Wavelengths

Volume 61 – Issue 11

Contents

Upcoming Events

We have a number of events coming up this month. Listed below are some of the events, FYI.

Event	Date	Time
Physics Impacts to Plasma Wave Thruster Design	03 Nov 2021	03:30 PM
SEM Section ExCom Monthly Meeting (Teleconference)	04 Nov 2021	06:30 PM
Ch8: AdCom Teleconference	11 Nov 2021	11:00 AM
IEEE Photonics Society Distinguished Lecture: Nitrides for quantum light sources	12 Nov 2021	09:00 AM
The Plasma-Water Interface: Modern Challenges and New Software Tools	17 Nov 2021	03:30 PM
SEM EMC Society Monthly Technical Meeting	18 Nov 2021	05:30 PM
Development of application Solutions Hub in Earth Observation Industry	22 Nov 2021	09:00 AM

Note: All times are EST/EDT. If any events are missed do kindly bring them to the attention of wavelengths@ieee-sem.org. Thank you!

SusTech 2022 CFP

IEEE SusTech2022

https://ieee-sustech.org

Call For Papers

April 21st-23rd, 2022

The 9th **Annual IEEE Technologies for Sustainability Conference** (SusTech 2022) is designed to explore technical development that meets the needs of the present without compromising the future generations. The conference brings together scientists, engineers, technologists and scholars from disparate disciplines to conduct a dialogue on environmental issues and collaborate on ideas to develop and utilize innovative tools and intelligent systems to address them. Attendees will explore emerging relevant technologies, latest tools, and proactive solutions to take their sustainability programs to the next level.

- **SusTech 2022** is a virtual and on-demand event and will feature technical papers & presentations, posters and workshops.
- Prominent experts will be giving keynotes, plenary presentations and invited talks.
- Best Posters and Papers in the conference will be eligible for an award.
- Full papers will be considered for publication in the IEEE SusTech 2022 Proceedings.

Conference content that meets IEEE quality review standards and format will be submitted for inclusion into IEEE Xplore as well as other Abstracting & Indexing (A&I) databases.

Papers are solicited for presentations from industry, government, and academia (including students) covering relevant research, technologies, methodologies, tools, case studies and public policy.

Conference Fields of Interest (see web site for full details)

Technologies that drive sustainable infrastructure design and implementation

Energy Efficiency	**Sustainable Electronics**	**Smart Grid**
Renewable/Alternative Energy	**Water Resource Management**	**Internet of Things (IoT)**
Intelligent Transportation Systems	**Societal Implications/Quality of Life**	**Public Policy**

The Conference will also consider submissions representing: Smart Grid, e-Waste, Ocean Waste & Pollution, Ecological Sustainability & Conservation, Agriculture & Food Technology, Sustainable Management.

Instructions to Authors: Submit in **PDF** form, a full submission of the paper for oral presentation via the SusTech website. For information for authors, please visit the conference website at https://ieee-sustech.org. Select the Authors *tab* and follow the instructions.

There will be a separate Student Poster Competition.

Important Dates	November 1st, 2021	Submission Deadline for Paper
	December 15th, 2021	Notification of Acceptance
	January 31st, 2022	**FINAL manuscript submission deadline**

For more information or questions, please contact: sustech@ieee.org

SusTech 2022 Leadership

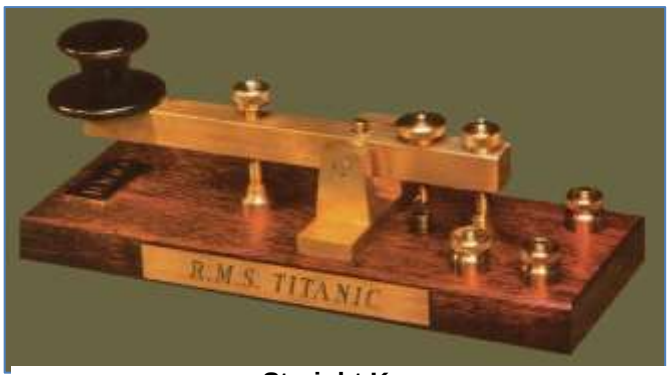
General Chair: David E. Gonzalez | davidgonzalez@ieee.org
Vice Chair: Sharan Kalwani | sharan.kalwani@ieee.org
Technical Program Chair: Rakesh Mahto | ramahto@fullerton.edu
Past Chair: Gora Datta | gora.datta@ieee.org
Emeritus Chair and Co-Founder: Ed Pekins | e.perkins@ieee.org

IEEE Region 6 · IEEE · IEEE-USA · SSIT · IEEE Environmental Engineering Technical Community

Sideswiper

No, this is not about reckless driving or snide comments.

For those of us who are avid Amateur Radio Operators many maintain our skills sending and receiving Morse code (CW). [*Called 'CW' for continuous wave on a single frequency, as opposed to the old spark gap transmitters which broadcast in 'bursts' of electromagnetic energy which covered most of the available radio spectrum.*]
… One of the problems that plagued early telegraphers and by extension, early Amateur Radio Operators using 'straight keys' was a progressive muscular problem dubbed 'glass arm'.
Today we call it Carpel-Tunnel Syndrome.
After many hours of up and down 'pumping' on a straight key the operators arm began to complain!



Straight Key

A solution was developed in the 1888 which moved the up and down operation of the key to side to side and added another set of electrical contacts.
Thus the 'Sideswiper' was born.

