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IEEE Day 2021  
is October 5



<https://ieeeday.org>

## Announcements

On September 9, **Maine Section's Joint Communications**

**Society and Computer Society Chapter** and the

University of Maine are co-hosting a panel discussion on the growing role of artificial intelligence in Cyber Security. See pages 2 and 11 for details. Click [here](#) to register.



The IEEE Annual Election has begun. Maine Section's own **Ali Abedi** is [running for Region 1 Director](#). Ballots and info about the candidates are posted on the [IEEE Annual Election website](#). Please vote before October 1.

[IEEE-USA](#) is accepting nominations for their [annual awards](#) until September 15. See page 14 for details.

## Upcoming Events

### Quantification of Peak Demand Reduction Potential in Commercial Buildings

*Tuesday, August 31, 6:30 PM to 7:30 PM, via Webex; **Free Registration required***

Quantification of peak demand reduction potential of buildings is critical for demand response (DR) analysis in a microgrid environment. [Prof. Dr. Saifur Rahman](#) of the [Center for Energy and the Global Environment at Virginia Tech](#) will discuss peak reduction potential of commercial buildings within a microgrid environment through the control of heating, ventilation, and air conditioning (HVAC) set point and lighting brightness adjustment. Co-hosted by the [Montréal Chapter](#) of the [IEEE Power & Energy Society](#). Visit <https://events.vtools.ieee.org/m/279386> for more info.

### EVOPro – The Professional Evolution of You

*Wednesday, September 1, 1:00 PM to 4:00 PM, Online; **Free Registration required***

EVOPro will feature impactful keynote speakers and sessions that embrace innovation and fuel creativity. This professional-level event will expand your skill set and knowledge, while supplying useful insights from "Big Thinkers" in industry, to take your career to the next level. The keynote speakers



[Continues Next Page]

## Section Officers

### Executive Committee:

Chair: [Ashanthi Maxworth](#)  
 Vice Chair: [Julia Upton](#)  
 Treasurer: [Shengen Chen](#)  
 Secretary: [Ashanthi Maxworth](#)  
 Past Chair: [Betina Tagle](#)

### Affinity Group (AG) & Technical Chapter Chairs:

Women in Engineering AG:  
[Sonia Naderi](#)  
 Young Professionals AG:  
[Matt Dube](#)  
 Communications + Computer Societies Joint Chapter:  
[Julia Upton](#)  
 Electron Device + Solid-State Circuits Societies Joint Chapter:  
[Jifa Hao](#)  
 Engineering in Medicine & Biology Society ME/NH/VT Joint Chapter:  
[Rosemary Smith](#) (Co-Chair)  
 Power & Energy + Industry Applications Societies Joint Chapter:  
[Jesse Shank](#)

### Other Committee Chairs & Positions:

Audit: [Ron Brown](#) & [Ali Abedi](#)  
 Awards and Recognition:  
[Rosemary Smith](#)  
 Educational Activities: [Matt Ring](#)  
 Member-at-Large: [Daniel Spacek](#)  
 Member Development: [Rich Hilliard](#)  
 Newsletter Editor: [David Klein](#)  
 Professional Activities: [Dick Wilkins](#)  
 Public Relations: [Ron Brown](#)  
 Student Activities: [Lauren Mayhew](#)  
 Webmaster and Social Media:  
[Doug Sprague](#)

### University Faculty Advisors:

IEEE Student Branches:  
[Jude Pearse](#) (UMaine)  
[Ashanthi Maxworth](#) (USM)  
 HKN Delta Kappa Chapter: [Ali Abedi](#)

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## Upcoming Events [continued from page 1]

will be [Ashley Stahl](#), who switched careers from being a counter-terrorism professional to being a career coach, and [Joe Grand](#), computer engineer and the proprietor of [Grand Idea Studio](#). Hosted by IEEE-USA. Visit <https://events.vtools.ieee.org/m/270404> and <https://evoconference.org/session/evopro-1-sep-2021/> for more info.

### Pressure-Test Your Startup Idea

*Tuesday, September 7, 7:00 PM to 8:30 PM, via Zoom; **\$10 Pre-Registration required***

Pressure testing a business strategy or plan reveals blind spots within an organization and assumptions that may be held by members of the team. Successful pressure testing can save a startup company a lot of money and potentially save the founder and entrepreneur from a failed venture. Entrepreneurs' Network Chair Emeritus [Rob Adelson](#) will moderate a panel that will include [Joyonna Gamble-George](#), Ph.D. COO & Chief Scientific and Medical Officer at [SciX](#); [David L. Verrill](#), Founder and Managing Director at [Hub Angels Investment Group](#); and [Mary Brodie](#), Founder and Strategist at [Gearmark](#). There will be online networking before and after the meeting. Hosted by [The Boston Entrepreneurs' Network](#). Visit <https://boston-enet.org/event-4373827> for more info.

### Artificial Intelligence in Cyber Security: Government, Industry, and Academia Perspectives

*Thursday, September 9, 12:00 PM to 1:00 PM, via Zoom; **Free Registration required***

The Maine Section's Joint [Communications Society](#) and [Computer Society](#) Chapter and the [University of Maine](#) are co-hosting a panel discussion on the growing role of artificial intelligence in Cyber Security.

[Dr. Julia Upton](#), Husson University Mathematics and Data Analytics Associate Professor and Joint Chapter Chair, and [Dr. Ali Abedi](#), UMaine Associate Vice President for Research and Professor of Electrical and Computer Engineering, will moderate a virtual panel that will include:

- [Bill Leigher](#), U.S. Navy Rear Admiral (Retired),
  - [Scott McGaunn](#), FBI-Boston Special Agent,
  - [Dr. Dan Shoemaker](#), 2021-2023 IEEE Computer Society Distinguished Visitor, and
  - [Dr. Dick Wilkins](#), Principal Technology Liaison for [Phoenix Technologies Ltd.](#) and recently-retired [Thomas College](#) Associate Professor of Computer Science and Cyber Security.
- Visit <https://events.vtools.ieee.org/m/277980> for more info. Flip to page 11 to see the event flyer. E-mail [um.ai@maine.edu](mailto:um.ai@maine.edu) after the event to receive a CEU/PDH certificate.



