# IEEE Region 2

## INSIDE THIS ISSUE

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- *A New Focus on Revitalization Post COVID-19*
- *Hot Topics of the Month IEEE-USA, IEEE, and Region 2*

Mr. Barry Tilton

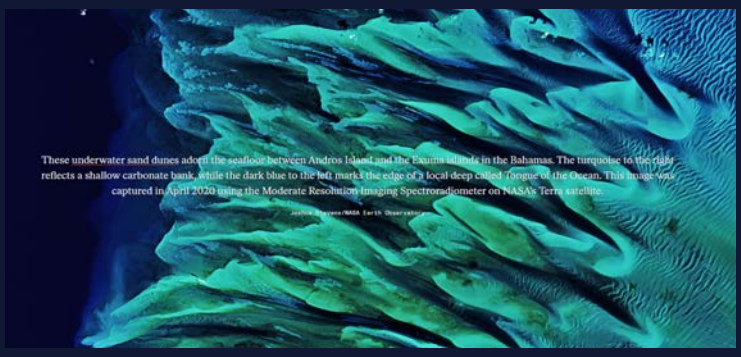
# Looking Forward to the Lunar Gateway, A Step Closer to MARs

This month we examine the not too distant future of autonomous space stations, robot caretakers, and the supporting role they play in exploring deep space. This **IEEE Spectrum** article from April, 2022 examines autonomy from multiple perspectives, including communications, crewless operations and maintenance, and science experimentation support. This is being designed to be driven from a vehicle system manager or VSM, which monitors, adjusts, maintains, and helps repair any needed issues that arise. Two types of robots have been in test and integration, Robonaut2 (humanoid like) and its free-flying side-kick Astrobee, with a finding, that the pairing, best meets the complex needs of the program overall.

# Bounty Hunting Satellites

Our next **IEEE Spectrum article** examines the "space-jam" blocking great orbital pathways and the novel ways "bounty hunter" satellites are bring trained to catch, potentially repair, and release these "out of control" space satellites and potentially give them new life.

**NASA Astrobees** are being used to emulate the rogue satellite space debris as well as act as the "Catching units" which can eventually capture the run-away technology. Experts expect this to not only be a lucrative future business given the current rate of satellite deployment and level of current space debris, but that it will also work to extend the capability lifecycle of equipment used for high-speed internet, GPS, climate and crop monitoring, and other applications.




# Satellite Imagery for Everyone

This **IEEE Spectrum** article examines the evolution of satellite imagery over time, ranging from geosynchronous equatorial orbit (GEO) satellites to low Earth orbit (LEO) satellites. The major differences are the orbit location, range, image resolution, and primary uses.

**ORBIT LOCATION**

- 36,00 kilometers above the equator (GEO)
- 450 kilometers (LEO) in near polar orbits

**RANGE**

- Bearing and elevation to the earth remains constant (GEO)
- Sun synchronous orbit that moves from pole to pole (LEO)

**IMAGE RESOULTION**

- Dependent upon the technology - from course to higher resolutions (GEO)
- Extremely fine-grained resolution (25 cm) (LEO)

**PRIMARY USES**

- Communication relays, observation of changing weather patterns (GEO)
- Military, government, commercial, agriculture, wild-fire monitoring, earthquakes, etc. (LEO)

These two satellite types provide imagery for many additional uses, including monitoring other types of disaster and pipe-lines, insurance claims, financial-investment data, identifying undisclosed waste sites, illegal fishing activities, human trafficking, COVID-19 deaths, and internment camps, etc.

For those wanting free access to the imagery, please see the Copernicus Open Access Hub and EarthExplorer.

*Newsletter Editor: Dr. Rhonda Farrell, ieeer2rvc@gmail.com, www.ieee.org/r2*

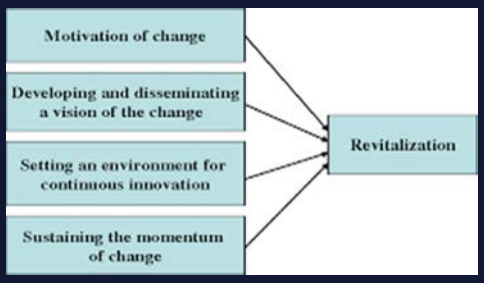
# IEEE Region 2 Revitalization Road Show

As we navigate through the POST COVID-19 re-opening of our organizational units across our Region, our focus will be on continuous innovation and ensuring each of our Sections within our four (4) Areas are able to get back up and running and serving the membership using our new hybrid models.