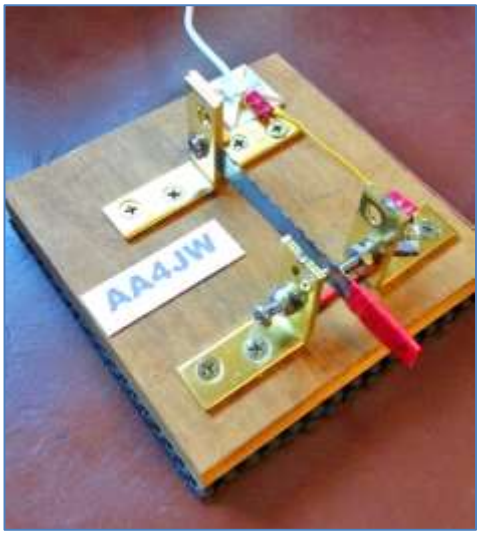

Sideswiper

This new twist on the traditional straight key had another advantage in that with two contacts, Morse code could be sent twice as fast. Thus, it was called the 'Double Speed' key.

Today, many Hams have returned to Amateur Radio when the isolation enforced by the global pandemic gave them the final push to have fun on the air with CW (Morse Code) and they rediscovered the Sideswiper

Roll Your Own:
One of the traditions of Amateur Radio is to build as much of your own equipment as your talents and available equipment and time will allow. Most of the Morse keys (Straight key, Bug, Paddles) can prove too much of a challenge for most Hams working in their basement without access to a fully equipped machine shop.

The Sideswiper is the notable exception. (see the figure at the right.). An old hacksaw blade, four angle brackets, assorted screws, nuts and bolts and a piece of wood to serve as a mount and a fully functional Sidwswiper key can be assembled in an afternoon. Total cost, probably less than $5-$10 depending on how 'upscale' you go with brass or stainless-steel. Hardware.
Note: Learning to send readable Morse code on a Sideswiper will require training your hand and arm to use a completely new set of kinesthetic memories, so plan to take your time and enjoy it.



DIY Sideswiper

If you want to build your own, you might enjoy exploring the site: http://www.k4icy.com/weekend_radio_depot_cootie.html
which goes into detail and provides several different examples of building Sideswipers.

BTW: In the USA, Sideswipers have the informal name of 'Cootie'. Some claim that is because one of the early manufacturers of the key imprinted their logo which looked like a small insect. The real reason is lost to history and until Dr. Brown develops the 'Flux Capacitor' and travels 'Back in Time' we may never know for sure.

N8FNC

Technical Activities Report

2021 IEEE SE Michigan Section Geo-unit Status (Till Oct 29th)

Ch's & AG's	Ave Tech Mtg. Attend	Ave Tech Mtg Guest	#L31 - Technical	#L31 -Admin	#L31 Professional	#L31 -Other	Geo-Unit Name	# Unreported	Total Mtgs
Cnslt	20	1	1	5	1	0	Consultants Network	0	7
LIFE	45	42	1	0	6	0	Life Members	0	7
WIE	0	0	0	9	2	0	Women In Engineering	1	11
YP	0	0	0	0	0	0	Young Professionals	0	0
1	2	1	3	3	0	0	Circuits & Systems, Signal Proc., Info Th.	2	6
2	40	9	3	1	0	0	Vehicular Technology	0	4
3	103	37	3	0	0	0	Aerospace & Elec. Sys., Communications	0	3
4	27	9	3	0	0	0	Trident (Ant, Elect Dev., uWave, Photo)	0	3
5	33	3	52	11	6	3	Computers	0	72
6	0	0	0	0	0	0	Geoscience & Remote Sensing	1	0
7	41	8	7	4	0	0	Power Engineering, Industrial App.	0	11
8	81	34	14	9	0	0	Electromagnetic Compatibility (EMC)	0	23
9	42	14	4	1	0	0	Power Electronics, Industrial Electronics	0	5
10	4	0	3	1	0	0	Engineering Management	0	4
11	0	0	0	0	0	0	Eng. in Medicine & Biology	0	0
12	30	1	1	3	0	0	Control Systems	0	4
13	41	3	16	1	3	0	Education	0	20
14	0	0	0	0	2	0	Robotics & Automation	0	2
15	64	39	5	0	0	0	Nuclear Plasma Science Society	1	5
16	0	0	0	0	0	0	Computational Intelligence / Sys.Man.Cyber.	0	0
17	21	17	3	0	0	0	Nano Technology Council	0	3
SEM	22	2	4	14	4	1	SEM (Section)	1	23
Tot	617	220	123	62	24	4	NOTE: Highlight Green = Active	6	213
		32%					NOTE: Highlight clear = Concern		

The monthly Section Health report now includes columns representing the numbers of unreported meetings see, (#Unreported) as well as total meetings see (Total Mtgs) for each GA. WIE, Chapters 1, 6, and 15 have one or more unreported meetings, otherwise keep up the great work. GA leaders are requested to review the report and clarify any unreported meeting activity by either submitting the appropriate L31 status report or by contacting the undersigned for assistance.

We have only a few GAs who seem to be inactive as of the end of September. I trust that this is the quiet before the great storm of activity being planned for the Fall. Remember that our technical chapters and societies can conduct joint technical meetings where both groups can receive recognition by IEEE and our Section. Please endeavor to engage your group membership by: 1. Meeting F2F or virtually to discuss IEEE presentations or other technical content germane to your group; 2. Invite members or outside speakers to present relevant technical achievements and or issues; and 3. Collaborate with other GAs on relevant joint technical topics of interest via webinar. These are just a few suggestions to maintain healthy technical interchanges within our Section.