### Simulating the Performance of Ocean-Observing Imaging Payloads for Nanosatellites

*Thursday, September 9, 6:00 PM to 7:30 PM, via Zoom; **Free Registration required***

Consequences of climate change threaten to have substantial and irreversible negative effects on our oceans, making it crucial to quickly understand and quantify behavioral changes resulting from increased human impact. [Candence Brea Payne](#), a PhD Candidate in the [Space Telecommunications, Astronomy, and Radiation Laboratory](#) at [MIT](#), will discuss how near-continuous, large-scale monitoring from space is revolutionizing methods for monitoring and forecasting ocean behavior. Hosted by the Boston Chapter of the [IEEE Geoscience and Remote Sensing Society \(GRSS\)](#). Visit <https://ieeeboston.org/event/simulating-the-performance-of-ocean-observing-imaging-payloads-for-nanosatellites/> for more info.

[Continues Next Page]

## Upcoming Events *[continued from page 2]*

### Implementing Symbols and Rules with Neural Networks

Thursday, September 9, 7:00 PM to 8:30 PM, via Zoom, **Free Registration required**

Many aspects of human language and reasoning are well explained in terms of symbols and rules. However, state-of-the-art computational models are based on large neural networks which lack explicit symbolic representations of the type frequently used in cognitive theories. In this talk, [Ellie Pavlick](#), the Manning Assistant Professor of Computer Science at [Brown University](#) and a Research Scientist at [Google AI](#), will discuss the extent to which neural networks (without any explicit symbolic components) can implement symbolic reasoning at the computational level and future work and refinement that is needed. Co-hosted by the [Boston Chapter](#) of the [IEEE Computer Society](#). Visit <https://ewh.ieee.org/r1/boston/computer/ElliePavlick.html> for more info.

### IEEE Maine Section Executive Committee (ExCom) Meeting

Monday, September 13, 5:00 PM to 6:30 PM, via Zoom

All IEEE members are welcome to attend. E-mail [Ashanthi.Maxworth@ieee.org](mailto:Ashanthi.Maxworth@ieee.org) for agenda info, meeting ID, and passcode.

### Sustainable Electronics – From Dumped E-Waste to A Circular Economy: What Is Needed?

Thursday, September 16, 3:00 PM to 4:30 PM, via Webex; **Free Registration required**

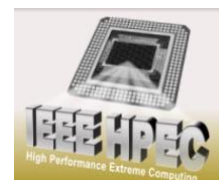
[Professor Mervi Paulasto-Kröckel](#) of [Aalto University School of Electrical Engineering](#) in Finland will discuss the current state and challenges for electronics sustainability. Topics will include legislative proposals on waste and their impact on electronics design and the resulting lifecycles, including the EU's long-term targets on a circular economy. Currently applied reuse and recycling steps and methods for WEEE (Waste Electrical and Electronic Equipment) components and materials will be presented. The talk introduces the Life Cycle Assessment (LCA) methodology and presents two case studies for electronic devices. Environmental impacts of semiconductors and packaging will be discussed and the needs for applying Ecodesign principals and recycling improvements to approach carbon neutrality will be highlighted. Hosted by the [Silicon Valley Area Chapter](#) of the [IEEE Electronics Packaging Society](#). Visit <https://events.vtools.ieee.org/m/261691> for more info.

### 2021 IEEE High Performance Extreme Computing Virtual Conference

Monday, September 20 to Friday, September 24, Online; see [registration page](#) for fee info

– Early-bird registration ends September 1

HPEC is the largest computing conference in New England and is the premier conference in the world on the convergence of High Performance and Embedded Computing. Our community is interested in computing hardware, software, systems, and applications where performance matters. We welcome experts and those new to the field. Hosted by [IEEE Boston Section](#). Visit <http://ieee-hpec.org> for more info.



### IEEE Maine Section Executive Committee (ExCom) Meeting

Monday, October 4, 5:00 PM to 6:30 PM, via Zoom

All IEEE members are welcome to attend. E-mail [Ashanthi.Maxworth@ieee.org](mailto:Ashanthi.Maxworth@ieee.org) for agenda info, meeting ID, and passcode.

### IEEE Day 2021

Tuesday, October 5 with events held between Friday, 1 October and Sunday, October 17

IEEE Day commemorates the first time IEEE members gathered to share their technical ideas in 1884. The theme of IEEE Day is: Leveraging Technology for a Better Tomorrow. While the world benefits from what is new, IEEE focuses on what is next. 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. IEEE Day encourages members to share their technical ideas and be inspired to achieve their technological goals. This year, there will be a hybrid celebration due to the pandemic restrictions. Events will take place all around the world, both physically and virtually. Visit <https://ieeeday.org> for more info. Follow IEEE Day on [Facebook](#), [Twitter](#), [Instagram](#), or [LinkedIn](#).



## Upcoming Events *[continued from page 3]*

### Navigate the Phases of Team Development with Speed and Agility for Happier and More Productive Teams

Tuesday, October 5, 2:00 PM to 3:00 PM, Online; **Free Registration required**

Want happier and more productive teams? Among other things, it takes great leadership. And proven strategies can provide a real edge. In this webinar, **Scott M. Graffius** will discuss the five phases of team development — Forming, Storming, Norming, Performing, and Adjourning — including detailed descriptions of each along with proven strategies for addressing challenges or issues which may occur along the way. Hosted by **IEEE-USA**. Visit <https://events.vtools.ieee.org/m/277932> for more info.



### MTUG's 34th Annual Summit & Tradeshow - Maine's Largest Business Tech Event

Tuesday, October 5, 7:30 AM to 4:00 PM, in-person at the **Holiday Inn by the Bay**, 88 Spring St., Portland, ME; see [registration page](#) for fee info – Early-bird registration ends September 15

MTUG's IT Summit and Tradeshow bills itself as the premier technology infrastructure conference in Maine with workshop topics that speak to the concerns and interests of IT professionals in all organizational sectors and industries. The exhibitors on the tradeshow floor will run the full array of IT services. This year's keynote speaker is **David Cooper**, CTO of **WEX**. Visit <https://mtug.org/summit/2021-summit> for more info.