We kicked off our **IEEE Region 2 Revitalization Road Show** with the Central Area on 13 April 2022 and will continue with the next three Areas per the schedule below.

- **WEST**: 20 April 2022, vTools event link
- **EAST**: 11 May 2022. vTools event link
- **SOUTH**: 25 May 2022, vTools event link

Still want to offer innovation and improvement thoughts? Participate in our IdeaBoardz portal today.




# Continuous Innovation

In addition to our Area Road Show sessions, each month the Region hosts a **Mini-Region 2 Leader Sync**. We will have a guest speaker, a special segment highlighting Section and other OU successes, and a short "What is on your mind" round table.

For our 04 May 2022 event, we welcome **Dr. Kalyan Sen** as our first guest speaker whom will be discussing **Driving Value through the use of the Distinguished Lecturer Program**. Register for our event here.

Additional events (all in vTools) will be held on 01 June 2022, 13 July 2022,10 August 2022, 07 Sept 2022, 05 Oct 2022, 02 Nov 2022, 07 Dec 2022.

We welcome your topic suggestions, speaker recommendations, and success information at: ieeer2rvc@gmail.com

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# IEEE - USA Special Recognition

## IEEE-USA Congratulates 2022 DiscoverE Future City Competition Winners

All 41 teams of middle schoolers at this year's **Future City finals** did an outstanding job this year. IEEE-USA congratulates all those who participated and those who won awards, including the team from **Howard Bishop Middle School** in Tampa, FL, who won the IEEE-USA Most Advanced Smart Grid special award. The award was presented virtually by **2022 IEEE-USA President Deb Cooper.**

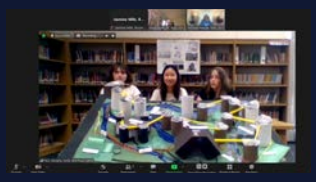
We also recognize and congratulate **Warwick Middle School** in Pennsylvania (Central) for winning the **2022 Future City Competition** with their waste-free city Buenos Aires!

# Additional Rounds of future City Judging

We wanted to ensure we recognized the IEEE-USA Volunteers whom participated in the Judging rounds and the teams whom participated. Thanks to **Mr. Michael Pearse** for his contributions.

**Future City** is an annual event organized by our partners at Discover Engineering. It engages more than 45,000 middle school students in the United States and abroad each year. Students learn more about STEM, designing model cities of the future with particular attention paid to that year's theme. The best teams at the regional level are invited to come to Washington, DC to compete in the finals. This year will be the second finals in a row to be held virtually due to the ongoing pandemic.

Congratulations to the following teams whom made it very far: Aloevera, City of Atlantis, El Cusco Perdido, Greendale City, Greenland City, Nulla Vastum, Sharks, Triton, and Wiltshire.



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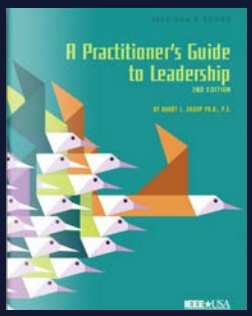
# IEEE - USA Special Resources

## CHOOSE RADICAL ACCEPTANCE IN THE WORKPLACE

What is radical acceptance, and how can we use it in the workplace to identify and address problems in the workplace? Author **Jacquelyn Adams** explains how the time we set aside for introspection can give us greater freedom to choose how we respond to life's curveballs and emerge stronger from them.

## A PRACTITIONER'S GUIDE TO LEADERSHIP – 2ND EDITION

Drawing on his broad range of engineering and military experience, as well as his leadership role at IEEE, Barry L. Shoop Ph.D., has authored an updated, 2nd edition of A Practitioner's Guide to Leadership. The new edition includes many of the core ideas of his original work; however, Shoop adds insights gained since the first edition (published in 2008) -- including those drawn from his time as IEEE President and CEO. Shoop believes that anyone can become an effective leader through "self-study, education, training, experience and reflection." Free download for all IEEE members!




# DiscoverE Chats With Change Makers

In the season finale of **DiscoverE's engineering talk series** for students, host Tiffany chats with Software Quality Engineer and IEEE member **Michael Pearse**. Join us live 28 April at 2:30pm ET to hear his stories and ask questions!

# IEEE Women in Engineering Forum USA 2022

3–5 November 2022

Join Us for **IEEE Women in Engineering Forum USA 2022** in Providence, Rhode Island on 3-5 November, 2022 for our first post COVID-19 in person Forum.

