Kenji Anon, Don Bramlett, Laurence Dishman, Ralph Mackiewicz, Dave Morris, Bill Quinlan, and Kimball Williams. Given the virtual format, judges were able to view a YouTube video presentation and slides for each project, but were not able to question the students. Students were expected to use the scientific method in addressing the issues related to their projects.

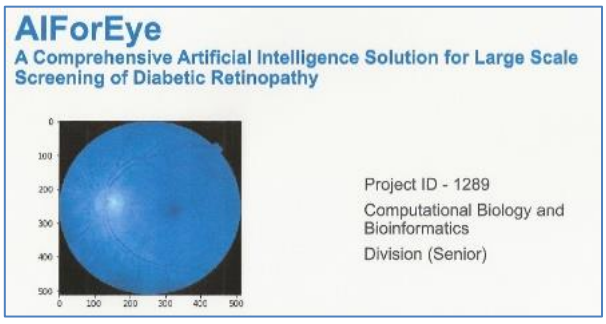
Three First Place Grand Awards ($100 check and frameable, personalized certificate) were presented to the following Senior (High School) Division projects.

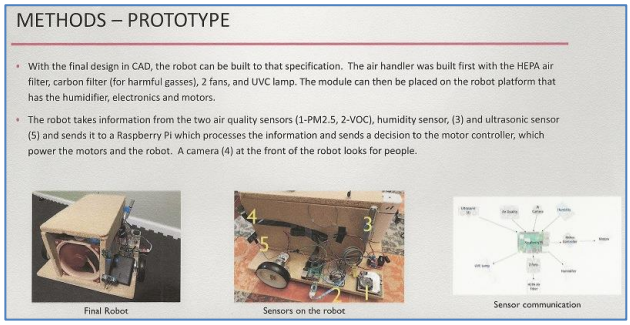
- ✓ Vikram Goddla, a freshman at Detroit Country Day Upper School, for his project titled *"A Comprehensive AI Solution for Largescale Screening of Diabetic Retinopathy"*.
- ✓ Michelle Hua, a sophomore at Cranbrook Kingswood Upper School, for her project titled *"Dilated Silhouette Convolutional Neural Network for Human Action Recognition"*.
- ✓ Mikul Saravanan, a sophomore at Cranbrook Kingswood Upper School, for his project titled *"Smart Robot to Purify, Humidify and Disinfect the Air"*.

Three Outstanding Achievement Awards (frameable, personalized certificate) were presented to the following Senior (High School) Division and Elementary Division projects.

- ✓ Adam Sun, a senior at Detroit Country Day Upper School, for his project titled *"Efficient Monocular Depth Estimation with Fully-Convolutional Neural Networks"*.
- ✓ Sonnet Xu, a sophomore at Troy High School, for her project titled *"A Machine Learning Approach to Mortality Prediction in Maintenance Hemodialysis"*.
- ✓ Abhimanyu Kommareddi, Anirudh Rajagopalan, Ajitsai Reddy, Saharsha Gadde, Nishith Bandaru, Aarav Tirumali, and Avi Abhyankar, 5th grade students at South Arbor Charter Academy, for their team project titled *"VolcaMet"*.

The Science Fair should return to an in-person format in 2022 at the TCF Center. Below are 3 pictures from the event.





ORG UNITS cheat sheet

Section Unit Name or Affinity Group or Chapter Name (Organizational Unit is in parentheses)		
Consultants Network Affinity Group:	(CN40035)	
Life Members:	(LM40035)	
Young Professionals:	(YP40035)	
Women in Engineering:	(WE40035)	
Chapter: 01	(CH04049)	(SP01) Signal Processing Society, (CAS04) Circuits and Systems Society and (IT12) Information Theory Society
Chapter: 02	(CH04051)	(VT06) Vehicular Technology Society
Chapter: 03	(CH04053)	(AES10) Aerospace and Electronic Systems Society and (COM19) Communications Society
Chapter: 04 "Trident"	(CH04050)	(AP03) Antennas and Propagation Society, (ED15) Electron Devices Society, (MTT17) Microwave Theory and Techniques Society,
Chapter: 05	(CH04055)	(C16) Computer Society
Chapter: 06	(CH04056)	(GRS29) Geosciences and Remote Sensing Society
Chapter: 07	(CH04057)	(PE31) Power Engineering Society, (IA34) Industrial Applications Society
Chapter: 08	(CH04088)	(EMC27) Electromagnetic Compatibility Society
Chapter: 09	(CH04087)	(IE13) Industrial Electronics Society, (PEL35) Power Electronics Society
Chapter: 10	(CH04142)	(TEM14) Technology and Engineering Management Society
Chapter: 11	(CH04099)	(EMB18) Engineering in Medicine & Biology
Chapter: 12	(CH04103)	(CS23) Control Systems Society
Chapter: 13	(CH04113)	(E25) Education Society
Chapter: 14	(CH04115)	(RA24) Robotics And Automation Society
Chapter: 15	(CH04144)	(NPS05) Nuclear Plasma Sciences Society
Chapter: 16	(CH04125)	(CIS11) Computational Intelligence Society, (SMC28) Systems, Man and Cybernetics Society
Chapter: 17	(CH04128)	(NANO42) Nanotechnology Council