### Artificial Intelligence in Space and Aerospace

Thursday, October 7, 12:00 PM to 1:00 PM, via Zoom; **Free Registration required**

This will be a one-hour webinar with leaders from Artificial Intelligence for Space and Aerospace. Additional details and who will be speaking will be announced prior to the webinar. Part of the **University of Maine Artificial Intelligence Fall 2021 Webinar Series**. Visit <https://ai.umaine.edu/webinars/> for more info.



### Data Science Ensemble: Our Adventure with AI Methods in Orthopedics

Thursday, October 7, 4:00 PM to 5:00 PM, **Free** via Zoom; Launch <https://maine.zoom.us/my/usm.datascience> to join

**Dr. Hilal Maradit Kremers**, Professor of Epidemiology at the **Mayo Clinic**, will explore orthopedic surgical procedures, and in particular, total joint arthroplasty (TJA) of the hip and knee joints. They are the most common and the fastest-growing surgeries in the U.S. However, the evidence for TJA practice and technologies is based on imperfect and incomplete data. The lack of high-quality phenotypic data is a critical barrier to progress in improving TJA outcomes. TJA-specific phenotypic data remain embedded in the unstructured text of the **Electronic Health Record** and/or serial TJA radiographs. Over the past few years, Dr. Maradit Kremers' interdisciplinary team has been developing several natural language processing (NLP) and deep learning computer vision algorithms to better phenotype TJA patients. Dr. Maradit Kremers will give examples from these projects and outline how the team learned to work together and be productive in developing clinically applicable AI tools in orthopedics. Visit <https://usm.maine.edu/college-of-science-technology-health/data-science-ensemble-our-adventure-ai-methods-orthopedics-lessons> for more info.



### Ada Lovelace Day

Tuesday, October 12

**Ada Lovelace** is often regarded as the first computer programmer. Born in 1815, she collaborated with inventor **Charles Babbage** on his general purpose computing machine, the **Analytical Engine**. In 1843, Lovelace published what we would now call a computer program to generate **Bernoulli Numbers**, and was the first person to foresee the creative potential of the Engine. Ada Lovelace Day (ALD) is an international celebration of the achievements of women in science, technology, engineering and maths (STEM). It aims to increase the profile of women in STEM and, in doing so, create new role models who will encourage more girls into STEM careers and support women already working in STEM. Visit <https://findingada.com> for more info. Follow Ada Lovelace Day on **Twitter** or **Facebook**, or [subscribe to the ALD newsletter](#) to be kept up to date.





## Upcoming Events [continued from page 4]

### IEEE 5G World Forum

Wednesday, October 13 to Friday, October 15, Online with optional in-person in Montréal, QC; see [registration page](#) for fee info – Early-bird registration ends September 28

The 5G World Forum aims to bring experts together from industry, academia, and research to exchange their vision as well as their achieved advances towards future networks of 5G and beyond. Hosted by [IEEE Montréal Section](#), [IEEE ComSoc](#), [IEEE Computer Society](#), and [IEEE Future Networks](#). Visit <https://ieee-wf-5g.org> for more info.



### Maine Center for Research in STEM Education Colloquium

Monday, November 1, 3:00 PM to 4:00 PM, via Zoom; **Free Registration required**

Dr. John Volin, Executive Vice President for Academic Affairs and Provost at the University of Maine, will speak on a topic to be announced. To join the presentation, sign up for the RiSE e-mail list by contacting [risecenter@maine.edu](mailto:risecenter@maine.edu). Visit <https://umaine.edu/risecenter/colloquia/> for more info.



### IEEE Maine Section Executive Committee (ExCom) Meeting

Monday, November 1, 5:00 PM to 6:30 PM, via Zoom

All IEEE members are welcome to attend. E-mail [Ashanthi.Maxworth@ieee.org](mailto:Ashanthi.Maxworth@ieee.org) for agenda info, meeting ID, and passcode.

### EVO 2.0 Conference

Wednesday, November 3, 1:00 PM to 4:00 PM, Online; **Free Registration required**

EVO 2.0 will bring thought leaders directly to career-minded professionals, recent grads, and college students, giving them insights into the tech trends and pathways that lead to challenging and fulfilling careers. Hosted by [IEEE-USA](#). Visit <https://meetings.vtools.ieee.org/m/270410> and <https://evoconference.org/session/evo2-3-nov-2021/> for more info.



See the [IEEE Region 1 Calendar \(https://r1.ieee.org/calendar/\)](https://r1.ieee.org/calendar/) and [IEEE vTools Search \(https://meetings.vtools.ieee.org/events/search\)](https://meetings.vtools.ieee.org/events/search) for more events.

## Chair's Corner



By Dr. Ashanthi Maxworth

Well, as we near the official end of summer, I am sure you all are looking forward to the beautiful fall in Maine. This fall is especially important to me since I moved to Maine exactly a year ago.

As you all get busy with studies and work in the next few months, we, in the Section have some very exciting events planned for you. You will find information about those in this newsletter.

Also, as the IEEE elections began on August 16, I want to endorse [IEEE Region 1 Chair candidate Dr.](#)

[Ali Abedi](#). Ali is a [Professor](#) at the [Department of Electrical and Computer Engineering at the University of Maine at Orono](#). He is an expert in the areas of wireless communications, information theory, and wireless sensors for space applications. For decades Ali has contributed to the IEEE Maine Section, IEEE Region 1, and the engineering profession at large. Last but not the least, please reach out to us anytime through our Section's contact page at: <https://r1.ieee.org/maine/contact/>. See you soon in the colorful fall! – Ashanthi



Ali Abedi

## Executive Committee Session

*Editor's synopsis based in-part on draft minutes*

On August 2, the IEEE Maine Section Executive Committee (ExCom) held their monthly session on Zoom.