Your Technical Activities Committee (TACom) stands ready to assist as needed. Stay well and stay safe.

Jeff Mosley
Chairman, Technical Activities Committee, R4 IEEE SEM, jvmosley@ieee.org.

Member News

Increased Section Membership Retention

The IEEE Southeastern Michigan Section Membership Development is pleased to report that our Section for the 2nd year running has achieved the Silver Award for membership. We are also planning a bevy of activities in cooperation with several of the student branches, outreach events in January and February of 2022. Plus there will be a senior elevation event also scheduled for February 2022 (we need activities to keep us all warm!). Look for the email from the section vtools site. If you do not get those emails, contact the undersigned for tips on how to enable notification.

Sharan Kalwani,
Chair, IEEE SE Michigan Section Membership Development
2019-2020~2021

ISEF top award winner

ISEF Top Award Winner
By Don C. Bramlett, Life Senior Member, IEEE

It was reported in the April/May issue of Wavelengths that one of the IIEEE-SEM Section Grand Award winners at the Science and Engineering Fair of Metro Detroit (SEFMD) was Michelle Hua, a sophomore at Cranbrook Kingswood Upper School in Bloomfield, MI for her project titled “Dilated Silhouette Convolutional Neural Network for Human Action Recognition.”

She was one of six (6) SEFMD Grand Award winners and two (2) Michigan Science and Engineering Fair (MSEF) Grand Award winners that participated in the Regeneron (sponsored) International Science and Engineering Fair (ISEF) in May 2021. The ISEF was conducted in a virtual format, similar to the SEFMD.

The ISEF Awards Ceremony was conducted in a virtual format as well on May 21, 2021. A 1st Place award of $500 in the category of Robotics and Intelligent Machines was awarded to Michele.

At the end of the ISEF Awards Ceremony the top awards for the entire Fair were announced. Michelle Hua received the TOP award at the Fair, the $75,000 George D. Yancopoulos Innovator Award, named in honor of the pioneering drug discoverer and Regeneron co-founder, President and Chief Scientific Officer.

Michelle was awarded this prize for her discovery of an artificial intelligence- based algorithm used for human action recognition. Using human silhouettes, Michelle designed and implemented a novel deep learning framework that outperforms all similar state-of-the-art algorithms.

Chapter 8 Profile

November 2021 Wavelengths Magazine Chapter VIII EMC Report

Southeastern Michigan Chapter VIII currently has 80 IEEE members plus an email list of over 1100 engineers interested in Electromagnetic Compatibility. Each year the chapter hosts an annual event called EMC Fest at the Embassy Suites in Livonia. Our last event was in 2019 and attracted 222 attendees and vendors. We are currently postponing the next EMC Fest until May 12, 2022. More information is at http://www.emcfest.org

Our chapter is currently led by Chair Scott Lytle, Vice Chairs Candace Suriano and Akio Fujimaki, Secretary Steve Tomba and our Treasurer is Matt Feusse. Our awards Chair is Jim Woodyard. We will end this year with 10 virtual technical EMC meetings plus one workshop. Since we are still in virtual mode, we invite several other EMC chapters to co-host our meetings. We use Zoom for most of our technical meetings and then put the recordings up on YouTube afterwards. Our meeting schedule and past meeting archives can be found on our website at http://www.emcsociety.org

Scott Lytle

Chapter VIII Chair

Scott Lytle, Chair

Akio Fujimaki, Vice-Chair

Candace Suriano, Vice-Chair

Jim Woodyard, Awards Chair

Matt Fuesse, Treasurer

Steve Toomba, Secretary

Robofest Update

Robofest eNewsletter 10-29-21

(1) ROWC Highlight Videos and Winners Posted
(2) Robofest 2022 Season Tentative Dates
(3) Site Host Opportunity Returns for 2022
(4) MCWT Grants for All-Girl Robofest Teams
(5) LTU Robofest Scholarship Opportunity
Note: All times are listed in EDT unless noted

(1) ROWC Highlight Videos and Winners Posted

The Robofest Online World Championship Highlight Videos, Event Presentations, and Award Winners Lists have been posted to the Online World Championship tab on the Robofest.net website. Thank you all who participated and cheered on the teams.

(2) Robofest 2022 Season Tentative Dates

UPDATED: Release of the International Game Rules	November 11, 2021
Kickoff meetings to review rules	December 8, 2021 and January 15,2022
International Qualifiers Begin	January 2022
Release of final US Official Game Rules	January 15, 2022
Warmup Competition/Judge Training on LTU Campus	Feb 12, 2022
US Qualifiers Begin	February 26, 2022
World Championship at LTU*	**May 12, 13 and 14, 2022**

** We are also discussing the possibility of hosting an in-person AND online World Championship for teams that may not yet be able to travel to Michigan in May 2022.*

(3) Site Host Opportunity Returns for 2022

Robofest is seeking site hosts for the 2022 Competition Season for Robofest Game and Exhibition Qualifiers as well as BottleSumo, RoboParade and other Open Category events in the spring of 2022. Returning Site Hosts may contact the Robofest office at spalonis@ltu.edu to start the registration process. Online Application is open on the Registration page and downloadable forms and New Site Host Information and FAQ documents are now available on the For Site Hosts page Robobofest.net website.

