Wavelengths

IEEE Southeastern Michigan
Electrical and Electronic Engineers Creating Our Future

Volume 62 – Issue 09

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Upcoming Events

We have several events coming up this month, all are listed below, FYI.

Event	Date	Time
SEM Section ExCom Monthly Meeting (TELECONFERENCE) for September 2022	01 Sep 2022	06:30 PM
Claude Shannon: documentary	02 Sep 2022	05:00 PM
How to write an effective research paper	06 Sep 2022	07:00 PM
Ch8: AdCom Teleconference	08 Sep 2022	11:00 AM
CODE RUSH: documentary Netscape & Open Source	09 Sep 2022	06:00 PM
EMC Society Oktoberfest	15 Sep 2022	05:00 PM
Revolution OS: documentary	16 Sep 2022	06:00 PM
Challenges in designing a self-driving car to real world	20 Sep 2022	05:55 PM
Nikola Tesla: documentary	23 Sep 2022	06:30 PM
Prediction by the Numbers: documentary	30 Sep 2022	06:00 PM
Tour of MSU Facility for Rare Isotope Beams (FRIB)	30 Sep 2022	09:30 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!

Chair's Column

Welcome to the September edition of the Wavelengths.

A heads up for October (I believe it is never too early!). In the month of October, we are featuring a Senior Member elevation event. Senior Member is a title that can be applied for by an individual, once they have achieved 10 years of experience, with credit for advanced degrees, and can demonstrate significant contributions to our industry. I encourage every member who meets those qualifications to apply. The application requires 3 existing Senior Members to provide a reference. This event helps to connect you with the references and streamlines the application process.

Get Involved/Volunteer!
Getting involved with Chapters is a great way to get connected. Our Section features **17** different Chapters and several Affinity Groups that all have different focus areas. A complete list is available in this Wavelengths. Feel free to reach out if you want any additional information.

While you here, be sure to check out the Embedded Systems Workshop that is taking place virtually. It continues to be one of the premiere events in our Section. It's now in its **20th year**. There is a small fee to attend, but I hear there will be door prizes!

Nominations:
Nominations are open for elected positions in our Section, Technical Chapters and Affinity Groups. In our Section we are looking for nominations for Chair-Elect and Vice-Chair–Elect who will train in 2023 and take office for two years, 2024 and 2025. Chapters and Affinity Groups have yearly elections and are looking for Chair, Vice-Chair, Secretary and Treasurer to serve in 2023. (See page 6).

There is an article reprint 'Advice at 90' article (page 5) from the newsletter of August 2015. It has been a long time since we published this great listing of life lessons, and it never hurts to emphasize the value of the council of our elders.

We have a large number of documentary and movie screenings in September, every Friday. Look for the flyers in this issue. EMC's famous OktoberFest is coming up as well!

Last month two PACE events were held, but the attendance was rather low. PACE is a valuable resource for IEEE members to boost their job skills outside of the technical field. Very few other technical societies offer this, so do take advantage of this member benefit (applies to students too!).

Trip to MSU's Facility for Rare Isotope Beams (FRIB)
We are arranging for a tour for both IEEE members and students to take a tour of MSU's FRIB, where there have a particle accelerator to help create rare isotopes. This is being planned on Friday morning September 30th. A vtools registration link is under preparation and will be announced soon!

Thanks to the amazing team of volunteers that we have in this organization. I look forward to seeing everyone (virtually) soon!

Sharan Kalwani
Via email: chair@ieee-sem.org
Section members are encouraged to engage using any of these online platforms:

Technical Activities Report

2022 IEEE SE Michigan Section Geo-unit Status (Till Aug 31st)

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	11	3	1	0	1	0	Consultants Network	0	2
LIFE	0	0	0	0	2	0	Life Members	0	2
WIE	14	1	2	8	0	1	Women In Engineering	0	11
YP	0	0	0	0	0	0	Young Professionals	0	0
1	78	0	1	0	0	0	Circuits & Systems, Signal Proc., Info Th.	0	1
2	36	6	3	1	0	0	Vehicular Technology	0	4
3	0	0	0	0	0	0	Aerospace & Elec. Sys., Communications	0	0
4	0	0	0	0	0	0	Trident (Ant, Elect Dev., uWave, Photo)	0	0
5	29	6	27	5	5	1	Computers	3	38
6	0	0	0	0	0	0	Geoscience & Remote Sensing	0	0
7	21	2	2	4	0	0	Power Engineering, Industrial App.	0	6
8	58	40	8	8	0	1	Electromagnetic Compatibility (EMC)	1	17
9	24	4	3	1	0	0	Power Electronics, Industrial Electronics	0	4
10	6	2	2	0	0	0	Engineering Management	0	2
11	55	37	1	2	0	0	Eng. in Medicine & Biology	0	3
12	0	0	0	0	0	0	Control Systems	0	0
13	16	3	12	1	0	1	Education	0	14
14	5	3	1	0	0	0	Robotics & Automation	0	1
15	42	27	4	0	0	0	Nuclear Plasma Science Society	1	4
16	78	0	1	0	0	0	Computational Intelligence / Sys.Man.Cyber.	0	1
17	0	0	0	0	0	0	Nano Technology Council	0	0
SEM	39	5	4	17	2	0	SEM (Section)	1	23
	512	136	72	47	10	4	NOTE: Highlight Green = Active	6	133
		27%					NOTE: Highlight clear = Concern		

Our Section has 9 out of 17 Technical Chapters showing 1 or no technical meetings being held. There is still a need to plan and conduct meetings before the end of this calendar year. GA leaders please reach out to the TAcom for any assistance. GA members if you have suggestions or requests for technical meetings please contact me via the email below. Your TAcom plans to continue contacting chapters and groups needing assistance in meeting IEEE and SEM Section goals for encouraging member participation and discussions related to the vast amounts of technical and engineering challenges facing our world.

V/r
Jeffery V. Mosley
TAcom Chairman
jvmosley@ieee.org

ESW2022 is Coming!

