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IEEE is committed to advancing diversity in the technical profession, and to promoting an inclusive and equitable culture that welcomes, engages, and rewards *all* who contribute to the field

## Announcements

IEEE Maine Section Executive Committee would like to thank Dr. Betina Tagle for her great service to the Section in these past 6 months. We wish her well in her future endeavors. Since Dr. Tagle was not able to continue in her role as Chair due to a change in her work commitments, Dr. Ashanthi Maxworth, current Maine Section Secretary, agreed to serve as interim Section Chair until our next election in the fall. Please join us in welcoming Dr. Maxworth to this new role.

Could the Section better serve you and your peers? Please share your thoughts with Membership Development Chair Rich Hilliard by e-mail ([r.hilliard@computer.org](mailto:r.hilliard@computer.org)) or via the Section’s [Contact Webpage](#).

IEEE Maine Section and our PES/IAS Joint Chapter are hosting an [event](#) on **June 24**. See page 2 for info.

The deadline for submitting nominations for [IEEE Region 1 \(Northeastern United States\) Awards](#) is **June 30**. See page 5 for info.

Applying for the power and energy undergrad scholarship? Reminder that the application deadline is **June 30**. See page 10 for info.

## Upcoming Events

### Fast Solvers for EM-Based Analysis and Design of ICs and Systems

*Monday, June 21, 6:30 PM to 7:30 PM, via Google Meet; **Free Registration required***

The design of advanced integrated circuits (ICs) and microsystems from zero to terahertz frequencies calls for fast and accurate electromagnetics-based modeling and simulation. Such design imposes unique challenges on EM analysis such as exponentially increased problem size and extremely multi-scaled system spanning from nano- to centi-meter scales. [Prof. Dan Jiao of Purdue University](#) will present recent advances in fast solvers to tackle these challenges. Hosted by the [IEEE New Hampshire MTT/AP Joint Chapter](#). Visit <https://events.vtools.ieee.org/m/274146> for more info.

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## Section Officers

### Executive Committee:

Chair: [Ashanthi Maxworth](#)  
 Vice Chair: Alisha Chaney (she/her)  
 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]

### Arcs and Sparks - Finding Fault on Live Wires

Tuesday, June 22, 6:00 PM to 7:00 PM, via Webex; **Free Registration required**

Aging electrical wiring is an area of critical concern. Wiring is the leading cause of home and building fires, and is responsible for numerous incidents in transportation, consumer product safety, and power and communication system reliability. IEEE Fellow [Cynthia M. Furse](#) will discuss the real-world challenges in electrical systems and the development and use of spread spectrum time domain reflectometry (SSTD) for finding faults on live electrical systems. Hosted by the [IEEE NJ Coast/Princeton/Central Jersey APS/VTS/EMC Joint Chapter](#). Visit <https://events.vtools.ieee.org/m/266793> for more info.

### International Women in Engineering Day

Wednesday, June 23

Celebrating its 8<sup>th</sup> year in 2021. INWED is an international awareness campaign which raises the profile of women in engineering. Sign up for #INWED21 news at <https://www.inwed.org.uk>, or follow on [Twitter](#) or [Instagram](#).



### Women in Computing Panel Discussion

Wednesday, June 23, 10:30 AM to 11:30 AM, via Zoom; **Free Registration required**

In commemoration of "International Women in Engineering Day," [NASA CRE2DO](#), [IEEE Miami WIE](#), [IEEE Miami YP](#), [IEEE Turkey WIE](#), and [CS Turkey Chapter](#) presents a Women in Computing Panel Discussion. Speakers will include [Daniela Radu](#), [Ramalatha Marimuthu](#), [Takako Hashimoto](#), and [Sezer Goren Ugurdag](#). Visit <https://events.vtools.ieee.org/m/275205> for more info.



### Presentation and Virtual Tour of ReVision Energy

Thursday, June 24, 12:00 PM to 1:00 PM, via Zoom; **Free Registration required**

[ReVision Energy](#), an employee-owned New England solar company, will provide a video tour of their facility, followed by a live half-hour question-and-answer session with the company's co-founder, [Fortunat Mueller](#) (PE). He leads the operational side of the company, overseeing design, engineering, and installation operations. He also is lead engineer on new product development, including microgrids, battery storage, solar parking canopies, electric vehicle charging, and heat pumps. Hosted by [IEEE Maine Section](#) and [IEEE Maine PES/IAS Joint Chapter](#). Visit <https://events.vtools.ieee.org/m/272011> for more info.



### 2021 RiSE Conference

Monday, June 28 to Tuesday, June 29, Online; **E-mail [risceneter@maine.edu](mailto:risceneter@maine.edu) to register (\$0 to \$60)**

This year's RiSE Center conference is entitled "Integrating Research and Practice: Moving Forward in STEM Teaching and Learning through Research-Practice Partnerships." Talks and workshops will address a variety of themes such as enhancing education through researcher/practitioner collaborations and exploring science questions in local contexts. Visit <https://umaine.edu/risceneter/conferences/> for more info.