Section Unit Name or Affinity Group or Chapter Name (Organizational Unit is in parentheses)	
University Of Detroit-Mercy:	(STB00531)
Michigan State University:	(STB01111)
University Of Michigan-Ann Arbor:	(STB01121)
Wayne State University:	(STB02251)
Lawrence Technological University:	(STB03921)
Oakland University:	(STB06741)
Eastern Michigan University:	(STB11091)
University of Michigan-Dearborn:	(STB94911)

Curated & Maintained By

Sharan Kalwani,
Wavelengths,
2017 ~ 2021

Activities & Events

We try to publish IEEE events in several places to ensure that everyone who may want to attend has all the available relevant information. **NOTE: The IEEE SE Michigan section website has changed to its new home, kindly make a note of it! The new home is located at http://r4.ieee.org/sem/ .** The old links will continue to work for some time, but will be changing permanently in the near future.

SEM Wavelengths:
https://r4.ieee.org/sem/about-sem/sem-history/wavelengths-magazine-archive/
This is our 'Active' event listing site where everyone should look first to see what events are scheduled for our Section in the near future.

SEM Web Calendar:
http://r4.ieee.org/sem/
Select "SEM Calendar" button in the top row of the website.

SEM Web Meetings:
http://r4.ieee.org/sem/
Select "SEM Meeting List" button in the left-hand column.

vTools Meetings:
http://sites.ieee.org/vtools/
Select "Schedule a Meeting" button in the left-hand column of buttons.

Other Happenings

Here are some of the non-IEEE functions that may be of interest to you or someone you know. Let us know if you have a special interest in a field that encourages technical study and learning, and wish to share opportunities for participation with members of the section. NOTE: You may need to copy the URL and paste it into your browser address bar.
Send details to: wavelengths@ieee-sem.org

Michigan Institute for Plasma Science and Engineering: Seminars for the 2018-2021 academic year:
http://mipse.umich.edu/seminars.php

Model RC Aircraft
http://www.skymasters.org

Model Rocketry
https://www.nar.org/find-a-local-club/nar-club-locator/

Astronomy
http://www.go-astronomy.com/astro-clubs-state.php?State=MI

Experimental Aircraft Association
https://www.eaa.org/en/eaa/eaa-chapters/find-an-eaa-chapter

Robots
https://www.robofest.net/index.php/about/contact-us

Science Fiction Conventions
https://2021.penguicon.org/

http://www.confusionsf.org/

Mad Science
http://www.madscience.org/

ESD PE Review Class
https://www.esd.org/programs/pe/

Maker Faire:
https://swm.makerfaire.com/

Executive Committee

The SEM Executive Committee is the primary coordination unit for Southeastern Michigan (SEM) IEEE operations. The basic organization chart below shows the 2019/2020/2021 arrangement of communications links designed to provide inter-unit coordination and collaboration.

The SEM Executive Committee meets in a teleconference each month on either the first Wednesday or first Thursday at noon. The specific meeting days, times, phone or WebEx numbers and log in codes are published on the IEEE SEM Website calendar: **http://r4.ieee.org/sem/** Click on the "Calendar" button in the top banner on the first page of the web site.

If you wish to attend, or just monitor the discussions, please contact **Bhupinder Mavi**, the section secretary at: **bmavi@outlook.com,** and request to be placed on the distribution list for a monthly copy of the agenda and minutes. More meeting details are available on the next page of this newsletter.

Other Meetings:
About half of our members maintain memberships in one or more of the IEEE technical societies, which automatically makes them members of the local chapter which is affiliated with that society. As a result, they should receive notices of the local chapter meetings each month.