20th Annual Embedded Systems Workshop

October 22nd and 29th (100% Virtual), 2022, 8:30 AM to 12:30 PM EDT Time Zone (Two Saturdays). Each day has different speakers.

IEEE Computer Society and IEEE Education Society (Southeastern Michigan Chapters) are offering a TWO half-day set of workshops on Embedded Systems on Saturday, October 22nd and 29th, 2022. This workshop is open to all industry professionals, both experienced and newly minted engineers, as well as students. This is the 20th year that the event is being held. The theme for this year is: "*Role of AI in Automotive Embedded Systems*".

The aim is to disseminate knowledge, directly benefitting the IEEE members, at the same time **improve the technology skills pool, indirectly boosting the economy**. Speakers and experts from the embedded systems industry will be making presentations and will also be available for discussions and networking during the event. In addition to the technical presentations, there will be industry interaction and potential recruitment sessions. Use this opportunity for virtual networking with engineers, industry experts and embedded enthusiasts.

Please confirm your participation by registering on the IEEE events web site

Deadline is 16th October, 2022 11 PM

Virtual using Video Conferencing (Oct 22 and 29)

The volunteers who work to help you!

Speakers in the past: Beningo Embedded Group, Infineon, TeKnowledge, Intrepid CS and others...

Attendees: There is a small one-time cost of $5 (IEEE members and students) to attend, this will help cover door prizes, video recording, storage, presentations, a dedicated website and other logistics. Several random raffles representing the embedded systems industry will also take place. All are welcome. Do post this flyer in your workplaces, share/inform your peers & colleagues about this event. It is a great way to learn not only what is going on, but also network (virtually) with other professionals as well.

Brought to you by the IEEE SE Michigan Computer & Education Society chapters. Do seriously consider joining the IEEE, boost your technical skills, broaden your awareness of compute-based engineering in the region, support numerous similar initiatives & learn other benefits this brings.

Open to all, Pre-registration is necessary for attending!

https://events.vtools.ieee.org/m/320935

For Technical questions, contact the Program Committee **at:** esw2022@ieee-sem.org

A CEU/PDH Certificate will be made available for participants who Pre-register and attend both days!

ESW 2022 Organizing Committee: Subra Ganesan (Chair), Sharan Kalwani (Vice Chair), Ramesh S, Nilesh Dudhaia, Praveena Jakkula, Sreenivas Eeshwaroju and Ben Sweet

Advice at 90

By Regina Brett,
90 years old, of the 'Plain Dealer', Cleveland, Ohio.

"To celebrate growing older, I once wrote the 45 lessons life taught me. It is the most requested column I've ever written. My odometer rolled over to 90 in August, so here is the column once more:

1. Life isn't fair, but it's still good.
2. When in doubt, just take the next small step.
3. Life is too short, enjoy it.
4. Your job won't take care of you when you are sick. Your friends and family will.
5. Pay off your credit cards every month.
6. You don't have to win every argument. Stay true to yourself.
7. Cry with someone. It's more healing than crying alone.
8. It's OK to get angry with God. He can take it.
9. Save for retirement starting with your first paycheck.
10. When it comes to chocolate, resistance is futile.
11. Make peace with your past so it won't screw up the present.
12. It's OK to let your children see you cry.
13. Don't compare your life to others. You have no idea what their journey is all about.
14. If a relationship has to be a secret, you shouldn't be in it.
15. Everything can change in the blink of an eye, but don't worry, God never blinks.
16. Take a deep breath. It calms the mind.
17. Get rid of anything that isn't useful. Clutter weighs you down in many ways.
18. Whatever doesn't kill you really does make you stronger.
19. It's never too late to be happy. But it's all up to you and no one else.
20. When it comes to going after what you love in life, don't take no for an answer.
21. Burn the candles, use the nice sheets, and wear the fancy lingerie. Don't save it for a special occasion. Today is special.
22. Over prepare, then go with the flow.
23. Be eccentric now. Don't wait for old age to wear purple.
24. The most important sex organ is the brain.
25. No one is in charge of your happiness but you.
26. Frame every so-called disaster with these words 'In five years, will this matter?'
27. Always choose life.
28. Forgive
29. What other people think of you is none of your business.
30. Time heals almost everything. Give time time.
31. However good or bad a situation is, it will change.
32. Don't take yourself so seriously. No one else does.
33. Believe in miracles.
34. God loves you because of who God is, not because of anything you did or didn't do.
35. Don't audit life. Show up and make the most of it now.
36. Growing old beats the alternative of dying young.
37. Your children get only one childhood.
38. All that truly matters in the end is that you loved.
39. Get outside every day. Miracles are waiting everywhere.
40. If we all threw our problems in a pile and saw everyone else's, we'd grab ours back.
41. Envy is a waste of time. Accept what you already have, not what you need
42. The best is yet to come...
43. No matter how you feel, get up, dress up and show up.
44. Yield.
45. Life isn't tied with a bow, but it's still a gift."

-30-

Ballots

The nomination process has concluded, and the election team is moving forward with construction of election ballots for each Affinity Group and Technical Chapter (Geo-units) along with ballots for our new Chair-Elect and Vice-Chair-Elect. All in all our full set of ballots will offer options to select 21 x 4 = 84 + 2 = 86 officers to command, control and supervise the operations of the most active Section in IEEE Region 4.

Nominating and voting for effective leadership at all levels is the responsibility of all of us. The first step in that process is over (nominating competent leaders). The next step is voting for the leaders you believe will represent your interests in the coming year. We expect to complete building all the ballots for each of the Geo-units and the Executive Committee in late September and launch the results by the beginning of October.

Each member eligible to vote in the election will receive a copy of the election ballot for the Executive Committee officers, and for each Affinity Group and Technical Chapter that represents his or her personal membership in an Affinity organization or in a Technical Society or Council. For some of us, that means multiple ballots will be coming our way and careful consideration of the candidates offered is expected of us all.

If you are unsure of which specific Chapter you 'belong to' as a result of your affiliation with a Technical Society, download a copy of the SEM Organization Roster from the SEM website at:
https://r4.ieee.org/sem/wp-content/uploads/sites/6/2022/06/Organization_Roster_6.23.2022_Rev0.pdf

Open the PDF file of the Roster and use the 'find' function to search for the Technical Societies in your personal portfolio and the SEM Chapter and its current officers will be displayed for your attention.