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## Upcoming Events [continued from page 2]

### Engineering Education 2.0: Digital Transformation of Teaching in a Post-Pandemic World

Tuesday, June 29, 12:00 PM to 1:00 PM; via ON24; **Free Registration required**

The widespread shift from traditional teaching to remote learning has dominated the minds of academic teachers, degree program directors, accreditation agencies, and university leadership. What does the future hold? What role will disruptive technologies such as AI, Machine Learning, and Big Data play in the digital transformation of teaching in our fields? Prof. Arnold Pears, Head of the Department of Learning at the KTH Royal Institute of Technology, will explore these issues and the impact of the COVID-19 pandemic on Engineering Education. Hosted by IEEE Educational Activities and the IEEE Education Society. Click [here](#) for more info.

### How to Create an Incident Response Exercise

Thursday, July 1, 11:00 AM to 12:00 PM, via Webex; **Free Registration required**

Please join the Maine Technology Users Group (MTUG) and some folks from the Maine Chapter of (ISC)<sup>2</sup> to learn how to build an Incident Response exercise for your organization. This webinar will show you how to: set objectives and goals for the exercise; build an engaging story to draw in participants; and operate the exercise to get maximum value for the time and effort spent. Questions and scenarios from attendees encouraged. Visit <https://mtug.org/mtug-events/2021-07-01-summerwebinar1-how-to-create-an-incident-response-exercise> for more info.



### Data Science Ensemble: Multi-Class Semantic Segmentation of Medical Images using Deep Learning Computational Methods

Thursday, July 1, 4:00 PM to 5:00 PM, **Free** via Zoom; Launch <https://maine.zoom.us/my/usm.datascience> to join

Ahmad P. Tafti, Assistant Professor of Computer Science at USM, will discuss the role that medical image segmentation plays in a variety of healthcare applications, by automatically partitioning anatomical structures into multiple regions of interest so that they can be examined separately. In the last few years, deep learning has advanced as artificial intelligence algorithms have been increasingly used to interpret and discover patterns from medical images, and they have already demonstrated promising results in image segmentation and object detection. Dr. Tafti will offer a tutorial on the computational side of state-of-the-art deep learning-powered image segmentation used on knee x-ray images. Visit <https://usm.maine.edu/college-of-science-technology-health/data-science-ensemble-multi-class-semantic-segmentation-medical> for more info.



### Critical Thinking for Engineers

Thursday, July 8, 2:00 PM to 3:00 PM, Online; **Free Registration required**

We live in times in which we're bombarded with information of all sorts vying for our attention and sometimes intended to move us to action. If we're not careful, we are acting on someone else's best interests--not necessarily your own. And if you are an engineer, or in a technical field, then critical thinking is all the more important to ensuring you're using the right information, data and insights to deliver the most effective and potentially novel, break-through solution you can. In this webinar, we explore the key aspects of critical thinking: analytical skills, data analysis, interpretation, judgment, questioning evidence, and healthy skepticism. This aptitude allows for much richer, better solutions to real-world challenges. Hosted by IEEE USA. Visit <https://events.vtools.ieee.org/m/273098> for more info.



### Professional Development: How to Network Effectively

Friday, July 16, 4:00 PM to 5:00 PM, via Zoom; **Free Registration required**

Ana Laura Gonzalez Rios, Lead Systems Operations Engineer at GE Current, will go over key points and ideas to pursue when networking with others in your area of expertise, and how to do so efficiently and effectively. Co-hosted by several neighboring Canadian IEEE Young Professionals chapters. Visit <https://events.vtools.ieee.org/m/273121> for more info.



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## Upcoming Events [continued from page 3]

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

Tuesday, July 20, 6:00 PM to 7:00 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.

### Accelerating Tech Internships in Maine

Wednesday, July 28, 11:00 AM to 12:00 PM, via Webex; **Free Registration required**

Tech industry internships are a vital way to help new career professionals step into the industry and shape their education to better serve their future employers. What's involved with establishing technology internships and what can it do for your organization, and the quality and stability of your future workforce? Please join us for a dive into internship mechanics and case studies during this Maine Technology Users Group (MTUG) webinar featuring the career and internship experts from Educate Maine and Project. Visit <https://mtug.org/mtug-events/2021-07-28-summerwebinar2-tech-internships-in-maine> for more info.



### Integrated Access and Backhaul for 5G and Beyond

Friday, July 30, 12:00 PM to 1:30 PM, Online; **Free Registration required**

Integrated access and backhaul (IAB) networks, where the operator can utilize part of the radio resources for wireless backhauling, has recently received considerable attention. The purpose of IAB is to replace existing backhaul systems with flexible wireless backhaul using the existing 3GPP bands to provide backhaul and existing cellular services in the same node. This creates more flexibility and reduces the implementation cost. In this talk, Dr. Behrooz Makki of Ericsson Research will review the main backhauling techniques, and present the main motivations/standardization agreements on IAB. Comparisons between IAB and fiber-connected networks will be discussed, including the robustness of IAB networks to environmental effects. Co-hosted by IEEE Montréal Section and several Young Professionals chapters. Visit <https://events.vtools.ieee.org/m/272959> for more info.