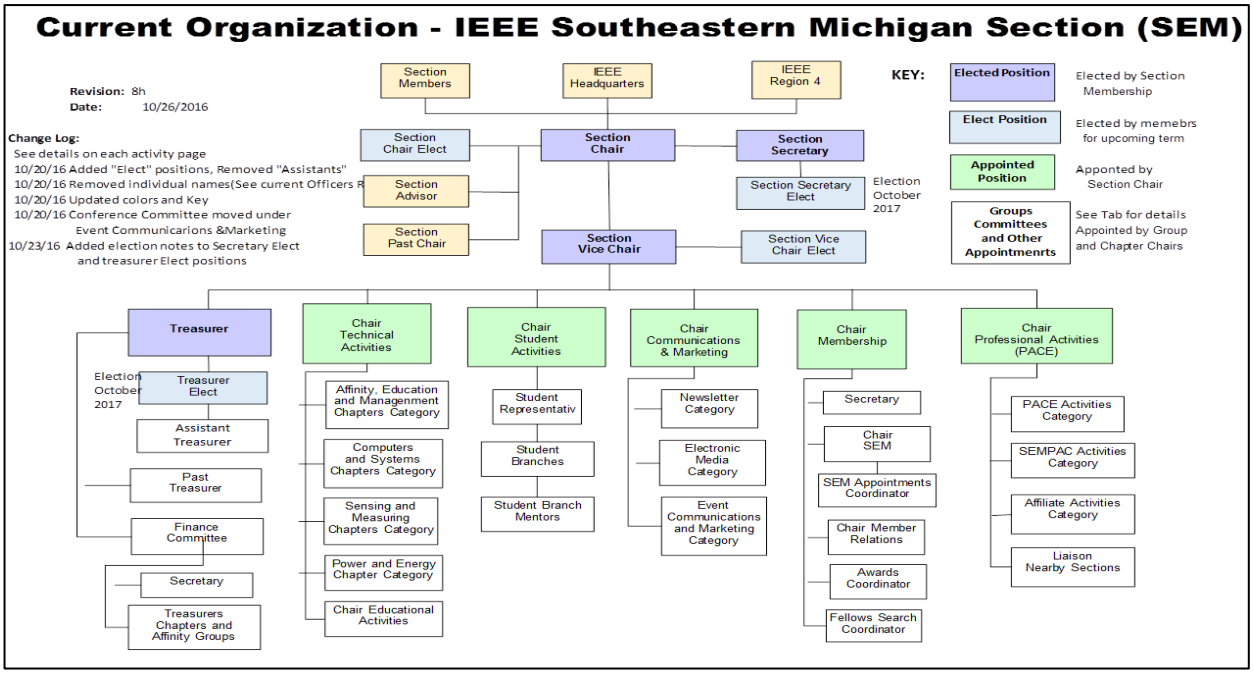
However, members of the section may have multiple technical interests and would like to have meeting information of other chapters. In order to communicate the meeting dates of all the chapters, affinity groups etc., to our members to facilitate their attendance, leaders of the groups are requested to send meeting information to our webmasters for posting on section's calendar.

More detailed information on meetings may be found through the IEEE SEM Website: **http://r4.ieee.org/sem/** and clicking on the **SEM meetings list** button near the bottom of the left-hand banner.

Automatic e-mail notification of web updates may be received using the "**Email Notifications**" button at the top of the **SEM Tools/Links** side banner.

Bhupinder Mavi - SEM Secretary 2021

Download the complete SEM Organization Chart, in PDF format, from our Website at: http://r4.ieee.org/sem/
Click on "About SEM" Tab and "Current Officers" ***(NOTE: this is now password protected)***



ExCom Meeting Schedule

NOTE: All SEM members are invited to attend ALL ExCom meetings:

Below is the 2021 schedule for the Section ExCom meetings with links to add the events to your calendar. It is important that at least one person from each Chapter/Affinity Group attends each scheduled ExCom meeting. Information on each Face-to-Face (in-person) Meeting will be sent out once the venue is confirmed.

Please mark your calendars for the 2021 meetings. Or, link your personal calendar to the SEM Web calendar.

Section Administrative Committee (ExCom) Meeting Schedule for 2021:

Note: All IEEE Members are welcome at any IEEE meeting, at any time but please register so we can be sure to accommodate you. This month's meeting is highlighted in **Bold**.