(4) MCWT Grants for All-Girl Robofest Teams

The Michigan Council of Women in Technology Foundation, 18-year sponsor of Robofest, is once again providing $500 grants for up to Ten Michigan all-girl Robofest teams for the 2022 Robofest Game and Exhibition competitions. More information, the application and deadline will be posted to their webpage: https://mcwt.org/programs/list/K-12-Initiatives/ROBOTICS-GRANTS

(5) LTU Scholarship Opportunity for all Robofest Participants

High School students who have participated in Robofest at any time and who are planning to attend LTU, can apply for a $3,000 renewable scholarship (Total of $12,000). Submit a 400-word essay describing your Robofest experience and your career goals, a letter of recommendation from one of your Robofest adult coaches or mentors, and the Scholarship Application by **April 1.** To find more information visit: https://www.ltu.edu/financial_aid/scholarships-freshmen.asp

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Lawrence Technological University / Robofest / J-233 / 21000 W. Ten Mile Rd, Southfield, MI 48075
Dr. Christopher Cartwright, Director, ccartwrig@ltu.edu
Elmer Santos, Assistant Director, esantos@ltu.edu
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Pam Sparks, Coordinator, psparks@ltu.edu
Dr. CJ Chung, Advisory Board Chairperson, cchung@ltu.edu

http://www.robofest.net http://facebook.com/robofest

IEEE Day 2021

About IEEE Day
IEEE Day is celebrating the first time in history when engineers worldwide and IEEE members gathered to share their technical ideas in 1884. Worldwide celebrations demonstrate the ways thousands of IEEE members in local communities join together to collaborate on ideas that leverage technology for a better tomorrow.

Theme
Now engraved in its essence, the IEEE Day's theme is: "Leveraging Technology for a Better Tomorrow". While the world benefits from what's new, IEEE focuses on what's next.

IEEE Day was celebrated on 5 October. There was a presentation on the history of the IEE, a video on some of the little known facts about IEEE. We held an online quiz contest which was won by: Gary Sochanski and Patrick Wong. Congrats to both!

If you would like to see some of the events done last year during the pandemic – check out: https://ieeeday.org/eventslist-2020/.

Go ahead and If you have any query, do not hesitate to contact Sharan Kalwani.

IEEE Day 2021 has lots of social media activity. Click on any of the icons below for the latest.

Satisfaction at Work

So much has changed in the last year and a half. And what you need to be happy at work may have changed too. The question is, do the people you work for and with know what you need now?

You aren't likely to get what you don't ask for, but most people don't ask for very much. We assume that the people we work with will do the right thing without prompting. We'll get the recognition and compensation we deserve at work because it's the right thing to do. We'll be included in important meetings and decisions regardless of from where we are working.

If you read this blog regularly, you already know that I'm a proponent of setting clear expectations and asking more questions before problems occur. Consider what you want and need, anticipate what can go wrong, and plan accordingly before problems happen. Doing that sounds great in theory, but how does it work in practice?

Here are five ways to increase your job satisfaction:

Increasing your job satisfaction tip one: Be honest with yourself about what you need to be happy at work. Rather than tell yourself you won't get what you need or try to convince yourself that you shouldn't need something, just admit your needs to yourself.

Increasing your job satisfaction tip two: Share your needs with people who can help you get those needs met. Don't make people guess. Chances are they won't guess at all or will guess wrong.

Increasing your job satisfaction tip three: Don't assume things will go well and just wait and see what happens. Instead, set clear expectations at the beginning of new projects and working relationships.

Here's how that could sound: "We're going to be working together for the next six months. Let's talk about how everyone likes to communicate, what people's pet peeves are, and the kind of information each person wants to receive."
Here's another example of how that could sound: "I'm excited to work on this project with you. There are a few things to know about me that will help us work well together and deliver timely results. I ask a lot of questions. Let me know if this frustrates you. I'm not questioning you; I just have a need to understand why we do what we do. And I work best with a deadline. I am happy to be available off hours, but you probably won't hear from me before 9 am. You will get messages and work from me at night and on the weekends. Just let me know if you'd prefer I schedule messages to go out during regular business hours."
People might give you what you need if you ask, but they likely won't if you don't. Train others how to work with you.

Increasing your job satisfaction tip four: Agree to talk about things as they happen. Don't wait until you're about to explode to speak up. That could sound like, "I want us to work well together, and things will go wrong. Can we agree that we'll provide feedback as things happen so we can make timely adjustments?"

Increasing your job satisfaction tip five: Renegotiate when you need to. If you realize you need or want something that you didn't ask for, go back and ask. It's never too late. Here's how that could sound, "We touch base about once a month and I'm realizing that if we could talk for about 20 minutes once a week, I'd be able to get more done. Can we make that happen?" Job satisfaction and happiness don't just happen. The people you work with are not you and they don't know what you need. Make a regular practice of identifying what you need, making those needs known, and then speaking up when things go awry. You won't get what you don't ask for, but you will get what you allow.

About Shari Harley
Shari Harley is the founder and President of Candid Culture, a Denver-based training firm that is bringing candor back to the workplace, making it easier to give feedback at work. Shari is the author of the business communication book *How to Say Anything to Anyone: A Guide to Building Business Relationships that Really Work*. She is a keynote speaker at conferences and does training throughout the U.S. Learn more about Shari Harley and Candid Culture's training programs at www.candidculture.com.

Officer Training

Candidate & Officer Training

A series of Officer Training events are planned to be broadcast early in November or December. Since in the past these were only minimally attended, the Nominations & Appointments Committee is considering alternatives to recommend to the Executive Committee for those who have been elected before they need to 'take office'.
Watch for a notice in the November issue of Wavelengths.