The example at the right shows three examples. Notice that Chapter 9, at the top, is a 'Joint' chapter with more than one Technical Society represented. We have several such Chapters in our Section, so don't overlook those if you don't notice your particular society identified at the start of the Chapter name.

Notice also the yellow bars indicating a vacant office which is an opportunity for a volunteer to step in and begin to gain the experience offered by serving in an active organization.

Industrial Electronics and Power Electronics Societies: Ch9		**CH04057**	
Chair	Van Wagner		wagnerv3@gmail.com
V-Ch			
Director(IndElect)			
Director(Pwr Elect)			
Secretary	Shanelle Foster		hogansha@egr.msu.edu
Treasurer			
Past-Ch			
Technology & Engineering Management: Ch10		**CH04142**	
Chair	Mark Robinson		mark.robinson@bw-ee.com
V-Ch	Raymond Sasinowski		rays@ieee.org
Secretary	Raymond Sasinowski		rays@ieee.org
Treasurer	Kellee Christensen		kelleechris@sbcglobal.net
Past-Ch	Mark Robinson		mark.robinson@bw-ee.com
Engineering in Medicine and Biology: Ch11		**CH04099**	
Chair	Patrick Rye		ryepatrick@ieee.org
V-Ch	Maurice Snyder		mfsnyder@me.com
Secretary	Yan Yan		yyan2@wayne.edu
Treasurer			
Past-Ch	Maurice Snyder		mfsnyder@me.com

Serving as a Chapter officer is one of the best ways to acquire and practice those 'soft skills' we are always talking about as one of the pillars of a successful engineering career. Those 'soft skills' can only be developed by practice, and working as a volunteer officer is one of the best ways to get that needed practice.

When you receive your ballot for election of an office but you don't see any name nominated for that position, consider using the "Write-In" option to place your name in offering for that job. It may be the first step you take toward a fuller understanding of what IEEE is and does, and it certainly will broaden your contacts within your local technical community and perhaps you will find lifelong friends along the way.

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Alfred Vail

I was recently proviliged to give a talk it the IEEE Electromagnetic Compatability Symposium in Spokane, WA. The topic was “What's keeping Morse Code alive?”

Given the multitude of communications technologies and their wide acceptance all over the world, does it not seem strange that something so ‘archane’ as Morse code should still be hanging on, and fact, it’s use is increasing at a steady rate?

So, what is keeping Morse code alive, and just who is the person in the title of this article?

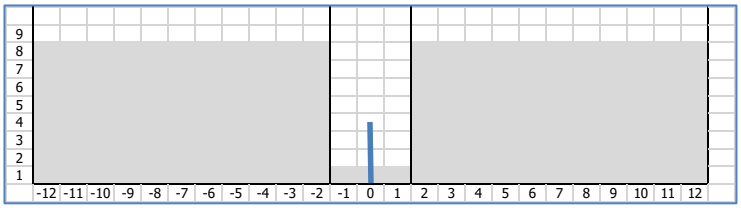
The picture of the gentleman at the right is that of Alfred Vail.
Alfred was the technical geneous behind the work of Samual Morse.
Alfred was the man who invented the Morse code ‘Key’, the hand controlled switch which allows the operator to swiftly and accurately generate the morse code characters that cary the intellegence within the message.

Alfred was also the person who did the research for the frequency of letters in the English language, and then devised the first version of the Morse code known as ‘American Morse’. He also designed and constructed the paper tape system that recorded in ink each of the code characters as it was sent.

Morse obviously had a better publisist than Alfred. Such is life.

Knowing the contributions of Alfred Vail as the initial fountain of creativity for the ‘Morse’ code, I was starteled when I gave that talk I mentioned earlier to a room with between 40 to 50 EMC engineers and radio amateurs and mentioned the name of Alfred Vail and only <u>one hand</u> went up when I asked how many knew of who this man was!

Back to the original question about what’s keeping Morse code alive. There are several interesting factors involved here but for the present I will confine myself to only one.



When transmitting the human voice by any technology, a bandwidth for the signal must encompass 2,400 Hz in order for the received signal to be intelegable. Any radio receiver bandwidth must be sufficiently wide to receive the entire contents which means that all the inherent background static and internal noise in the receiver will also be within that bandwidh. The figure on the left compares the received noise level (grey areas) for the human voice. The segment in the center shows the signal to noise radio for a Morse code receiver with only a 300 Hz bandwidth and the resulting prominance of a signal with much less power standing out in the clear, even with lots of local man made noise. That signal, usually only about 10 Hz wide, ‘punches through’ when a voice signal is lost in the background. Thus a Morse code signal with minimal power can be relied to provide dependable communications when voice transmissions fail completely.

I will continue this discussion next month to discuss several more reasons why Morse code is still alive and well among a number of alternatives which each have their niche but don’t replace the simple elegance of Morse code.

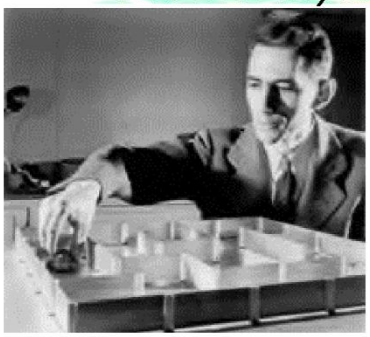
Kimball Williams is an IEEE Senior Life Member, an iNARTE certified Master EMC Design Engineer, a Member of the Board of Directors and the Society past President.. Kim is a licensed private pilot, PADDY certified scuba diver, licensed Amateur Radio operator (Extra Class - Call sign: N8FNC) and teaches Morse code (CW) and STEM classes and plays classical guitar in his ‘spare’ time.