2021 Meeting Schedule:

ExCom Meeting	*Date & Time*
SEM Section ExCom Monthly Meeting (Teleconference) for April 2021	4/7/2021 18:30
SEM Section ExCom Monthly Meeting (Teleconference) for May 2021	5/6/2021 18:30
SEM Section ExCom Monthly Meeting (Teleconference) for June 2021	6/2/2021 18:30
SEM Section ExCom Monthly Meeting (Face-Face) for July 2021	7/14/2021 18:30
SEM Section ExCom Monthly Meeting (Teleconference) for August 2021	8/5/2021 18:30
SEM Section ExCom Monthly Meeting (Teleconference) for September 2021	9/1/2021 18:30
SEM Section ExCom Monthly Meeting (Face-Face) for October 2021	10/7/2021 18:30
SEM Section ExCom Monthly Meeting (Teleconference) for November 2021	11/4/2021 18:30
SEM Section ExCom Monthly Meeting (Teleconference) for December 2021	12/1/2021 18:30

Bhupinder Mavi
SEM Secretary 2021
bmavi@outlook.com

Letters to the Editor

As promised, we have now started a "Letters to the Editor" column soon. Feel free to email away to help us get that started! Letters, bouquets, brickbats, suggestions, advice, feedback, opinions may be sent to:
letters@ieee-sem.org

To the Editors of Wavelengths:

It's a commendable job to gather the information and server in one platter, Kudos! Many young and experienced engineers get motivated and keep up with the recent news and activities with the help of Wavelengths. It has a special significance particularly in these challenging times when human interactions are minimal, this provides an excellent platform to virtually meet other enthusiasts.

While Wavelengths provides great articles, I was thinking if we can provide a way for users to express their feedback/opinion/reaction about the article(s) and if those responses could be published in the next issue, that would be great. This will encourage authors and also increase a user participation as well.

My 0.02$:-)

Thank you and I appreciate all the hard work put in place by all editors!

- - - - - - - - -
Best,
Nilesh Dudhaia

Thank you for your letter, kind words and most sought after: an excellent suggestion!

I will share it with the editorial team plus the Section leadership. We will make efforts to provide a way to rate articles in the future.

--Sharan Kalwani,
Editor Wavelengths (2019 ~ 2021)

Previous editions in this series may be found on the IEEE SEM website at: http://r4.ieee.org/sem/. Click on the "Wavelengths" button in the top row of selections.

Comments and suggestions may be sent to the editorial team at wavelengths@ieee-sem.org
OR
sharan.kalwani@ieee.org
d.romanchik@ieee.org
nilesh.dudhaia@ieee.org
k.williams@ieee.org
cgjohnson@ieee.org
lunnmalcolm@me.com
akio@emcsociety.org

We rely on our officers and members to provide the 'copy' that we finally present to readers of the newsletter. The **Wavelengths Focus Plan and Personal Profiles** plan shown in the matrix below is presented to ensure coverage of section activities and events.

We try to complete the newsletter layout a week before the first of the month to allow time for review and corrections. If you have an article or notice, please submit it two weeks before the first of the month or earlier if possible.

The plan below relies on the contributions of our members and officers, so please do not be shy. If you have something that should be shared with the rest of the section, we want to give you that opportunity.

We always encourage all chapters and student branches to share news of activities (both past and future) in their arenas. Please feel free to share any and all information so your peers, colleagues can hear about all the good work you do.

Quote*:*

"If a tree falls in a forest and no one heard it, how do you know it actually fell??"

So publicize your work, one never knows when it can pay off!

Editors:

We are always looking for members interested in helping to edit the newsletter. The process is always more fun with more people to share the duties. Having more participants and contributors also helps us keep the newsletter interesting.

Heads Up

We are contemplating making the submissions of articles and events for the Wavelengths, a little easier and a little more inviting. Ideas are of course welcome and to this end, we are toying with setting up a little "newsletter portal". Stay tuned for some news on that end!

Join the Team:

If you feel you might like to join the team, or would like to train with us, please contact one of us at:

wavelengths@ieee-sem.org

OR

any one of the following:

sharan.kalwani@ieee.org
d.romanchik@ieee.org
nilesh.dudhaia@ieee.org
k.williams@ieee.org
cgjohnson@ieee.org
lunnmalcolm@me.com
akio@emcsociety.org