If an officer is unable to attend a training session, the option remains to look for the voice over power point training materials on the SEM webpage at:
http://sites.ieee.org/sem/about-sem/training/

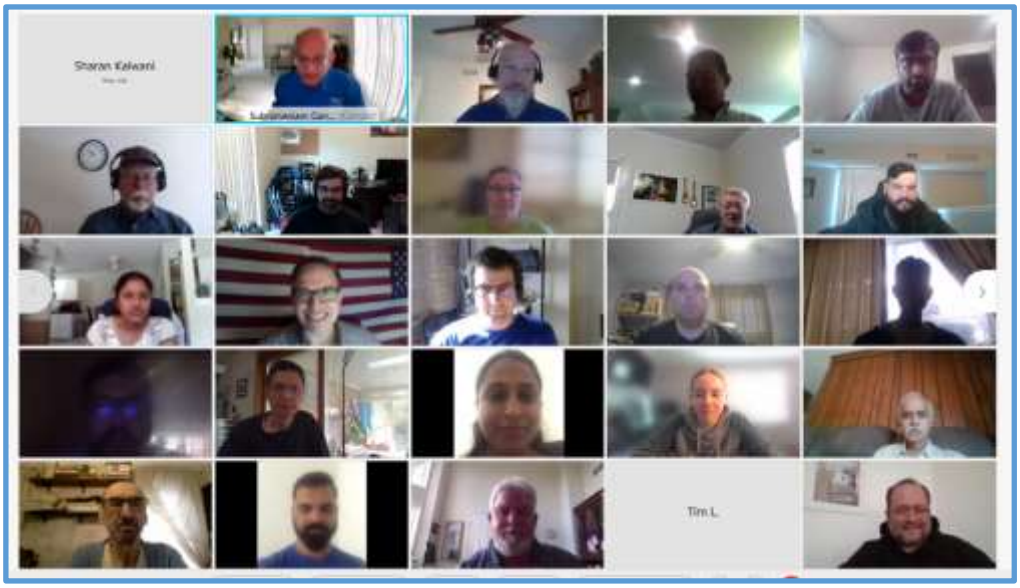
Voice over Power Point Training:
Many on-line virtual training modules are available through the SEM Website Training page at:
http://sites.ieee.org/sem/about-sem/training/

More in depth training may be found on the IEEE Center for Leadership Excellence site located at:
https://ieee-elearning.org/CLE/

ESW 2021 Report

Embedded Systems Workshop 2021 Report

The Embedded Systems Workshop was held virtually for the second time in its history – spread over two days - on October 23rd and October 30th, 2020. This was the 19th year that this event has been continuously held and we had a registration of over 120 people!



Attendees of the 2021 ESW event, Day 1

This in itself is rather remarkable, as the organizers debated the merits of doing everything virtually again, or in-person, whether a full day event can even last for 8 hours and many other accompanying & perplexing questions. The planning for this event began in earnest from June 2021 onwards requiring many regular WebEx (sometimes Google Meet, sometimes Zoom) online meetings, as well as using a number of technology tools (such as the IEEE Google Suite) to assist in making things run smoothly, on time, and on budget.

ESW 2021 had over 120 folks register right up to the last day (October 28th), including a few last minute requests as well. The event had 5 major sponsors, chief among them were Intrepid Control Systems, Beningo Embedded Group, Infineon, Arm, MathWorks, Siemens and DataSwing LLC. Results are still being compiled at the time of writing this report, but expect (or feel free to remind us) a summary later in these columns.

We had ten (10) technical presentations in all, 100% by practicing industrial professionals (we also threw in an academic as well on the last day). These ran up to 45~50 minutes each, including Q&A. Most of the speakers stayed on after the talks as several of the attendees had questions, which they answered as best as they could via the chat feature.