Public Relations Chair

**Ron Brown** moved to approve the minutes from the July meeting, which was seconded by Interim Section Vice-Chair **Julia Upton**. The minutes were approved unanimously.

Interim Section Chair **Ashanthi Maxworth** proceeded to the Chairperson's Report. Ashanthi said she will attend the IEEE Region 1 Board of Governors meeting in-person on August 21. She will report on that at the next ExCom meeting.

Ashanthi shared an idea from Ron about sponsoring IEEE student groups at universities. For this, each student group will need to raise \$500 and the Section will match it. Ashanthi will be reaching out to [IEEE-USA](#) to check whether they have funds to support this effort. Ashanthi offered that this effort is worth supporting even at the Section level to promote student activities. Active IEEE student groups from UMaine, USM, and Husson University would be participating in this.

An e-mail circulated by Vincent Socci, who leads the [IEEE R1 Educational Activities Committee](#), said R1 is willing to provide \$250 for pre-university STEM activities organized by the Section. If any of the ExCom members or any student group is willing to take the initiative, Ashanthi said the Section will be fully supportive in submitting the paperwork.

Treasurer **Shengen Chen** presented the Treasurer's Report, informing the committee of Maine Section's closing balance.

Membership Development Chair **Rich Hilliard** thanked all the members for their comments,

questions, and suggestions for the membership development plan. The plan will be submitted to IEEE in mid-August.

Presenting a detailed report, Social Media Chair **Doug Sprague** discussed the Section's Facebook page [@IEEEEME](#). While created, it remains unpublished. The social media team is prepping to bring on a student by the end of September.

Further target goals are to create a LinkedIn page by the end of October, and to adopt a long-term social media and outreach plan by the end of November.

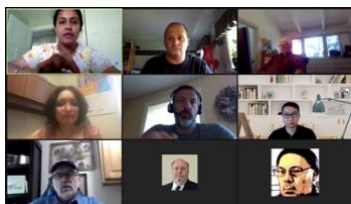
There was discussion that student volunteers can bring fresh ideas on reaching a like-minded audience, and that we need to endeavor to align the Section's expectations with the student's long-term career goals.

Doug noted that after looking into it, Facebook's "New Experience" will offer benefits to the Section's page, once Facebook converts the page over from the old format.

In her role as Chair of the Section's joint Communications and Computer Societies, Julia confirmed that the [Cyber Security Panel Discussion](#) will be on September 9 and that all members will be receiving invitations via IEEE vTools and snail-mail.

Newsletter Editor **David Klein** asked whether anyone knew where to find the Section's archives. According to decades-old notes (~2000) left by former Section Chair **Dave Conroy**, CMP's research services stored the Section's records dating back as far as 1969 at their Farmingdale Historical Site. However, David has learned that CMP [transferred](#) their Farmingdale collection to the Maine Historical Society in 2004. Unfortunately, the Maine Historical Society has no record of the IEEE documents.

In response to David's question, Ron suggested three former Section officers that David might contact to find more details.



## Maine Patent Trends



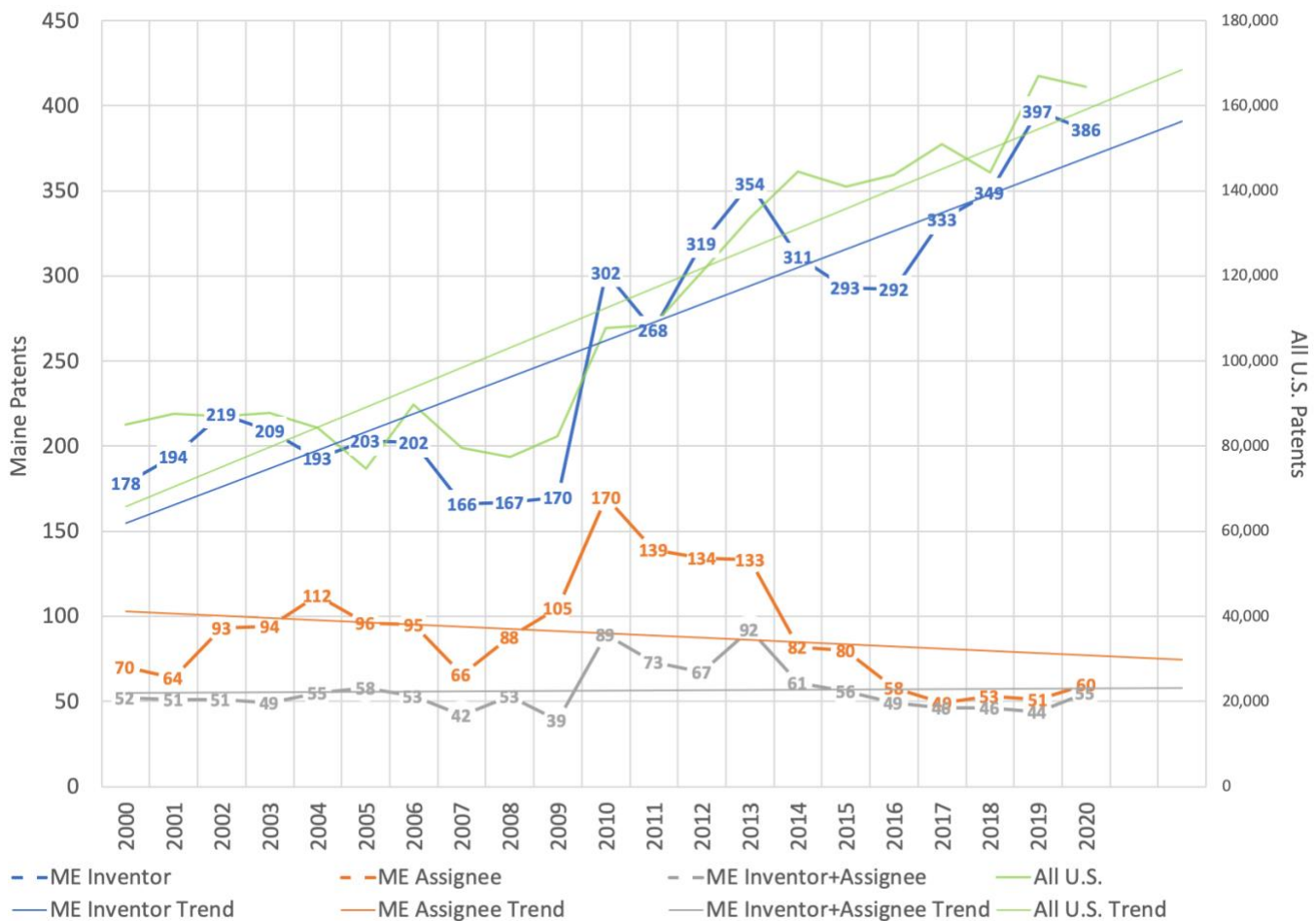
By David Klein  
Newsletter Editor

One measure of tech sector performance is patents. How is the Maine tech sector doing?