Claude Shannon Movie

IEEE Southeastern Michigan

Presents:

The Bit Player: Claude Shannon



IEEE Southeastern Michigan
Electrical and Electronic Engineers Creating Our Future

We proudly present an IEEE foundation video documentary entitled: "The Bit Player". One of Michigan's famous sons, but not many Michiganders know about him – Indeed few know about Claude Shannon the creator of the "Information Theory". You will learn more about him and at the same time get a refresher on the mankind changing impact Claude Elmwood Shannon made on the world today. This documentary was made in 2018 and brought to you by the IEEE Foundation who partially funded this along with the IEEE Information Theory Society. The trailer for this 90-minute video is https://www.youtube.com/watch?v=E3OldEtfBrE&authuser=0

At Glance

- **When:**
  Date: Sep 2, 2022
  Time: 05:00 – 6:30 PM (EST/EDT)
- **Where:**
  Online via Webex (to be shared only after you have a confirmed registration)
- **Audience: OPEN to ALL***

Sponsored by
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***Pre-Registration Required!**

https://events.vtools.ieee.org/m/318134

IEEE COMPUTER SOCIETY

IEEE Education Society

IEEE Advancing Technology for Humanity

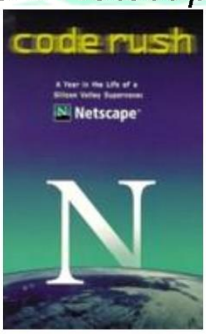
IEEE Southeastern Michigan Section

CODE RUSH Movie

IEEE Southeastern Michigan

Presents:

Code Rush: Netscape & the Open Source movement



IEEE Southeastern Michigan
Electrical and Electronic Engineers Creating Our Future

As part of an innovative and fresh approach, i.e. a non-traditional meeting event: we will present a video documentary entitled: "CODE RUSH"

Summary: Code Rush is a 2000 documentary following the lives of a group of Netscape engineers in Silicon Valley. It covers Netscape's last year as an independent company, from their announcement of the Mozilla open-source project until their acquisition by AOL. It particularly focuses on the last-minute rush to make the Mozilla source code ready for release by the deadline of March 31, 1998, and the impact on the engineers' lives and families as they attempt to save the company from ruin.

At Glance

- **When:**
  Date: Sep 9, 2022
  Time: 06:00 – 7:30 PM (EST/EDT)
- **Where:**
  Online via Webex (to be shared only after you have a confirmed registration)
- **Audience: OPEN to ALL***

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***Pre-Registration Required!**
https://events.vtools.ieee.org/m/318147

IEEE COMPUTER SOCIETY

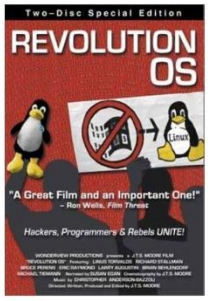
IEEE Education Society

IEEE Advancing Technology for Humanity

IEEE Southeastern Michigan Section

Revolution OS Movie

IEEE Southeastern Michigan
Presents:
Revolution OS



IEEE Southeastern Michigan
Electrical and Electronic Engineers Creating Our Future

As part of an innovative and fresh approach, i.e. a non-traditional meeting event: we present a video documentary entitled: "REVOLUTION OS".

Movie Summary: Revolution OS is a 2001 documentary film that traces the twenty-year history of GNU, Linux, open source, and the free software movement. Directed by J. T. S. Moore, the film features interviews with prominent hackers and entrepreneurs including Richard Stallman, Michael Tiemann, Linus Torvalds, Larry Augustin, Eric S. Raymond, Bruce Perens, Frank Hecker and Brian Behlendorf.

AFTER the movie - we can have a brief discussion session. NOTE: You must supply your own soda pop and popcorn! :-)

Trivia may also follow, so bring your Jeopardy hats too

At Glance

- **When:**
  Date: Sep 16, 2022
  Time: 06:00 – 7:30 PM (EST/EDT)
- **Where:**
  Online via Webex (to be shared only after you have a confirmed registration)
- **Audience: OPEN to ALL***

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***Pre-Registration Required!**
https://events.vtools.ieee.org/m/318148

IEEE COMPUTER SOCIETY

IEEE Education Society

IEEE Advancing Technology for Humanity

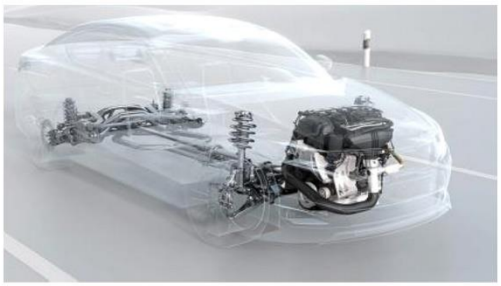
IEEE Southeastern Michigan Section

AV Safety Challenges

IEEE Southeastern Michigan

Presents:

Challenges of Improving Safety of AV thru ML



IEEE Southeastern Michigan
Electrical and Electronic Engineers Creating Our Future

Automated vehicles heavy rely on the machine learning (ML)/ Artificial Intelligence (AI) based algorithms that helps an automated vehicle to perceive, plan, and navigate on a roadway. However, there exist several challenges while designing an automated vehicle which relies on ML/AI-based algorithms. In this talk, Dr. Mhafuzul Islam will present some of his prior works on improving the safety of an automated vehicle using ML/AL algorithms, more specifically using Deep Learning. He will also present future challenges that we need to overcome before making an automated vehicle into a fully autonomous vehicle.

Speaker Bio:
Dr. Mhafuzul Islam is currently working as a Senior Researcher in General Motors R&D, USA. He received his Ph.D. from Clemson University. His research area includes transportation cyber-physical systems with an emphasis on data-driven connected autonomous vehicles. He previously worked as a senior software engineer at Infineon Technologies AG, Germany.

At Glance

- **When:**
  Date: Sep 20, 2022
  Time: 06:00 – 7:30 PM (EST/EDT)
- **Where:**
  Online via Webex (to be shared only after you have a confirmed registration)
- **Audience: OPEN to ALL***

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***Pre-Registration Required!**
https://events.vtools.ieee.org/m/321865

IEEE COMPUTER SOCIETY

IEEE Education Society

IEEE Advancing Technology for Humanity

IEEE Southeastern Michigan Section

Nikola Tesla Movie

IEEE Southeastern Michigan

Presents:

Tesla: Visionary or madman?