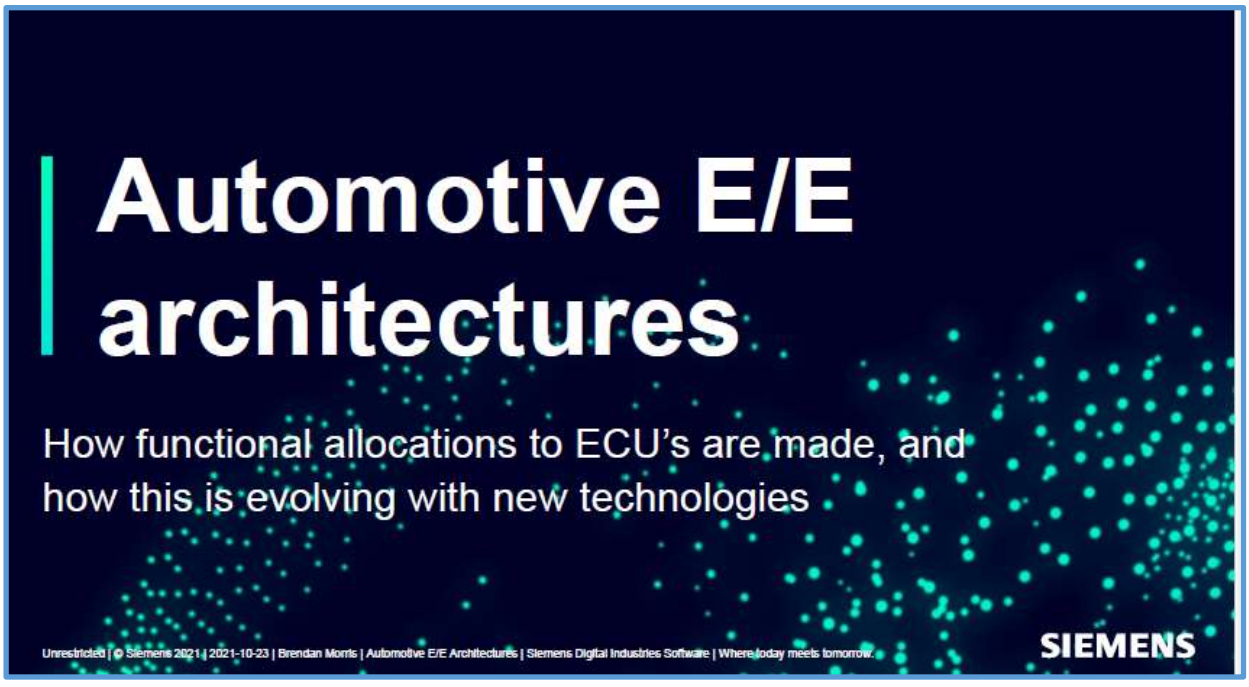
ESW 2021 Event/Logo

Using the WebEx recording feature came in extremely handy – so we have recorded all the sessions. The presentation PDF documents will also be made available to those who ***attended***. A certificate of attendance will also be sent to all who joined us online, once we get thru the manual sorting of names.

The organizing chapters – Computer Society and Education Society, also plan to send via regular US mail, numerous flyers on the benefits of becoming an IEEE member, including membership forms, as well as technical swag to help gain mind share of potential volunteers and future engineers & leaders.

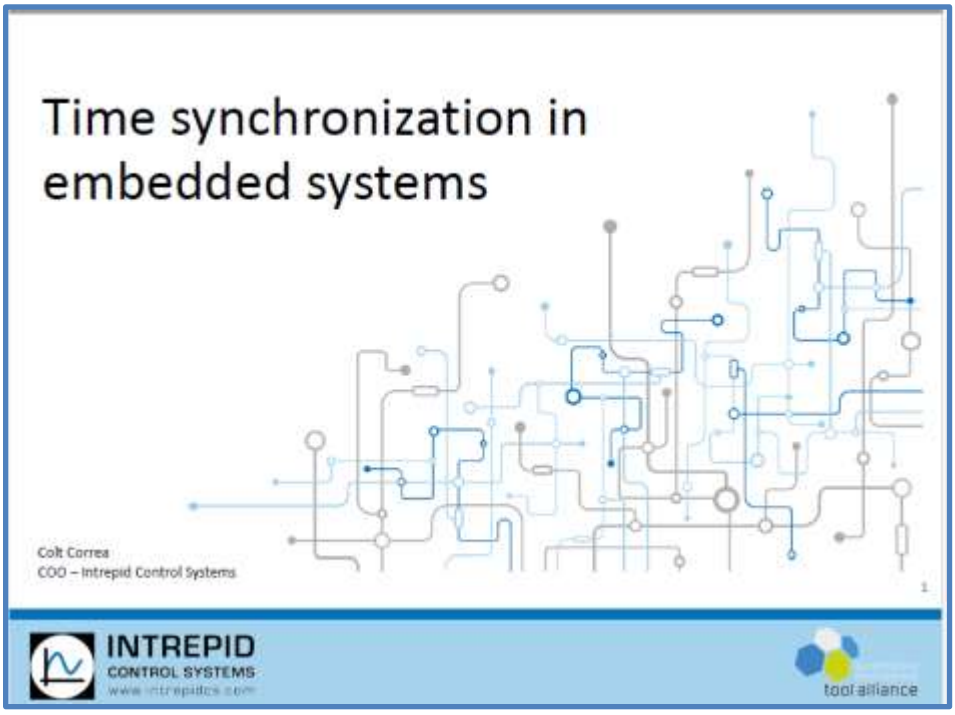
The first day started off with an in-depth simulation of State of Charge (SOC) and State of Health (SOH) battery model simulation using MATLAB, coupled with Simcape/Simulink. This was delivered by Javier Gazzarri, Senior Field application engineer, who has over 10 years of experience with MathWorks.

Right after MathWorks, all the way from the UK, we had Brendan Morris who spoke at length about EE Architectures.



That was followed by Atilla Bulmus of Infineon and Salvador Almanza of Cummins, who both gave an interesting talk on how using AUTOSAR Complex Device Driver framework was used to design a Battery Management System.

We then had a local leading company in the Automotive electronics world - Intrepid Control Systems, give us a pre-recorded talk on the massive challenges when dealing with precision timing in embedded systems. Colt Correa, dived into a good level of detail on the various scenarios and how they could be address using the timing protocol. He covered a lot of ground, highlighted the time stamping approach, and other attributes, so clearly there is a great deal of activity and opportunity ahead in this field!



One of the well-known and I dare say eagerly awaited breaks are the door prizes, usually conducted during the coffee break. Although we had no actual coffee or snacks this year and no paper sign in sheet, we did manage to find a way to do this online and gave away a number of prizes such as a Cypress Semiconductor prototyping kit, MathWorks T-Shirts and a low power Bluetooth development kit. Congratulations to all the winners: *Tulio Hernandez (Argentina), Kokila Subramanian, Neron Nesmith, Milan Vadera, Josue Munoz Perez, Zachery Miller, Syed Saif Shah, and Wendy Carolina (France)*. Just to prove that this is real – here are a few pictures of the door prizes from Day 1.