### IEEE Electric Ship Technologies Symposium

Tuesday, August 3 to Friday, August 6, Online; see [registration page](#) for pricing info (Early-Bird ends July 2)

The symposium will focus on commercial and military emerging electric ship technologies. Sponsored by IEEE PES and IEEE Power Electronics Society. Visit <https://ests21.mit.edu> for more info.



### Data Science Ensemble: Functional Singular Spectrum Analysis

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

Dr. Mehdi Maadooliat of the Department of Mathematical and Statistical Sciences at Marquette University will introduce a new extension of the Singular Spectrum Analysis (SSA) called functional SSA to analyze functional time series. The new methodology has been developed by integrating ideas from functional data analysis and univariate SSA. The talk will explore the advantages of the functional SSA in terms of simulation results and two real data applications: remote sensing data and a call center dataset. Visit <https://usm.maine.edu/college-of-science-technology-health/data-science-ensemble-functional-singular-spectrum-analysis-mehdi> for more info.



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

## Chair's Corner



*By Dr. Ashanthi Maxworth*

I am sure all of you are enjoying the beautiful Maine summer! This is the time to get outdoorsy as much as you can and enjoy the nature.

At this point, I want to echo what Dr. Betina Tagle mentioned in [our previous newsletter](#) about the IEEE awards season! This is our time to recognize those outstanding volunteers who contributed their time and effort for the benefit of their communities. Therefore, make sure to submit your nominations.

You may find more information at the Region 1 awards webpage > <https://r1.ieee.org/r1-awards/> (also, *see* below). On the same topic, IEEE Maine Section's goal is to be the Outstanding Small Section, and we value the opinion of our members. Please don't hesitate to reach out anytime through our Section's contact page at <https://r1.ieee.org/maine/contact/>.

Until next time, enjoy the summer and join our activities!

– Ashanthi

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## 2021 IEEE Region 1 Awards

The [IEEE Region 1 Awards](#) recognize significant accomplishments and contributions of IEEE volunteers here in the Northeastern U.S. Submissions to Region 1 are due no later than **Wednesday, June 30, 2021** at 11:59 PM EDT. The [Professional Achievement Award](#) categories are:

- **Technological Innovation (Academic):** For distinguished development, advancement and pursuit of the IEEE's technical objectives
- **Technological Innovation (Industry or Government):** For significant patents, discovery of new devices, development of applications or exemplary contributions to industry or government
- **Managerial Excellence in an Engineering Organization:** For managerial excellence in organization, leadership, design and development
- **Outstanding Teaching in an IEEE Area of Interest (University or College):** For outstanding contributions to education in an area of interest to the IEEE
- **Outstanding Teaching in an IEEE Area of Interest (Pre-University or College):** For improving communications between the IEEE and a student body; for support and service to a student body; for service and leadership to the student community
- **Enhancement of the relationship between IEEE and Industry:** For significant contributions in an enhanced IEEE-Industry relationship
- **Enhancement of the IEEE or Engineering Profession's Image with the Public:** For significant contributions in developing an IEEE-Public relationship
- **Outstanding Support for the Mission of the IEEE, MGA, Region 1 and/or Section:** For outstanding service to the IEEE at the Chapter, Section, Region, MGA, and/or National level

Region 1 is also accepting nominations for a [Lifetime Service Award](#) for contributions sustained over a long period of time and a [Young Professionals Award](#) for members within 15 years from their first degree.

Please [contact the Section's Awards Committee](#) if you are interested in making a nomination.

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## Executive Committee Session

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

On June 7, the IEEE Maine Section Executive Committee (ExCom) held their monthly session on Zoom.

**Ali Abedi**, who among his other roles is the [Northeastern Area](#)



Chair for IEEE Region 1, announced at the beginning of the meeting that Section Chair **Betina Tagle** is stepping down, and discussed developments that followed. Until a new chair is elected at the next election in the fall, the current Secretary **Ashanthi Maxworth** will act as Interim Chair.

Moving on, **Dick Wilkins** moved by motion to approve the minutes from the May Executive Committee meeting. This was seconded by **Doug Sprague**. The minutes were approved unanimously. Having just become Interim Chair, Ashanthi did not have specific items to present for the chairperson's report.

Treasurer **Shengen Chen** presented the treasurer's report, informing the Committee of Maine Section's closing balance and interest received. No payments were made in May.

Section Membership Development Chair **Rich Hilliard** said that Section membership grew by one in May: a brand-new member joined, someone moved into the Section, and someone moved out of the Section (for a net gain of 1).

Rich is working to produce a plan for membership development by mid-August, and is looking for input and ideas. He would like to hold a brainstorming session with interested officers later this month, after which specific action items will be selected. Rich also mentioned that IEEE will be holding training workshops for membership chairs and coordinators from the regions and sections.