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Meet Nikola Tesla, the genius engineer and tireless inventor whose technology revolutionized the electrical age of the 20th century. Regarded by many historians as an eccentric genius, Tesla gained fame for his invention of a system of AC that made possible the distribution of electricity over vast distances and is the basis for the electrical grid that powers 21st century life. But the Tesla imagined much more — robots, radio, radar, remote control, the wireless transmission of messages and pictures, and harnessing the wind and sun to provide free energy to all. A showman, he dazzled folks who flocked to see him demonstrate his inventions and send thousands of volts of electricity pulsing through his body. His fertile but undisciplined imagination was the source of his genius but also his downfall, as the image of Tesla as a "mad scientist" came to overshadow his reputation as a brilliant innovator. Even before his death in 1943, he was largely forgotten, his name obscured by Thomas Edison — his hero, one-time employer, and rival. But it is his exhilarating sense of the future that has inspired renewed interest in the man, as his once scoffed-at vision of a world connected by wireless technology has become a reality.

At Glance

- **When:**
  Date: Sep 23, 2022
  Time: 06:30 – 7:30 PM (EST/EDT)
- **Where:**
  Online via Webex (to be shared only after you have a confirmed registration)
- **Audience: OPEN to ALL***

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***Pre-Registration Required!**

https://events.vtools.ieee.org/m/318149

IEEE COMPUTER SOCIETY

IEEE Education Society

IEEE Advancing Technology for Humanity

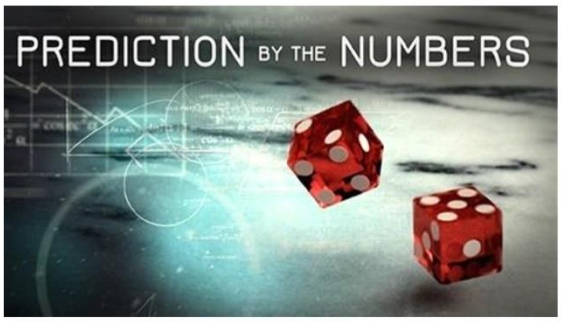
IEEE Southeastern Michigan Section

Prediction Movie

IEEE Southeastern Michigan

Presents:

Prediction by the Numbers: Art of Forecasting



IEEE Southeastern Michigan
Electrical and Electronic Engineers Creating Our Future

Predictions underlie nearly every aspect of our lives, from sports, politics, and medical decisions to the morning commute. With the explosion of digital technology, the internet, and "big data," the science of forecasting is flourishing. But why do some predictions succeed spectacularly while others fail abysmally? And how can we find meaningful patterns amidst chaos and uncertainty? From the glitz of casinos and TV game shows to the life-and-death stakes of storm forecasts and the flaws of opinion polls that can swing an election, "Prediction by the Numbers" explores stories of statistics in action. Yet advances in machine learning and big data models that increasingly rule our lives are also posing big, disturbing questions. How much should we trust predictions made by algorithms when we don't understand how they arrive at them? And how far ahead can we really forecast?

The documentary first aired in February 2018, running time is 53 minutes

At Glance

- **When:**
  Date: Sep 30, 2022
  Time: 06:00 – 7:30 PM (EST/EDT)
- **Where:**
  Online via Webex (to be shared only after you have a confirmed registration)
- **Audience: OPEN to ALL***

Sponsored by IEEE SE Michigan Computer Society & Education Society Chapters

***Pre-Registration Required!**
https://events.vtools.ieee.org/m/318150

IEEE COMPUTER SOCIETY

IEEE Education Society

IEEE Advancing Technology for Humanity

IEEE Southeastern Michigan Section

This Month in September

Ernst Weber; Born 6 Sep 1901; Died 15 Feb 1996 at age 94.
Austrian-American electrical engineer who contributed to the development of microwave technology, applied in radar and communications systems. During WW 2, he led researchers solving the problems of accurately measuring very high frequency microwaves, essential for the calibration of radar. (This involved learning how to coat glass tubes with a very thin layer of conducting metal, which Weber derived from the ancient skill of decorating chinaware with gold and silver, followed by success using a mixture of platinum and palladium.). The team created other designs and production techniques that helped the overall development of radar during the war. His expertise later guided the growth of the Polytechnic Institute in New York City.

David Packard; Born 7 Sep 1912; Died 26 Mar 1996 at age 83.
American entrepreneur and electrical engineer who co-founded the Hewlett-Packard Co., a leading manufacturer of computers, computer printers, and analytic and measuring equipment. In 1939, he formed a partnership known as Hewlett-Packard Company with William R. Hewlett, a friend and Stanford classmate. HP's first product was a resistance-capacitance audio oscillator based on a design developed by Hewlett when he was in graduate school. The company began with $538 in initial capital, and its first production facility was a small garage in Palo Alto.

Edward Johnson; Died 9 Sep 1917 at age 71 (born 4 Jan 1846).
Edward Hibberd Johnson was an American electrical engineer and inventor who spent many years in various business projects with Thomas Edison, including as vice-president of the Edison Electric Light Company. They met when Johnson, as manager of the Automatic Telegraph Company, hired the 24-year-old Thomas Edison. As Edison's talent as an inventor propelled him into developing his invention laboratory and commercial enterprises, Johnson became his business executive and eventually president of Edison Electric Illuminating Co. of New York (organized 17 Dec 1880) which later became today's Con Edison. Johnson created the first electric lights on a Christmas tree on 22 Dec 1882, which he displayed in the window of his New York home. The hand-wired string of bulbs had been made for him, with 80 walnut-sized lamps glowing in equal numbers of red, white and blue light.

Harvey Fletcher; Born 11 Sep 1884; Died 23 Jul 1981 at age 96.
American acoustical engineer who was the first to demonstrate stereophonic sound (1934). He was a trail blazing investigator of the nature of speech and hearing, noted for his contributions in acoustics, electrical engineering, speech, medicine, music, atomic physics, sound pictures, and education. He guided the development of the Western Electric Hearing Aid, the first such device to use vacuum tubes. He developed a group survey method using recorded sound of decreasing volume which has wide acceptance in schools throughout the nation.