### Statewide Patenting — All Technologies

The line chart below shows how many U.S. [utility patents](#) issued from 2000 through 2020 and had Maine inventors and/or Maine [assignees](#), along with computer-generated linear forecast trendlines.

MAINE-RELATED U.S. UTILITY PATENTS



Source: USPTO Patent Full-Text Database; USPTO PTMT U.S. Patent Statistics

The chart data omits ornamental design, plant, and reissue patents.

The blue “Maine Inventor” data illustrates how many patents had at least one Maine inventor, even if a patent also includes non-Maine inventors. The trendline suggests that the number of patents naming Maine inventors will continue to increase in the future. Growth in remote work may further accelerate this trend as more engineers move to Maine while working for companies elsewhere.

The light-green “All U.S.” data illustrates the number of U.S.-origin utility patents granted as [tabulated](#) by Patent Technology Monitoring Team (PTMT) of the U.S. Patent and Trademark Office (USPTO). Overall, the Maine data exhibits some commonality with the U.S. data.

The 2007-to-2009 drop in the number of Maine-inventor patents likely related to [The Great Recession](#), which officially lasted from December

[Continues Next Page]

2007 to June 2009. A similar dip can be seen in [the national numbers](#) as well as with [earlier recessions](#) — when companies cut costs, they may opt to file fewer patent applications on less-essential inventions and more-readily abandon pending applications that encounter difficulties during examination.

The orange “Maine Assignee” data illustrates how many patents were assigned by the inventors to a Maine entity (*e.g.*, a business or university) prior to the patent issuing, *without* regard to where the inventors resided. Typically, the assignee is an inventor’s employer. The trendline illustrates a mild decline in patents assigned to Maine entities.

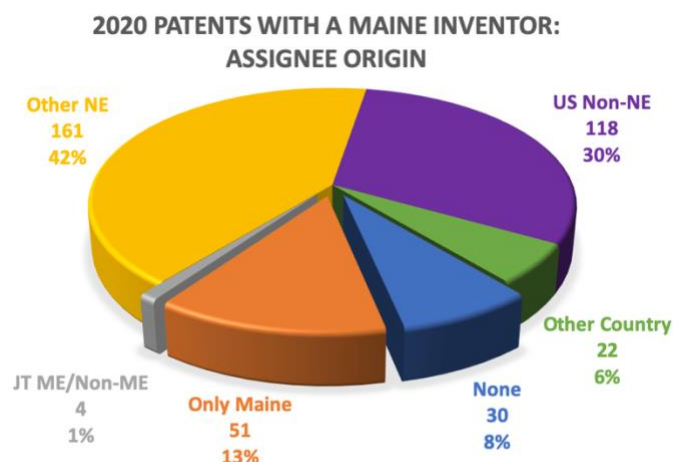
This mild decline may be due-in-part to out-of-state companies buying up Maine companies at a faster pace than Maine companies are acquiring interests out-of-state. See generally the January 25, 2021 article [Maine M&A experts predict deal momentum to pick up](#) by Renee Cordes in [Mainebiz](#). After a company is acquired, new and pending patent applications are often assigned to the acquirer.

The grey “Maine Inventor + Assignee” illustrates how many patents had at least one Maine inventor *and* were assigned to a Maine entity prior to the patent issuing. The trendline is notably flat. After a brief uptick in these patents in the early 2010s, levels returned to where they had been.

Although inventors retained ownership of a few patents, a majority of the patents with Maine inventors that are not assigned to Maine entities are instead assigned to out-of-state concerns. Also, while it does not happen often, sometimes assignees do not record their assignments until after a patent issues.

To explore this further, the pie chart breaks-out 2020 ownership data in more detail. Maine entities had an ownership interest in 85 (22%) of the 386 patents that included at least one Maine inventor. These 85 patents consist of 30 patents with no assignee (such that Maine inventors retained an

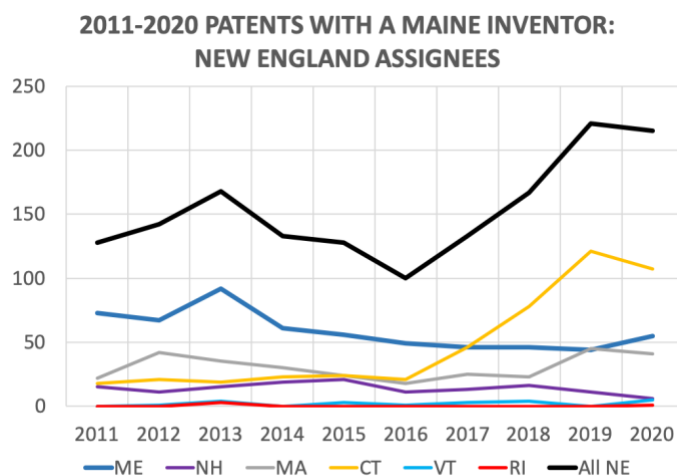
ownership interest), 51 patents which named a Maine assignee, and 4 patents that were jointly assigned to Maine and non-Maine entities.