Following Rich's presentation, Ali asked how many active members there are within the Section, and PES/IAS Chair **Jesse Shank** asked about the number of student members. As of June 16, there are 438 active members, including 23 undergraduate and 15 graduate student members. (*Editor's Note:* Rich provided these member counts after the meeting).

The meeting moved on to discussing community and member outreach through social media. Social Media Chair **Doug Sprague** said that the Social Media Committee has already created a Facebook page, but it has not yet been published. **David Klein** invited everyone to submit Maine engineering-related photographs for the page banner.

The next agenda item was technical activities. PES/IAS Chair **Jesse Shank** said that the Power and Energy Society had organized an event on [Integrating HydroKinetic Power systems into Standalone Microgrids](#) for Thursday, June 10 from noon to 1 pm.

In addition, [the ReVision Energy virtual tour and Q&A](#) will be held on June 24. **Jesse** scheduled two reminders to be sent out via IEEE's vTools system: a first on June 10, and a second on June 23 (the day before the event). Jesse said they will be creating a post for this event on [PES/IAS LinkedIn page](#).

Jesse also mentioned that a presentation by [Aqua Ventus](#) on offshore wind and renewable power is being planned.

Ali asked about the reporting from the technical chapters other than PES. Since there was no reporting from chapters other than PES, he requested that the Interim Chair send emails to the chairpersons of the other chapters and ask for a status update.

Ali also mentioned that there will be a governance meeting organized by [IEEE Region 1](#) in late August and a planning meeting on Wednesday, June 9.

## Spotlight on Maine's Next Generation of Engineers



By *Stefany Burrell*  
STEM Education Specialist,  
Maine Mathematics and Science  
Alliance (MMSA)

Each year, the next generation of scientists and engineers from around Maine compete at the [Maine State Science Fair \(MSSF\)](#). Following up on last month's article, I would like to introduce you to three more local teens and their research.



Emerson Harris

### Customized Pointe Shoe Padding

Ballet is a physically demanding art, and it's no surprise that ballerinas suffer from foot pain and even deformities. The two major issues causing deformities are misaligned toes and unequal distribution of pressure across the toes. [Pointe shoes](#) have toe pads that are made of fabric, paper, and cardboard that is packed tightly to support the dancer's weight. Some dancers have elaborate routines to break in pointe shoes, but this still does not fully solve the problem.

Emerson Harris, a junior at Boothbay Region High School, is a dancer and wanted to reduce foot pain

and prevent long-term damage. She used clay, dental molding, and silicone to create customized pads for her pointe shoes and for those of another dancer. Creating the mold while the foot is in proper alignment prevents toes from bending or crossing. She tested the pressure distribution with carbon paper and an electronic pressure sensor. After several trials, she was able to create pads that distributed the pressure more evenly across the toes rather than focusing the pressure on the big toe. Because her project was so hands-on, it ended up taking over her living room for about a month.



Standard Pad



Custom Pad

"I always knew that I wanted to do an engineering project because my favorite part of any science project is when I get to create something," writes Emerson. "The biggest takeaway for me in this project was that I CAN combine STEM with dance. I always thought there was some sort of unbreakable dichotomy between those two worlds. I assumed I would have to choose one or the other. But through this project, I showed myself that I can intertwine the two. Now, I am constantly searching for and finding ways that I can connect engineering with performance."

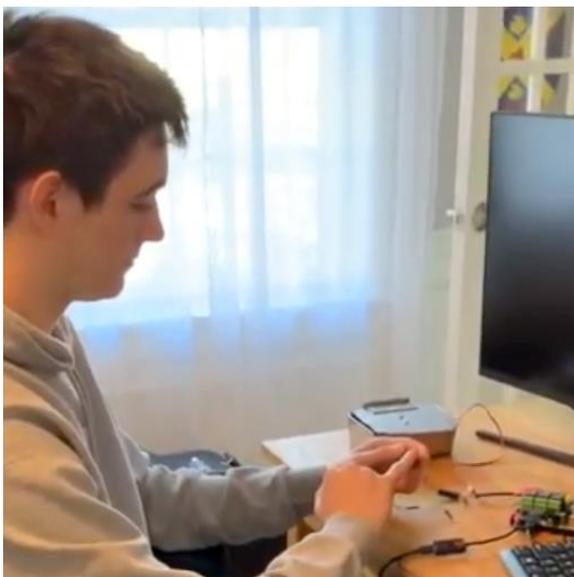
Emerson loves any chance to talk about her project, so she naturally enjoyed the Maine State Science Fair. Since judges could not see the pads in person at the virtual event, she included as many pictures as possible in her presentation.

Her hard work paid off: she was awarded first place in the Biomedical & Health Sciences category and received the Communicating Your Science Video Award for her outstanding 2-minute video. What's

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more, she was offered scholarships to College of the Atlantic, University of Maine, University of New England, and University of Southern Maine.