Alexander Meissner; Born 14 Sep 1883; Died 3 Jan 1958 at age 74.
Austrian engineer whose work in antenna design, amplification, and detection advanced the development of radio telegraphy. In 1907 he joined the Telefunken Company of Berlin, where he conducted research on radio problems. He improved the design of antennas for transmitting at long wavelengths, devised new vacuum-tube circuits and amplification systems, and developed the heterodyne principle for radio reception. In 1911 Meissner designed the first rotary radio beacon to aid in the navigation of the Zeppelin airships. In 1913 he was the first to amplify high-frequency radio signals by using feedback in a vacuum triode; this principle made it possible to build radio receivers more sensitive than any earlier type.

Sir Arthur Percy Morris Fleming; Died 14 Sep 1960 at age 79 (born 16 Jan 1881).
English engineer who was a major figure in developing techniques for manufacturing radar components. During WW 1, Fleming made important advances in submarine-detection gear. In 1920, as a pioneer in the development of radio, he established in Manchester the second British transmitting station to broadcast programs on a daily basis. His work on demountable, high-power thermionic tubes made it possible to establish radar stations in Great Britain by the time WW 2 began in 1939.

Georges Leclanche; Died 14 Sep 1882 (born 1839).
French engineer who invented the wet cell Leclanché battery (1866), ancestor of the familiar carbon-zinc dry cell batteries used to power portable electric lights and electronic devices. His wet cell, provided an e.m.f. of about 1.5 volts. A porous pot containing manganese dioxide and a carbon rod as current collector was immersed in an electrolyte of ammonium chloride solution with a negative terminal of zinc metal. From 1867, Leclanché gave full-time attention to his invention, which was adopted the following year by the Belgian telegraph service. He opened a factory to manufacture the battery. In 1881, J.A. Thiebaut had the idea of packing the chemicals in a zinc cup. Carl Gassner made the first commercially successful “dry” cell.

Oswald Garrison Villard; Born 17 Sep 1916; died 7 Jan 2004 at age 87.
American electronics engineer who developed over-the-horizon radar (a way to detect objects out of direct sight by bouncing radar off the ionosphere, an electrically charged layer in the upper atmosphere) so radar could peer around the Earth's curvature to detect aircraft and missiles thousands of miles away. His interest in electricity began with a copy of Harper's Electricity Book for Boys. At age 12, he put together a radio from a kit. During WW 2, he researched countermeasures to protect Allied forces against enemy radio and radar devices. He made pioneering studies of radar jamming. In 1947, he designed a simplified voice transmitter permitting two-way communication on a single radio channel, such as a telephone conversation.

William Playfair; Born 22 Sep 1759; died 11 Feb 1823 at age 63.
Scottish engineer and economist who pioneered the graphical representation of statistics, creating the line graph, bar graph and pie chart, though his name is little known. His inventions and patents included metal-working machines, the mass-production of silver-plated spoons, improvements to agricultural implements, and modification of the bows to ships to improve speed. He had gained experience as apprentice to Andrew Meikle (inventor of the threshing machine) and working with James Watt and Matthew Boulton (manufacturers of steam engines). Playfair's book Commercial and Political Atlas (1786), which introduced his graphical display methods, was the first major work to use statistical graphs.

Robert Bosch; Born 23 Sep 1861; died 9 Mar 1942 at age 80.
German engineer and industrialist who was responsible for the invention of the spark plug and magneto for automobiles and whose firm produced a wide range of precision machines and electrical equipment in plants throughout the world.

Seymour R. Cray; Born 28 Sep 1925; died 5 Oct 1996 at age 71.
American electronics engineer who pioneered the use of transistors in computers and later developed massive supercomputers to run business and government information networks. He was the preeminent designer of the large, high-speed computers known as supercomputers.

Nils Bohlin; Died 26 Sep 2002 at age 82 (born 17 Jul 1920).
Swedish engineer who invented the familiar three-point lap and shoulder seatbelt which is considered one of the most important innovations in automobile safety. Bohlin left the aircraft industry, where he worked on jet ejector seats, including restraints, and joined AB Volvo in 1958 as safety engineer, where he invented and patented this device. In Aug 1959, Volvo was the first car manufacturer to introduce the three-point seat belt in their cars. They made this design freely available to other car manufacturers to save more lives. Bohlin holds several patents related to automotive and aviation design. After retiring from Volvo in 1985, he continued to give lectures and present papers relating to automotive restraint issues.

This concludes the yearlong feature of interesting ***engineering*** events or milestones that occurred in a specific month. Readers are invited to share their views and opinions (or suggestions) at the accompanying link. Submissions can also be made using direct email to the editors at: wavelengths@ieee-sem.org.

Sharan Kalwani
Just one of the Editors, Wavelengths,
2022 Chair, Southeastern Michigan Section
Passionate Engineering History Buff/Aficionado

ORG UNITS cheat sheet

Section Unit Name or Affinity Group or Chapter Name (Organizational Unit code 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 code 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)

Use the Geo-unit ‘Code’ for faster access in the vTools system applications.

HKN Code	HKN Name (Student IEEE Honor Society)
HKN029	University of Michigan-Ann Arbor, Beta Epsilon
HKN042	University of Detroit-Mercy, Beta Sigma
HKN054	Michigan State University, Gamma Zeta
HKN073	Wayne State University, Delta Alpha
HKN163	University of Michigan-Dearborn, Theta Tau
HKN164	Lawrence Institute of Technology, Theta Upsilon
HKN190	Oakland University, Iota Chi
HKN244	Southeastern Michigan Alumni

Organization Unit IEEE Code	Student Technical Chapter name
SBC00531	University of Detroit-Mercy, Computer Society Chapter
SBC02251	Wayne State University, Computer Society Chapter
SBC03921	Lawrence Tech University, Computer Society Chapter
SBC06741	Oakland University, Engineering in Medicine & Biology

Why do we publish this? Well, this is most useful when searching the vTools page for entering L31s or creating new events or searching for existing events!