Wavelengths Annual Publication Plan for Articles

Month	AG's	Ch's	Ch's	SB's	Special Notice	Reporting Events	Monthly Focus	Awards
Jan		*1*		*OU*	*New Year Officers*	*Officer's Welcome*	*The Year Ahead*	
Feb	*Cons*	*2*		*MSU*	*Science Fair Judges*	*National Engrs Wk.*	*Surviving Winter*	
Mar		*3*	*13*	*EMU*	*Elections - Prep*			
Apr		*4*		*U/M-D*		*ESD Gold Awards*	*Chapter Focus*	
May	*Life*	*5*	*14*			*Science Fair*		
Jun		*6*					*Leadership Skills*	
Jul		*7*	*15*				*Students Issues*	
Aug	*WIE*	*8*			*Nominations Call*		*Womens Issues*	
Sep		*9*	*16*	*LTU*	*Ballots*	*Engineers Day?*	*Professional Skills*	
Oct		*10*		*U/M-AA*	*Elections!*	*IEEE Day*		
Nov	*YP*	*11*	*17*	*WSU*	*Election Results*	*New Fellows*		
Dec		*12*		*U/D-M*	*IEEE-Com Apmts.*		*Happy Holidays*	*R4 Nom*

Wavelengths Annual Publication Plan for Personal Profiles

Month	Profiles	Profiles	Committees
Jan	Chair	New Officers	ExCom
Feb	Treasurer		Communications
Mar	Secretary		Conference
Apr	Stud-Rep		Education
May	V-Chair		Executive
Jun	Sect-Adviser		Finance
Jul	Sr Officers		Membership
Aug			Nominations
Sep			PACE
Oct			Student Activiies
Nov			Technical Activiies
Dec	Editor-WL		

IEEE Southeastern Michigan
Electrical and Electronic Engineers Creating Our Future

Web & Social Sites

SEM Website
http://r4.ieee.org/sem/

Each of the sites below may be accessed through the SEM Website:

Section Website Event Calendar
(Select the "SEM Calendar" button - top row.)

SEM Facebook Page
(Select the "f" button under the top row.)

SEM LinkedIn Page
(Select the "in" button under the top row.)

SEM Twitter Account (new)
https://www.twitter.com/ieeesemich

SEM Officers:
For a complete listing of all - Section - Standing Committee - Affinity Group - Chapter and Student Branch Officers, see the SEM Officers Roster on the SEM web page under the "About SEM" button and select "Current Officers."

Section Officers

Section Chair
David Mindham

Section Vice-Chair
Sharan Kalwani

Section Secretary
Bhupinder Mavi

Section Treasurer
Colleen Chmielewski

Standing Committees:

Section Adviser
Don Bramlett

Wavelengths Editor
Sharan Kalwani

Chair Educational Activities
Christopher Guirlanda

Chair Finance
Sharan Kalwani

Chair Membership Development
Sharan Kalwani

Chair Nominations & Appointments
Kimball Williams

Chair Professional Activities (PACE)
Sharan Kalwani

Chair Student Activities
Mel Chi

Student Communications Coordinator
Michael Anthony

Student Representative

Chair Technical Activities
Jeffery Mosley

IEEE Southeastern Michigan

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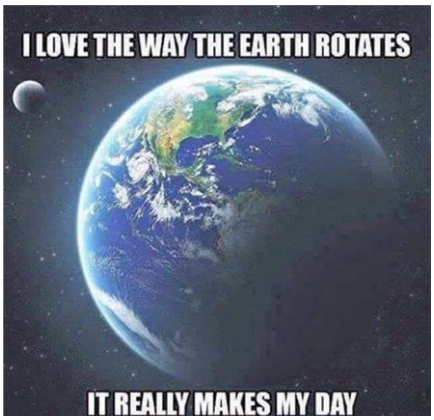
Visit Us on the Web at:
http://r4.ieee.org/sem



Advertising Rates

SEM Website & Newsletter

Leadership Meetings

SEM Executive Committee Monthly Teleconferences:

- 1st Wednesday or Thursday of Each Month @ Noon
- Check the Section Web Calendar at:
  http://r4.ieee.org/sem/sem-calendar/
  (Select the "SEM Calendar" button in the top row.)

SEM Executive Committee Face-to-Face Meetings:

- Once every Qtr. Find the location, and Registration at:
  http://bit.ly/sem-ieee

SEM Standing Committee Meetings:
SEM Affinity Group Meetings:
SEM Technical Society/Chapter Meetings:
SEM University Student Branch Meetings:

- Meeting schedules are announced on SEM Calendar
  http://r4.ieee.org/sem/
  (Select the "SEM Calendar" button in the top row.)

- Registration for all at:
  http://bit.ly/sem-upcoming