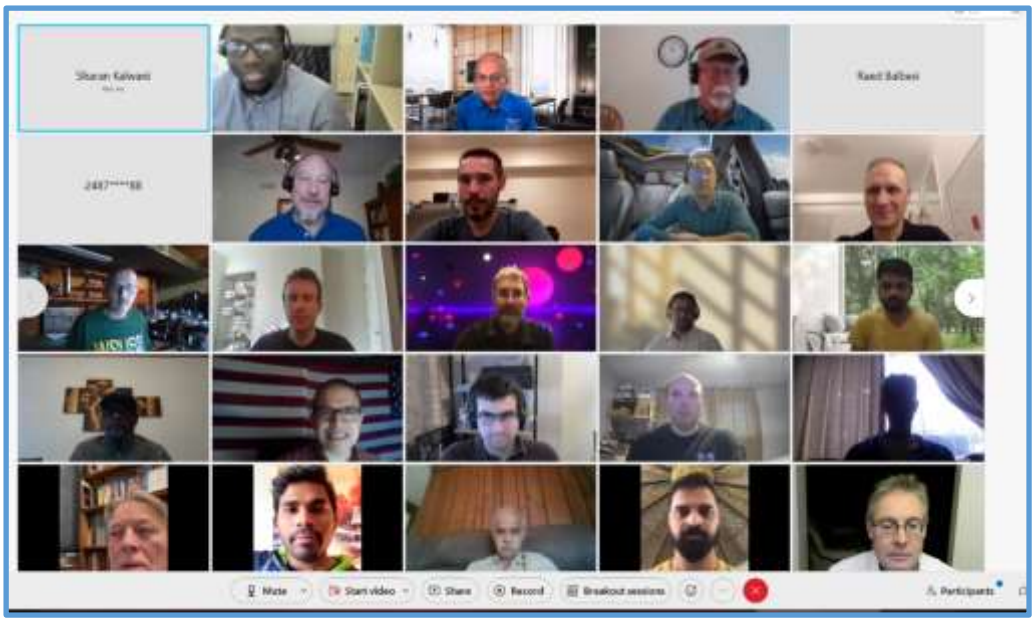
(Cypress Solar Powered IoT Device Kit and a MathWorks branded screwdriver set)

After the virtual coffee break and raffle prizes, we had a double header with Professor Subra Ganesan delivering a key message from the IEEE Region 4 Industrial Engagement Committee. In that he highlighted how the IEEE thru its volunteers are making several outreach initiatives.

Then wrapping the day's technical sessions, was the second part of the double header, where we were treated to a full blown tutorial of powertrain architecture of Battery Electric Vehicles.

Ending the day, we also held the final raffle draw for door prizes. We will be contacting all of them to obtain their mailing address. Once again: congratulations to all of them!

Day 2:
October 30th, we had a similar perfect launch (we learned from all of the feedback and avoided or fixed minor glitches that we had experienced in years past). We always had a plan B, but never needed to resort to it at all.

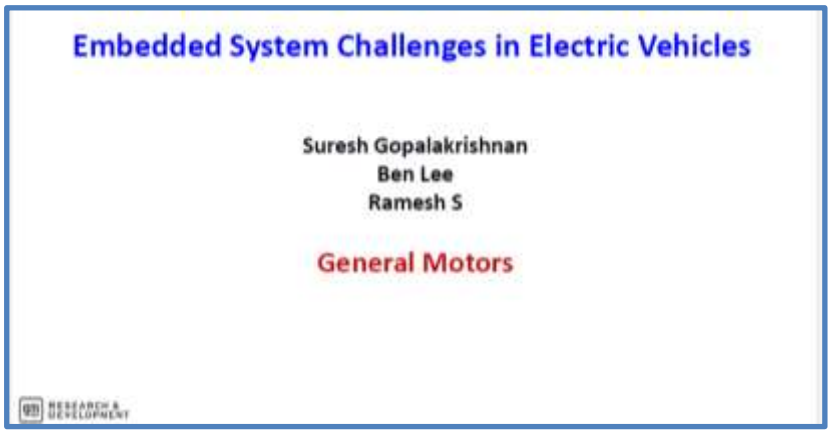


Attendees of the 2021 ESW event, Day 2

The Day 2 session kicked off by our Arm sponsor and speaker – Suraj Gajendra – all the way from Cambridge UK. He gave an excellent talk on the new SOAFEE framework to help accelerate the wide spread adoption of cloud based Automotive development and deployment of apps.

This was followed by an in-depth EE session on primary functions of a Battery Management System by Dr. Di Zhu of Ford Motor Company. He went into interesting caveats and considerations for the EE circuitry involved in a BMS.

Right after Zhu's talk, we had Dr Suresh Gopalakrishan of GM Research, gave a talk on the history of EV and the subsequent challenges faced by embedded systems designers to help with the EV functions.



Needless to say, we were delighted to host two major automotive OEMs in the workshop and were fortunate to hear their views.

This was followed by our now popular virtual door prize raffle drawings, this time we had MathWorks T-shorts and a coffee mug to give away, besides more embedded systems board kits. Congratulations to the winners on Day 2: *Dr Suresh Gopalakrishnan (GM), Daniel Carballo, Rajeswari Veluswami, Raed Balbesi (Massachusetts), Barry Poulson, Emere Johnson Isaac (UK) and Dean Norfleet.*

Our other international speaker for the day was Francesco Richichi, who also gave a well-received presentation last year in 2020. Francesco is a very experienced VHDL engineer and works in the Aerospace industry. He made a very convincing case for choosing VHDL for embedded systems, when conditions require it. He runs his own website – surf-vhdl.com – no doubt being a surfing enthusiast himself, combining both of his passions. He answered every question thrown at him and indeed we are very fortunate to have had Francesco share his insights with all of us. Francesco came to us all the way from Italy, where he lives and works on many European projects.