In the future, Emerson would love to test her design on a larger group of dancers and compare those results with the results from this smaller-scale experiment. Using 3D scans and 3D printer would make her idea marketable on a larger scale.



Brady McQuaid

### Designing a Biometric Pill Box

Misuse of prescription medications, whether accidentally or on purpose, is a serious problem. In some cases, people miss doses or forget that they already took them and take more. In other cases, people can deliberately take more than they need. Additionally, caretakers have been reported to steal medication from the person for whom they were prescribed.

Brady McQuaid, a sophomore at Brunswick High School, built a pill box that could be part of the solution to this problem. He connected a [Raspberry Pi](#) to a biometric scanner. The scanner reads fingerprints and the Raspberry Pi records information, including date and time. If the print matches an authorized user, a solenoid lock retracts and the pill box opens. The Raspberry Pi collects

information that could help doctors or caretakers know if the patient is taking their medication as prescribed. You can watch Brady demonstrating how his pill box works [here](#).

“This pill box can be used in many situations to help cut down on deaths from either not taking pills or taking too much, as doctors can be notified when this happens,” says Brady. “I enjoyed this project because I got to learn a lot about biometrics and coding that will be useful later in life. It was a struggle to get the code to work at first because it kept breaking but I eventually got it to work.”

Brady was awarded second place in the Engineering Category at Maine State Science Fair. He plans to improve upon his design for next year’s fair.



Miranda LeClair

### Maintaining Soil Moisture with Wood Pellets

In agriculture, maintaining proper soil moisture is key to producing abundant crop yields. During four out of the past five growing seasons, Maine has experienced moderate to severe drought conditions, which can damage crops and pastures.

Miranda LeClair, a senior at Old Town High School, got the idea of adding wood pellets to soil after

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learning that farmers add organic matter to soil to increase its water-holding capacity. Wood is an abundant resource in Maine, and in addition to running trials with varying amounts of soil and pellets, she ran an analysis of the cost of using pellets as a soil amendment. She first conducted tests by comparing the mass of watered samples over time. To confirm that pellets do indeed benefit moisture retention, she tested her soil and pellet mixtures by growing cilantro. The growth of the plants further confirmed her hypothesis that pellets can be a beneficial addition to soil.



“I had a lot of fun doing my project,” Miranda reflected. “I was basically just playing with dirt the whole time. A lot of my project was taking the mass of soil and pellets and figuring out what reasonable

amounts to use would be and then figuring out how much water to use. There was a good balance between researching and experimenting. I spent months working on the project so getting to present all the work that I did felt really good. It was a really good learning experience for sure. I got to learn about the process of problem solving and how to go about it.”

Miranda was awarded first place in the Environmental Sciences - Water category at Maine State Science Fair. She was also invited to compete for the U.S. Stockholm Junior Water Prize and received the award from the Association for Women Geoscientists. Miranda will enroll at University of Connecticut this fall to study Sports Management.

IEEE Maine Section was one of the sponsors of the 2021 Maine State Science Fair. The presenting sponsors and coordinators of the event are the [Reach project at Maine Mathematics & Science Alliance](#) and [The Jackson Laboratory](#).

Connect. Support. Inspire.

IEEE Women in Engineering  
*We*

IEEE



# IEEE Power & Energy Society SCHOLARSHIP PLUS INITIATIVE®

*Preparing the Next Generation of Power & Energy Engineers*

## IEEE Power & Energy Society Scholarship

The PES Scholarship Plus Initiative provides scholarships and real-world experience to undergraduates who are interested in power and energy engineering careers. The aim is to attract highly-qualified engineering students to the field. These students are the very individuals who will one day develop new green technologies, build the smart grid, and change the way we generate and utilize power.

Do you have what it takes to qualify for the PES Scholarship Plus Initiative? If so, you can receive up to three years of financial support (total of US\$7,000) and gain career experience through [internships and co-op work](#). This program offers opportunities to gain experience and build knowledge in power and energy engineering careers, including mentoring and special recognition as a PES Scholar.

**The deadline for completing the online application is Wednesday, June 30, 2021.**

### Eligibility

You can apply for the PES Scholarship as early as your first year in college. You do not need to be an IEEE member to initially apply. You are eligible to receive the scholarship if:

- You are currently enrolled full-time at a university, college, or community college.
- You are considering a career in electric power and energy engineering.
- You are working towards an electrical engineering bachelor's degree (or first professional degree).

- You will be a full-time student in the coming academic year at an ABET-accredited [university or college](#) in the U.S., Puerto Rico, or Canada that offers a 4-year electrical engineering program with undergraduate courses in power engineering. The subjects of typical power engineering courses can be [viewed here](#).
- You will take (or have taken) at least three of the power engineering courses for a total of nine-or-more credits.
- You are a citizen or permanent resident of, and reside in, the U.S., Canada, or Puerto Rico.
- Your current GPA is 3.0 or higher on a 4.0 scale (or equivalent).