Source: U.S. Patent and Trademark Office Patent Full-Text Database

Maine entities held no ownership interest in the other 301 (78%). Of those, 161 were assigned to entities from other New England states (NH/VT/MA/RI/CT), 118 were assigned to U.S. entities outside of New England, and 22 were assigned to entities in other countries.

Below is a 2011-2020 snapshot of New England assignments for patents that included at least one Maine inventor.



Source: U.S. Patent and Trademark Office Patent Full-Text Database

Maine researchers developing turbine engine technology for [Raytheon Technologies](#) are responsible for the uptick in patents assigned to Connecticut.

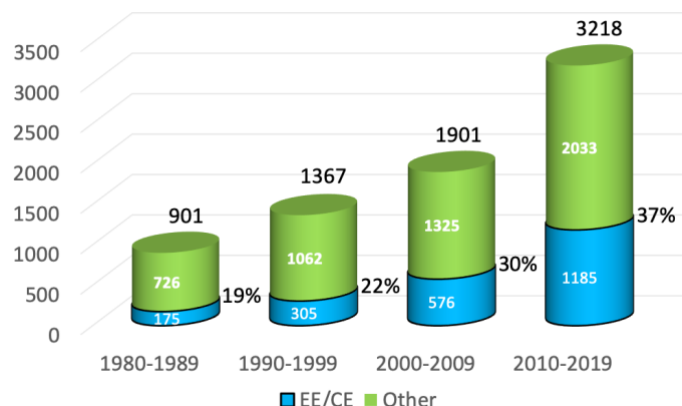
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### Statewide Patenting — EE and CE

The USPTO categorizes patents using various patent classification systems, making it possible to approximate patent-counts by technology type.

**PATENTS WITH A MAINE INVENTOR BY DECADE**



Source: U.S. Patent and Trademark Office Patent Full-Text Database

Using USPTO patent classification data, the chart above illustrates how many U.S. utility patents issued by decade naming at least one Maine inventor, and how many of those related to electrical and/or computer engineering.

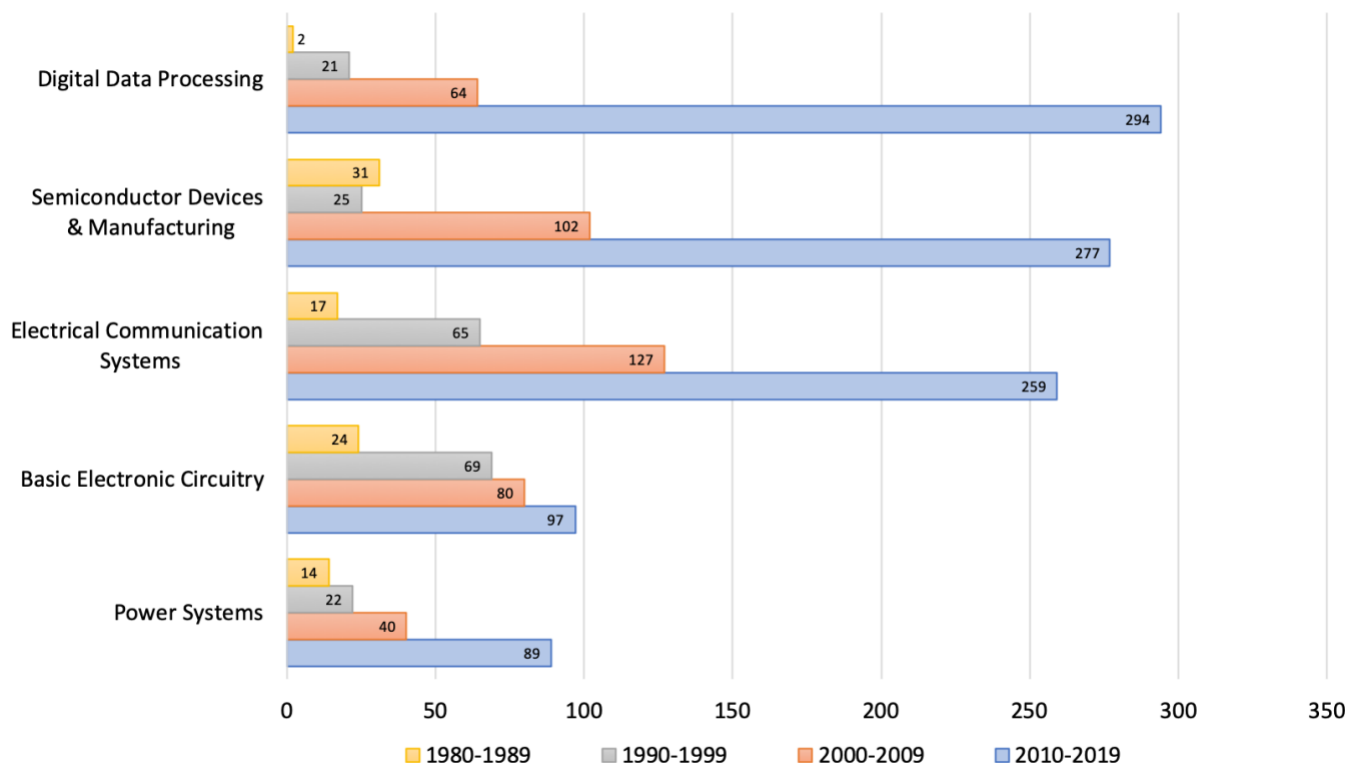
Over the last four decades, electrical and computer engineering patents (EE/CE shown in blue) have steadily increased as a percentage of Maine's overall patent numbers.

### Statewide Patenting — Prime EE/CE Movers

An individual patent is ordinarily assigned by the USPTO to multiple patent classification classes and subclasses, such that an individual patent may be attributed to more than one technology area.