Post the VHDL talk, the last talk was on a new chip architecture called RISC-V, which is free of both royalty and proprietary restrictions, so this gives a wide and open choice to many embedded developers, small and medium sized companies to provide even more solutions for this industry. Several attendees found this a very refreshing addition to the roster of talks.

Lest we forget, we would like to also thank the volunteers for all their hard work behind the scenes.

See you all next year!

Sharan Kalwani
Chair, SE Michigan Education Society Chapter (Chapter 13)
Vice-Chair, SE Michigan Computer Society Chapter, (Chapter 5)
sharan.kalwani@ieee.org

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	(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,
Chair, IEEE SE Michigan Education Society Chapter
Vice-Chair, IEEE SE Michigan Computer Society Chapter
Editor, Wavelengths,
2018~2019~2020~2021

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 is located at http://r4.ieee.org/sem/**

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 OR letters@ieee-sem.org

Michigan Institute for Plasma Science and Engineering: Seminars for the 2021-2022 academic year:
https://mipse.umich.edu/seminars_2122.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.

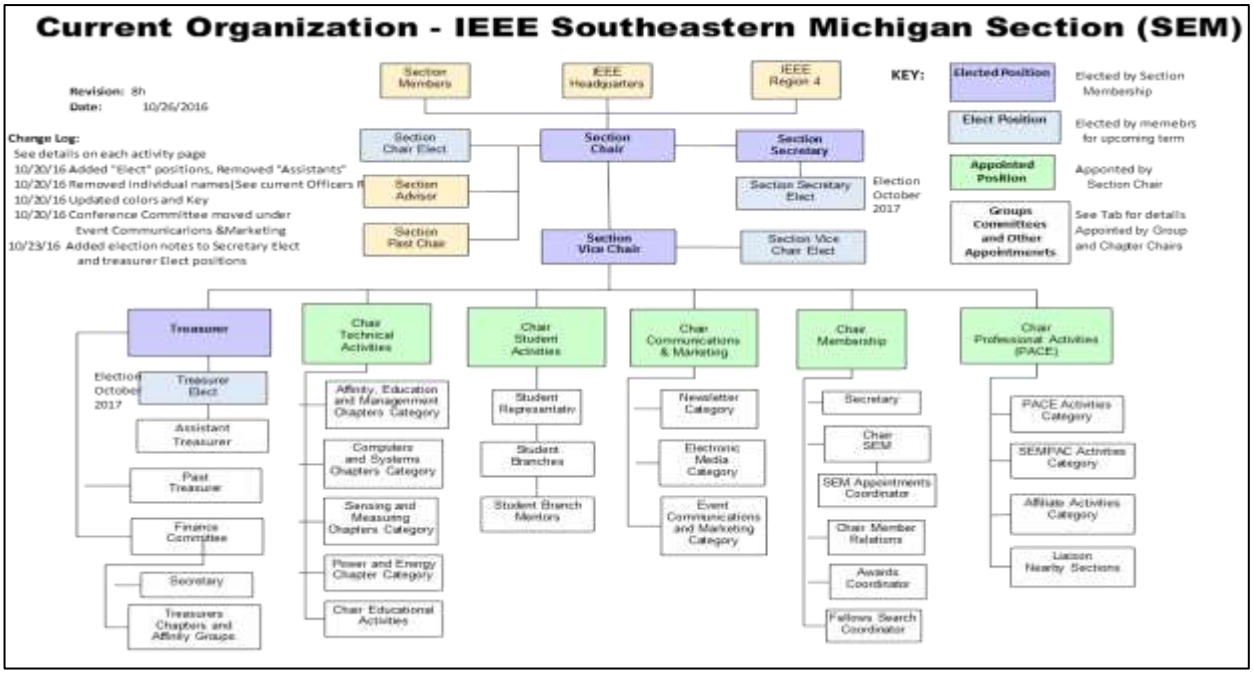
However, members of the section may have multiple technical interests and would like to have meeting information of other chapters. In order to communicate the meeting dates of all the chapters, affinity groups etc., to our members to facilitate their attendance, leaders of the groups are requested to 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 (executive committee) 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 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

Editorial Corner

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
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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.

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

Sharan Kalwani,
Chair, IEEE SE Michigan Education Society Chapter
Vice-Chair, IEEE SE Michigan Computer Society Chapter
Editor, Wavelengths,
2018~2019~2020~2021

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 "" button under the top row)

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

SEM Twitter Account (new)
(Select the "" button under the top row)
Or try 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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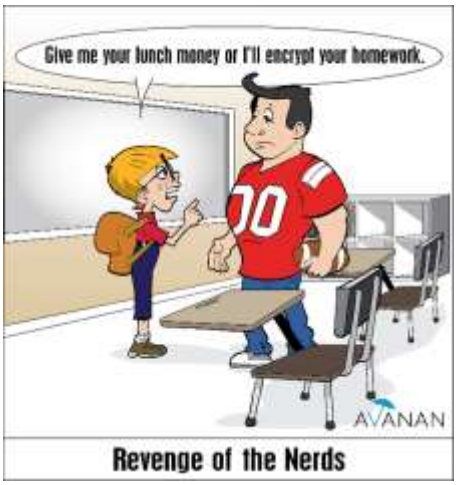
Visit Us on the Web at:
http://r4.ieee.org/sem



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