Curated & Maintained By
Sharan Kalwani,
Chair, IEEE SE Michigan Education Society Chapter
Vice-Chair, IEEE SE Michigan Computer Society Chapter
Editor, Wavelengths,
2018~2019~2020~2021~2022

Use the Geo-unit ‘Code’ for faster access in the vTools system applications.

Robotics Report

SEM Members enjoyed meals delivered by a Robot

SEM Robotics and Automation Chapter 14 had an in-person technical meeting at a restaurant in The Mall at Partridge Creek, Clinton Township to see how robots are actually employed in restaurants to serve customers.

Gary Lusk of Bear Robotics (https://www.bearrobotics.ai/) gave presentation about why they developed the robot, called Servi, to support the food and beverage industry. He demonstrated how to map the environment, connect to the network, load the map and indicate the stops. He also showed 3 different methods of delivery: Auto / Manual / Patrol. The "Servi" is equipped with 3 cameras and a LIDAR. Members also discussed social and ethical issues introduced by robots and ways to improve the robotics system.

Robofest 2023 Season Kickoff Meetings

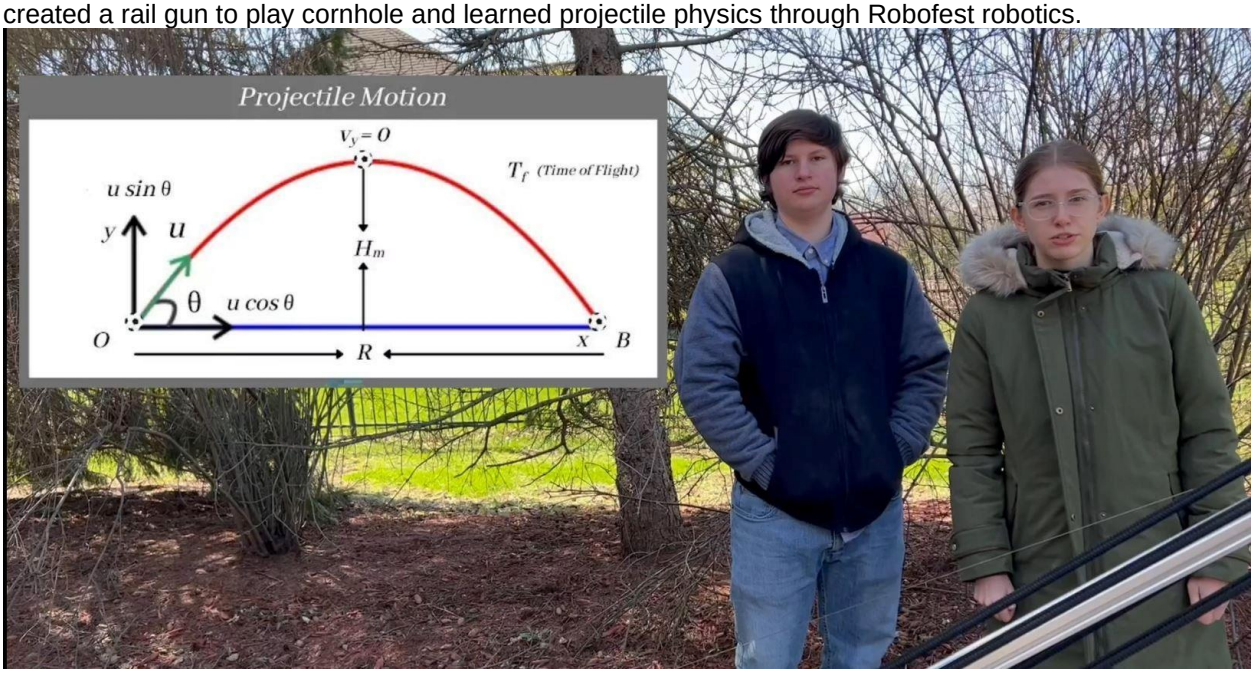
IEEE SEM sponsored Robofest is an International Autonomous Robotics Competition for students in 5th~12 grades and College. Any robotics kits are allowed in the construction of robots. Robots can be programmed with any programming language.

We will be hosting a series of Kickoff Meetings to announce the 2023 season competition rules and important dates. Please join us online or in the Robofest Lab in the Taubman Complex (J234) at Lawrence Technological University in Southfield to learn more about the program and how to be involved through coaching and mentoring students or judging events. We are looking forward to an exciting season!

Kickoff Meeting Schedule

- Kickoff I: Friday, October 21, 9:00 a.m. - 10:30 a.m. EST Zoom Only
- Kickoff II: Thursday, November 3, 2022: 7:00 p.m. - 8:30 p.m. EST, Local and Zoom
- Kickoff III: Saturday, January 7, 2023: 11:00 a.m. - 12:30 p.m. EST

The following picture shows a team who won 1st place award at Robofest Online World Championship 2022. The team created a rail gun to play cornhole and learned projectile physics through Robofest robotics.



The team's Exhibition project can be accessed on YouTube at: https://youtu.be/4bxx8N5O2CQ

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/

SEM Calendar of events:
https://r4.ieee.org/sem/sem-calendar/
Select "SEM Calendar" button in the top row of the website. 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 Collabratec Workspace:
https://ieee-collabratec.ieee.org/app/workspaces/5979/IEEE-Southeastern-Michigan-Section/activities
An IEEE supported space for online chat, discussions, connecting with other global IEEE entities, besides our local Michigan folks.

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: Copy the URL and paste it into your browser address bar.
These websites were checked in June 2022 and found viable.
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/

It appears that the SouthWest Michigan Maker Faire was a casualty of the Global Pandemic, as were many of our friends and several organizations.

However, we retain this link for anyone wishing to make contact and consider pumping life back into what was a wonderful experience.

Executive Committee

The SEM Executive Committee is the primary coordination unit for Southeastern Michigan (SEM) IEEE operations. The basic organization chart below shows the 2019/2020/2021/2022 arrangement of communications links designed to provide inter-unit coordination and collaboration.