Sampling patent classifications, five electrical and computer engineering technology areas stood out in the Maine numbers due to their size and growth: (1) Digital data processing, (2) Semiconductor devices and device manufacturing, (3) Electrical communication systems and communication techniques, (4) Basic electronic circuitry, and (5) Generation, conversion, and distribution of electric power. A chart illustrating the growth in these technology areas appears below:

**ELECTRICAL & COMPUTER ENGINEERING PATENTS WITH A MAINE INVENTOR BY DECADE**



Source: U.S. Patent and Trademark Office Patent Full-Text Database

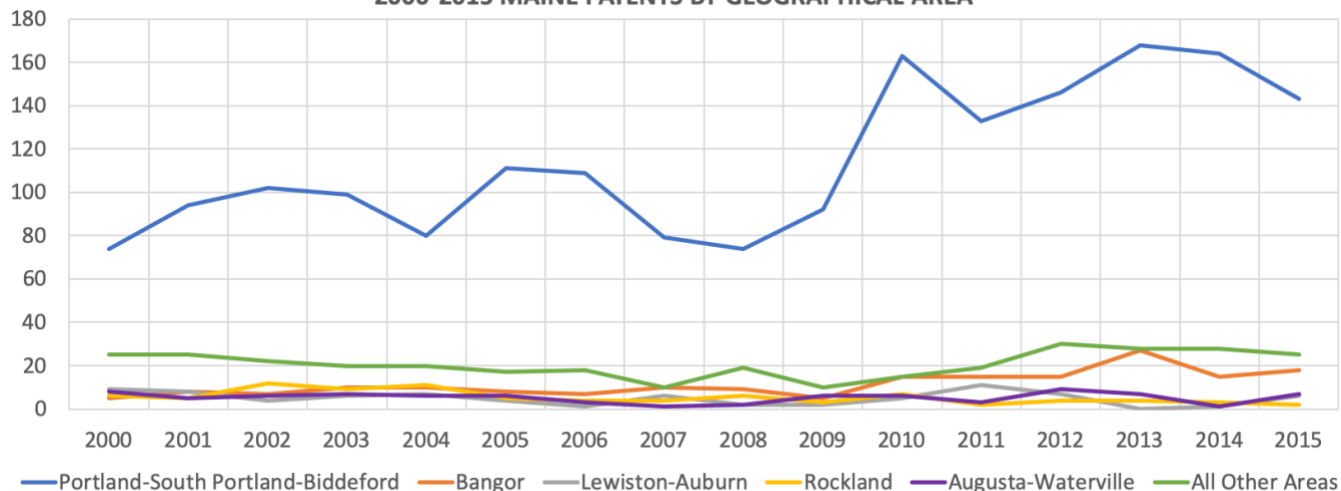
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### Intra-Maine Distribution — All Technologies

How do things look around the state? In 2016, the PTMT released a [report on utility patent grants for the years 2000 to 2015](#) that tabulated patent numbers for several Maine communities: (1) metro Portland-South Portland-Biddeford, (2) metro

Bangor (which includes Orono), (3) metro Lewiston-Auburn, (4) the Rockland area, (5) the Augusta-Waterville area, and (6) the rest of Maine. The U.S. Office of Management and Budget's [Core-Based Statistical Areas \(CBSAs\)](#) (archived [here](#)) defined the boundaries of these communities.

2000-2015 MAINE PATENTS BY GEOGRAPHICAL AREA



Source: U.S. Patent and Trademark Office Patent Technology Monitoring Team (PTMT) Report

Unlike the earlier charts based on whether a patent included *any* Maine inventors, the PTMT attributed patent origin based on the residence of the first-named inventor. As such, a significant number of the patents with Maine inventors in the earlier charts are not counted in this PTMT data. Even so, the PTMT data provides some insight, showing that metro Portland-South Portland-Biddeford is a major driver of the state's patent trends.

### About This Research

Aside from the PTMT data, patent counts were tabulated by running date-limited searches in the USPTO's [Patent Full-Text Database](#). Patents with Maine inventors were identified using the Inventor State (IS) field, whereas assignee locations were identified with the Assignee State (AS) field. Searches were limited to utility patents using the Application Type (APT) field.

To determine the assignee origin for the 2020 patents, each patent with a Maine inventor was

reviewed individually, with unassigned patents checked against the USPTO's [Assignment Database](#). (A correction was made to attribute [U.S. Patent 10,768,320](#) to a NH assignee because [its assignment](#) was left out). The 2011-2020 snapshot of New England assignees used state-limited searches. Patent technologies were sampled using both the current [Cooperative Patent Classification Class \(CPC\)](#) and the current [U.S. Classification \(CCL\)](#) fields to determine relevant classifications.

To broadly identify EE and CE patents, each search spanned all of [CPC Class H: Electricity](#) and selected classes/subclasses from [CPC Class G: Physics](#) (G05, G06, G08, G09C, G09G, G10L, G11C, and G16Y).

Digital data processing patents were in CPC Subclass G06F. Semiconductor devices and manufacturing patents were in CPC Subclass H01L and/or CCL Class 438. Electrical communication systems patents were in CPC Class H04. Basic electronic circuitry patents were in CPC Class H03. Power systems patents were in CPC Class H02.



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# UMaine Artificial Intelligence AI in Cyber Security

Thursday, September 9, 2021

12:00 - 1:00 p.m. EST (live via Zoom)



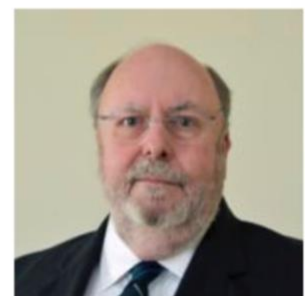
**William Leigher**  
*Rear Admiral (Retired), United States Navy*



**Scott McGaunn**  
*Special Agent, Federal Bureau of  
Investigation-Boston*



**Daniel Shoemaker**  
*2021-2023 IEEE Computer Society  
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**Richard Wilkins**  
*Principle Technology Liaison for  
Phoenix Technologies Ltd.*

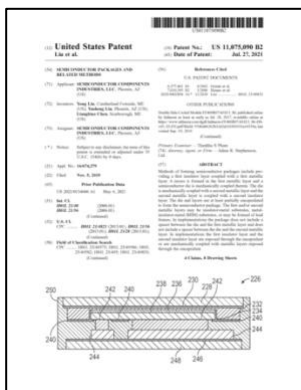


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## Member Accolades

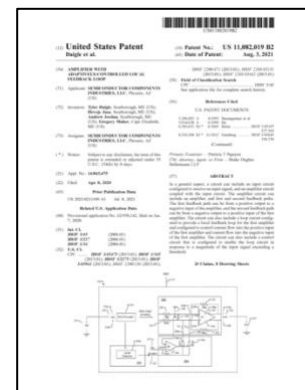
Congratulations to the IEEE Maine Section members who recently received patents or were published:

On July 27, 2021, the U.S. Patent and Trademark Office issued [U.S. Patent 11,075,090 B2](#), entitled “Semiconductor Packages and Related Methods.” Maine Section Fellow [Yong Liu](#) of Cumberland Foreside and Member [Liangbiao Chen](#) of Scarborough are listed as co-inventors.