### Application Overview

To complete an application, you will need:

- A copy of your unofficial transcript in PDF format, covering at least one year of courses at your current school, as well as any prior college transcripts.
- One letter of reference (although two is better) from an individual who thinks “you would be a worthy recipient of a scholarship for exploring a career in power and energy engineering.” It is preferred that this letter be from a professional acquaintance (NOT from friends and family), such as from professors (science and/or engineering focus), an IEEE Student Branch Adviser, or a person you worked for in an engineering capacity. You will be asked to enter their e-mail addresses on the application form to send them a reference-request e-mail.
- A list of at least three power and engineering course names and course numbers, and when you have taken or plan to take each course.

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- A statement of interests, not more than 500 words, describing your interest in engineering along with your personal interests and career goals, how they relate, and how you got interested in engineering.
- A personal statement, not more than 500 words, describing where you see yourself in 5, 10, or 20 years in the future, and in that regard, explaining why you “deserve” to be selected as a PES scholar.
- A list of your top achievements and/or awards that you have received, with a 50-word minimum and a 500-word maximum. Information on volunteer or employment experience is also helpful.
- A description of any career experience that you have and/or internships you are already committed to for next year (if any), in no more than 500 words.
- If applicable (not required for new applicants), a detailed description of career experience already done or currently in progress in the field of power and energy engineering, in no more than 300 words.
- If applicable (not required for new applicants), a description of opportunities you have taken to learn more about power engineering careers, such as attending conferences and participating in IEEE Chapter events, in no more than 200 words.

Please ask your reference(s) to submit their letter of recommendation prior to the June 30, 2021 application deadline.

### Selection

Selection for first-year PES scholarships is competitive. Your scholarship award application will be ranked based on these factors:

- Academic performance (based on overall GPA).
- The alignment of your technical and personal interests with power and energy engineering.
- Your personal strengths (such as achievements, volunteer activities, work experience, endorsement letter(s), etc.).
- Strength of your academic program.
- Overall assessment of your potential for a successful power and energy engineering career.

### What to Expect

You will be notified whether you have received a scholarship no later than September 30, 2021.

Individuals who are selected as PES Scholars will receive IEEE and PES membership free for one year.

You will have to reapply to receive the scholarships for the second and third year, but as long as you continue to meet the eligibility requirements, including having had a career experience, you will continue to receive the scholarship in those years.

Please check <http://www.ee-scholarship.org> for additional information. Visit [https://www.ee-scholarship.org/images/files/Scholarship\\_pdf/Scholarship\\_checklist\\_calendar.pdf](https://www.ee-scholarship.org/images/files/Scholarship_pdf/Scholarship_checklist_calendar.pdf) for an application checklist with important dates. Visit <https://www.ee-scholarship.org/how-it-works/faq> for answers to frequently asked questions.



### Additional Scholarship Opportunities

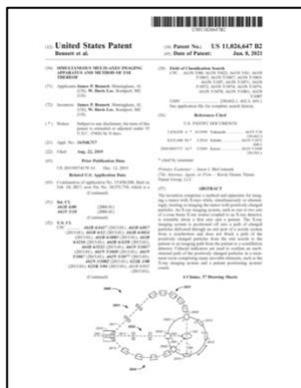
All recipients of the IEEE PES Scholarship Plus Initiative are also eligible for the [John W. Estey Outstanding Scholar Award](#), which is distributed annually to the top PES Scholar in each of the six IEEE U.S. regions and Canada. The Award includes an additional US\$5,000 for school expenses, and up to US\$1,000 in travel honorarium to attend the IEEE PES General Meeting.

Honorably discharged U.S. veterans are also eligible for the [IEEE PES G. Ray Ekenstam Memorial Scholarship](#), which is distributed annually to a selected PES Scholar. The scholarship includes a maximum of US\$5,000 for school expenses, and a travel stipend of up to US\$500 for the recipient to travel to and participate in the IEEE PES General Meeting.

## Member Accolades

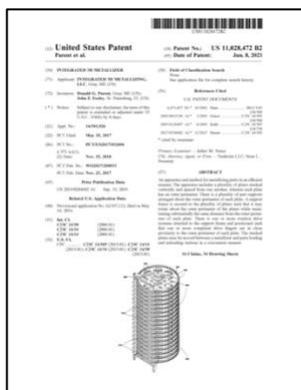
Congratulations to the IEEE Maine Section members who recently received patents or were published:

On June 8, 2021, the U.S. Patent and Trademark Office issued [U.S. Patent 11,026,647 B2](#), entitled “Simultaneous Multi-Axes Imaging Apparatus and Method of Use Thereof.” Maine Section Senior Member **W. Davis Lee** of Rockport is listed as a co-inventor.