The SEM Executive Committee meets in a teleconference each month on usually on a Thursday at 6:30 pm. 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 **Christopher Johnson**, the section secretary at secretary@ieee-sem.org 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.

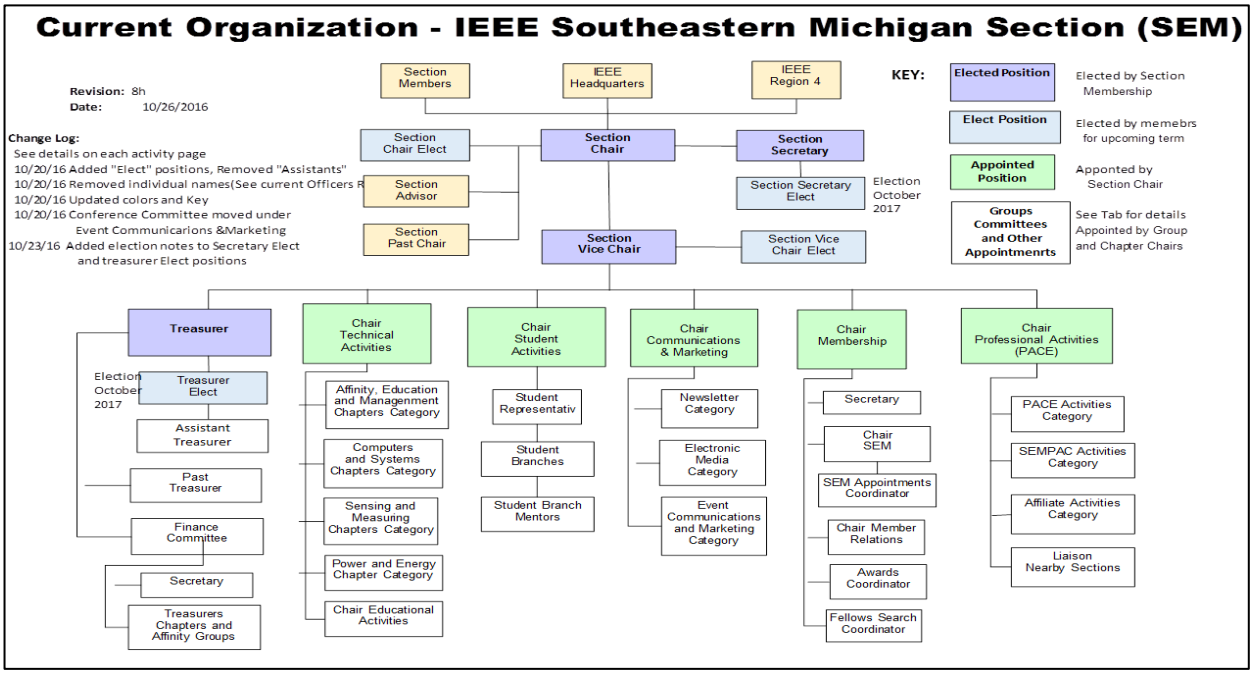
However, members of the section may have multiple technical interests and would like to have meeting information of other chapters. In order to communicate the meeting dates of all the chapters, affinity groups etc., to our members to facilitate their attendance, leaders of the groups are requested to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

Christopher Johnson (Secretary)
Email: secretary@ieee-sem.org

If you wish to download the complete SEM Organization Chart, in PDF format, it will be made available soon at http://r4.ieee.org/sem/ . In the meantime, you may use the diagram below (soon to be refreshed!)



ExCom Meeting Schedule

NOTE: All SEM members are invited to attend ALL ExCom (Executive Committee) meetings:

Below is the 2022 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. Please mark your calendars for the 2022 meetings. Or, link your personal calendar to the SEM Web calendar.

Section Administrative Committee (ExCom) Meeting Schedule for 2022:

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**.

ExCom Meeting	*Date & Time*
Sept 01,2022 - SEM Section ExCom Monthly Meeting (Teleconference) for September 2022 https://events.vtools.ieee.org/m/289873	6:30 PM
October 06,2022 - SEM Section ExCom Monthly Meeting (Teleconference) for October 2022 https://events.vtools.ieee.org/m/289875	6:30 PM
Nov 03,2022 - SEM Section ExCom Monthly Meeting (Teleconference) for November 2022 https://events.vtools.ieee.org/m/289876	6:30 PM
Dec 01,2022 - SEM Section ExCom Monthly Meeting (Teleconference) for December 2022 https://events.vtools.ieee.org/m/289877	6:30 PM

Christopher Johnson (Secretary)
Email: secretary@ieee-sem.org

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 hears 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
Co-Editor, Wavelengths,
2018~2019~2020~2021~2022

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)
https://www.facebook.com/groups/ieeesemich

SEM LinkedIn Page
(Select the "in" button under the top row)
https://www.linkedin.com/groups/1766687/

SEM Twitter Account (new)
(Select the "t" button under the top row)
https://www.twitter.com/ieeesemich

SEM Collabratec Workspace (new)
https://ieee-collabratec.ieee.org/app/workspaces/5979/IEEE-Southeastern-Michigan-Section/activities

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 "Organization Roster"

Section Officers

Section Chair
Sharan Kalwani

Section Vice-Chair
Mohammad Berri

Section Secretary
Chris Johnson

Section Treasurer
Ramesh Sethu

Standing Committees:

Section Adviser
Don Bramlett

Wavelengths Editor
Sharan Kalwani

Chair Educational
Christopher Guirlanda

Chair Finance Committee
Subra Ganesan

Chair Membership Development
Mohamad Berri

Chair Nominations & Appointments
Kimball Williams

Chair PACE
Sharan Kalwani

Chair Student Activities
Mel Chi

Student Communications Coordinator
Michael Anthony

Student Representative
Open!

Chair Technical Activities
Jeffery Mosley

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IEEE Southeastern Michigan

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

Leadership Meetings

SEM Executive Committee Monthly Teleconferences:

- 1st Thursday of Each Month @ 6:30 PM
- 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 Meetings:

- 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