**ABSTRACT:** Methods of forming semiconductor packages include providing a first insulator layer coupled with a first metallic layer. A recess is formed in the first metallic layer and a semiconductor die is mechanically coupled therein. The die is mechanically coupled with a second metallic layer and the second metallic layer is coupled with a second insulator layer. The die and layers are at least partially encapsulated to form the semiconductor package. The first and/or second metallic layers may be insulator-metal substrates, metal-insulator-metal (MIM) substrates, or may be formed of lead frames. In implementations the package does not include a spacer between the die and the first metallic layer and does not include a spacer between the die and the second metallic layer. In implementations the first insulator layer and the second insulator layer are exposed through the encapsulant or are mechanically coupled with metallic layers exposed through the encapsulant.

On August 3, 2021, the U.S. Patent and Trademark Office issued [U.S. Patent 11,082,019 B2](#), entitled “Amplifier with Adaptively-Controlled Local Feedback Loop.” Maine Section Members [Andrew Jordan](#) of Scarborough and [Gregory Maher](#) of Cape Elizabeth are listed as co-inventors.





### 2022 IEEE International Symposium on Phased Array Technology

Phased array systems continue to be a rapidly evolving technology with steady advances motivated by the challenges presented to modern military and commercial applications. This symposium will present the most recent advances in phased array technology and present a unique opportunity for members of the international community to interact with colleagues in the field. Hosted by [IEEE Boston Section](#).

*Full Paper Submission Deadline: Saturday, March 12, 2022*

*Conference: Tuesday, October 11 to Friday, October 14, 2022*

Visit <http://www.array2022.org> for more info.

### 2023 IEEE International Ultrasonics Symposium (IUS)

Present the latest developments in the field of ultrasonics, ferroelectrics, and frequency control. Hosted by [IEEE Montréal Section](#).

*Paper Submission Deadline: Saturday, April 1, 2023*

*Conference: Tuesday, September 5 to Friday, September 8, 2023*

Visit [https://conferences.ieee.org/conferences\\_events/conferences/conferencedetails/51837](https://conferences.ieee.org/conferences_events/conferences/conferencedetails/51837) for more info.

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The Beacon and Maine Section website are always looking for content. In particular:

**Events:** Please let us know about upcoming live engineering, science, and professional development events in Maine (preferably at least four weeks beforehand, although we will try to accommodate shorter notice).

**Articles:** We are interested in original technical, professional development, college-life, and Maine-interest articles. Original graphics and photographs are encouraged. Length is flexible.

**Patents and Publications:** Please let us know if you are presenting a paper at a conference, have recently been published in a peer-reviewed journal, or have recently received a U.S. Patent.

**Newsworthy Stories:** Do you know about something that might be of interest to IEEE Maine Section members that might have otherwise escaped their attention? If it is something that you've seen in media or in a press release, please tell us the source so that we may provide attribution.

**All submissions are subject to editorial review.**

Send submissions by e-mail to [IEEEMaineBeacon@gmail.com](mailto:IEEEMaineBeacon@gmail.com) or via our website's [Contact Page](#).

## IEEE-USA Awards

IEEE-USA is now seeking nominations for its annual awards and recognitions, given in one of three categories: professionalism, technical achievement, and literary contributions to public awareness and understanding of the engineering profession in the United States.



### Professionalism Awards

#### **The IEEE-USA Robert S. Walleigh Distinguished Contributions to Engineering Professionalism Award**

To honor members of the engineering profession for long-term dedicated effort and outstanding accomplishments in advancing the aims of IEEE professional activities in the United States.

#### **The IEEE-USA John Meredith Professional Service Award**

To recognize key individuals for outstanding IEEE-USA volunteer efforts and contributions.

#### **The IEEE-USA Award for Distinguished Public Service**

To honor individuals not currently in the practice of engineering for contributions to furthering the professional goals of IEEE in the United States.

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#### **The IEEE-USA Jim Watson Student Professional Awareness Achievement Award**

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#### **The IEEE-USA Entrepreneur Achievement Award for Leadership in Entrepreneurial Spirit**

To recognize a key individual who has been instrumental in furthering both entrepreneurial growth and spirit in the United States.

#### **The K-12 STEM Literacy Committee Educator-Engineer Partnership Award**

To recognize collaborative activities between K-12 teachers and technical professionals who are IEEE members. (This award [was won in 2014](#) by Bangor High School's Cary James and UMaine's Mohamed Musavi).

### Technical Award

#### **The IEEE-USA Harry Diamond Memorial Award**

To honor individuals for distinguished technical contributions in the field of electrotechnology while in U.S. Government Service.

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#### **The IEEE-USA Award for Distinguished Literary Contributions Furthering Public Understanding and the Advancement of the Engineering Profession**

To recognize outstanding journalistic or other efforts that contribute to the enhancement and expansion of the public understanding and the advancement of the engineering profession in the United States.

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For more details or to nominate a deserving colleague, visit: <https://ieeeyusa.org/volunteers/awards-recognition/>. **Nominations will be accepted through September 15, 2021.**

For questions, please contact Dr. Jason Hui, Region 1 Awards and Recognition Chair, at [jason.k.hui@ieee.org](mailto:jason.k.hui@ieee.org).

If you would like assistance preparing a nomination, please [contact the Section's Awards Committee](#).

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