**ABSTRACT:** The invention comprises a method and apparatus for imaging a tumor with X-rays while, simultaneously or alternately, treating or imaging the tumor with positively charged particles. An X-ray imaging system, such as one or two sets of a cone beam X-ray source coupled to an X-ray detector, is rotatable about a first axis and a patient. The X-ray imaging system is positioned off axis a path of charged particles delivered through an exit port of a nozzle system from a synchrotron and does not block a path of the positively charged particles from the exit nozzle to the patient or an imaging path from the patient to a scintillation detector. Fiducial indicators are used to confirm an unobstructed path of the positively charged particles in a treatment room comprising many movable elements, such as the X-ray imaging system and a patient positioning system/couch.

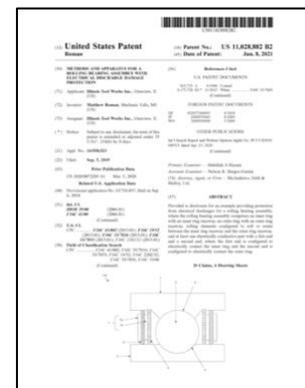
On June 8, 2021, the U.S. Patent and Trademark Office issued [U.S. Patent 11,028,472 B2](#), entitled “Integrated 3D Metallizer.” Maine Section Member **Donald G. Parent** of Gray is listed as a co-inventor.



**ABSTRACT:** An apparatus and method for metallizing parts in an efficient manner. The apparatus includes a plurality of plates stacked vertically and spaced from one another, wherein each plate has an outer perimeter. There is a

plurality of part supports arranged about the outer perimeter of each plate. A support frame is secured to the plurality of plates such that it may rotate about the outer perimeter of the plates while maintaining substantially the same distance from the outer perimeter of each plate. There is one or more rotation drive systems attached to the support frame and positioned such that one or more compliant drive fingers are in close proximity to the outer perimeter of each plate. The stacked plates may be moved between a metallizer and parts loading and unloading stations in a convenient manner.

On June 8, 2021, the U.S. Patent and Trademark Office issued [U.S. Patent 11,028,882 B2](#), entitled “Method and Apparatus for A Rolling Bearing Assembly with Electrical Discharge Damage Protection.” Maine Section Member **Matthew Roman** of Mechanic Falls is listed as inventor.



**ABSTRACT:** Provided is disclosure for an example providing protection from electrical discharges for a rolling bearing assembly, where the rolling bearing assembly comprises an inner ring with an inner ring raceway, an outer ring with an outer ring raceway, rolling elements configured to roll or rotate between the inner ring raceway and the outer ring raceway, and at least one electrically conductive part with a first end and a second end, where the first end is configured to electrically contact the inner ring and the second end is configured to electrically contact the outer ring.

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## IEEE Technical Communities and Councils

IEEE has a wide variety of [Technical Communities](#) and [Technical Councils](#) that are free and open to both IEEE members and society-affiliated non-members. Their focus varies from general interest to highly-specialized areas of cutting-edge research, often spanning multiple disciplines. Joining a Community or Council is a great way to learn, collaborate, and network.

Many are affiliated with a specific IEEE society, but for IEEE members, membership in the society is not a pre-requisite. Sponsoring societies include the

[Computer Society](#) (A 10-Year Retrospective on the Computer Society's Special Technical Communities was published in the February 2021 issue of "Computer," and can be found [here](#)), the [Engineering in Medicine and Biology Society](#), the [Oceanic Engineering Society](#), the [Power Electronics Society](#), and the [Vehicular Technology Society](#). To see the extensive offerings from these societies, click [here](#) to access the catalog.

Below is a list of inter-disciplinary communities and councils, often affiliated with multiple societies:

### General Technical Communities



#### IEEE Smart Grid Community

A community for practitioners and researchers focused on the inter-disciplinary challenges of modernizing and optimizing the power grid. Visit <https://smartgrid.ieee.org> for info and click [here](#) to join.



#### IEEE Internet of Things Community

A community for practitioners and researchers in the area of the "Internet of Things." Visit <http://iot.ieee.org/> for info and click [here](#) to join.



#### IEEE Life Sciences Community

A community for practitioners and researchers in the area of Life Sciences. Visit <http://lifesciences.ieee.org/> for info and click [here](#) to join.



#### IEEE Sustainable Information and Communications Technology (ICT) Community

A community for practitioners and researchers in the area of Sustainable ICT, including green IT, sustainable computing, and energy-efficient networks. Visit <https://sustainableict.ieee.org> for info and click [here](#) to join.



#### IEEE Global Earth Observing System of Systems Community

An IEEE Committee on Earth Observations (ICEO) community and forum for practitioners and researchers in the area of Earth Observation. Click [here](#) for info and to join (you *must* be a member of IEEE or a sponsoring society).



#### IEEE Software Defined Networks Community

A community for practitioners and researchers in the area of Software Defined Networks. Visit <https://sdn.ieee.org> for info and click [here](#) to join.



#### IEEE Big Data Community

A community for practitioners and researchers in the area of Big Data. Visit <http://bigdata.ieee.org> for info and click [here](#) to join.



#### IEEE Entrepreneurship Exchange Community

A community for technology startups, young professionals, investors, and venture capital organizations interested in the area of entrepreneurship. Visit <http://entrepreneurship.ieee.org/> for info and click [here](#) to join.



### IEEE Environmental Engineering Community

A community for practitioners and researchers in the area of Environmental Engineering, with a focus on monitoring and controlling natural and artificial physical environments to ensure livability and a sustainable future. Visit <https://environmental.ieee.org/> for info and click [here](#) to join.



### IEEE TechEthics Community

A community for practitioners and researchers in the area of Technology Ethics. Visit <http://techethics.ieee.org> for info and click [here](#) to join.



### IEEE Micro Electro Mechanical Systems (MEMS) Technical Community

A community for practitioners and researchers in the area of MEMS. Stay abreast of the latest in MEMS ideas, designs, and manufacturing methodologies. Click [here](#) for info and to join.



### IEEE Quantum Community

A community that will serve as IEEE's leader for all projects and activities on quantum technologies. Visit <https://quantum.ieee.org> for info and click [here](#) to join.

## Technical Councils



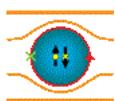
### IEEE Council on RFID

Theory and practice of matters relating to RFID (radio frequency identification) and RFID-related systems. Visit <http://www.ieee-rfid.org> for info and click [here](#) to join.



### IEEE Sensors Council

Further the theory, design, fabrication, manufacturing and application of devices for sensing and transducing physical, chemical, and biological phenomena. Visit <http://www.ieee-sensors.org> for info and click [here](#) to join.



### IEEE Council on Superconductivity

Promotes the science and technology of superconductors and their applications, including the development and enhancement of the associated materials. Visit <http://ieeecsc.org/> for info and click [here](#) to join.



### IEEE Systems Council

Integrates IEEE activities regarding aspects of multiple disciplines and specialty areas associated with the engineering of systems. Visit <http://www.ieeesystemsouncil.org/> for info and click [here](#) to join.



### IEEE Biometrics Council

Advances, promotes, and coordinates work in the field of biometric technology and applications. Visit <http://www.ieee-biometrics.org/> for info and click [here](#) to join.



### IEEE Council on Electronic Design Automation

Fosters design and automation of electronic and embedded systems at all levels. Visit <http://ieee-ceda.org/> for info and click [here](#) to join.



### IEEE Nanotechnology Council

Supports the advancement and coordination of work in the field of Nanotechnology. Visit <https://ieeenano.org/> for info and click [here](#) to join.

## Regional Calls for Papers

### 2021 IEEE High Performance Extreme Computing Virtual Conference

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](#).

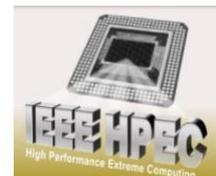
*Submission Deadline: Friday, July 9, 2021*

*Notification of Acceptance: Friday, August 13, 2021*

*Camera Ready Deadline: Tuesday, August 31, 2021*

*Conference: Tuesday, September 21 to Thursday, September 23, 2021, Online*

Visit <http://ieee-hpec.org/cfp.htm> for more info.



### 2021 IEEE 5G World Forum

The 5G World Forum aims to bring experts from industry, academia, and research to exchange their vision as well as their achieved advances towards future networks of 5G beyond and encourage innovative cross-domain studies, research, early deployment and large-scale pilot showcases that address the challenges of future networks. Hosted by [IEEE Montréal Section](#), [IEEE ComSoc](#), [IEEE Computer Society](#), and [IEEE Future Networks](#).

*Technical paper submission: Thursday, July 15, 2021*

*Acceptance Notification: Sunday, August 15, 2021*

*Camera-ready submission: Sunday, September 5, 2021*

*Conference: Wednesday, October 13 to Friday, October 15, Virtual with optional in-person in Montréal, QC*

Visit <https://ieee-wf-5g.org> for more info.

**Search IEEE's Call for Papers Database** of over 1,800 conferences for opportunities to submit abstracts and papers in your field of interest by visiting <https://publication-recommender.ieee.org/home>. Provides key data at a glance, including conference titles, locations, submission deadlines, and conference dates.

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## Call for Articles and Events

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.

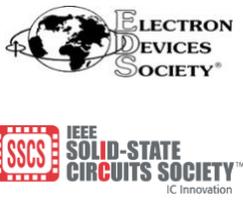
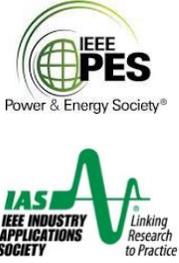
**Patents and Publications:** Please let us know if you are presenting a paper at a conference, have recently been published in a peer-reviewed journal, or have recently received a U.S. Patent.

**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 provide a link to the source so that we may provide attribution.

**All submissions are subject to editorial review. Please refrain from submitting content that is intended to promote a commercial product or service.**

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

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## Neighboring Sections:

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Boston	Green Mountain	Montréal	Québec	St. Maurice