We are pleased to open up the following opportunities:

- Call for Speaker participation
- Keynotes for our main offerings
- Patron & Sponsor opportunities (Patron Guide)
- Volunteer for the event
- Participate in our Career Fair

Have questions, contact us here!

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# IEEE - USA Events

## Free Webinar: Intellectual Property 101

The first in a new **IEEE-USA webinar series** in partnership with the **USPTO** about copyright, trademarks and patent rights, join **Elizabeth Dougherty** as she offers a brief dive into the basics of intellectual property and how you can protect your innovations as you transition from idea to product. LIVE on 20 April 2-3 pm ET. Register today.

## IEEE CONFERENCE ON TECHNOLOGIES FOR SUSTAINABILITY (SUSTECH) 21 APRIL - 23 APRIL 2022

The **9th IEEE Conference on Technologies for Sustainability (SusTech 2022)** is designed to explore development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Register today.

## ORGANIZATIONAL FIT AND RETENTION – HOW TO GET THE RIGHT PEOPLE AND GET THEM TO STAY!

Organizational fit has come into focus. This area has been studied for years in Industrial Psychology circles but it is becoming clear that the topic is not just for the classroom – "Person-Org Fit" (POF) really matters in the real world. And when we talk about POF, we quickly get to values, because values of both individuals and organizations determine POF. This talk will discuss how individual values meet opportunities, how one considers POF consciously and unconsciously, and how POF affects work satisfaction and retention. Register today.

## IEEE-USA Washington Update

In this bi-weekly webinar, **IEEE-USA Government Relations Director Russ Harrison** discusses what Congress is doing for, and to the profession. No registration required.

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# USPTO Webinar Series: Copyright, IP, Trademark, and Patents (IEEE-USA)

IEEE-USA IS PARTNERING WITH THE U.S. PATENT AND TRADEMARK OFFICE (USPTO) TO OFFER A SERIES OF FREE, MONTHLY WEBINARS ON INTELLECTUAL PROPERTY BASICS. THE SERIES WILL FEATURE SPEAKERS FROM USPTO, WHO WILL COVER INTELLECTUAL PROPERTY (IP) BASICS AND POTENTIAL WAYS TO PROTECT YOUR INNOVATIONS AS YOU TRANSITION FROM IDEA TO PRODUCT.

**INTELLECTUAL PROPERTY 101**

WEDNESDAY, APRIL 20, 2022, 2 PM ET
PRESENTER: ELIZABETH DOUGHERTY
FULL DETAILS/REGISTRATION: HTTPS://EVENTS.VTOOLS.IEEE.ORG/M/309617

**USPTO RESOURCES**

WEDNESDAY, MAY 18, 2022, 2 PM ET
PRESENTER: ROBIN HYLTON
FULL DETAILS/REGISTRATION: HTTPS://EVENTS.VTOOLS.IEEE.ORG/M/309619

**PATENT BASICS**

WEDNESDAY, JUNE 15, 2022, 2 PM ET
PRESENTER: BOBBY RUSHING, JR.
FULL DETAILS/REGISTRATION: HTTPS://EVENTS.VTOOLS.IEEE.ORG/M/309625

**TRADEMARK BASICS**

WEDNESDAY, JULY 20, 2022, 2 PM ET
PRESENTER: TBD (USPTO)
FULL DETAILS/REGISTRATION: HTTPS://EVENTS.VTOOLS.IEEE.ORG/M/310107

**PATENT SEARCHING**

WEDNESDAY, AUGUST 17, 2022, 2 PM ET
PRESENTER: TOMEKA OUBICHON
FULL DETAILS/REGISTRATION: HTTPS://EVENTS.VTOOLS.IEEE.ORG/M/310109

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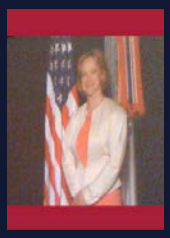
# Leader Spotlight

Our own IEEE Region 2 Director Barry Tilton joined MGA Board Chair / MGA VP, David Koehler for Region 8's Annual meeting, led by Region 8 Director, Mr. Antonio Luque. This marks the first known occasion of Region 2 leadership engaging in international Region meetings.



# Member Spotlight

## Dr. Nancy Landreville

Dr. Nancy M Landreville is an engineer currently engaged in nuclear physics to develop, design, and deploy APIs that enhance various handheld devices for asset remediation and threat management. As a ten-year member of IEEE as of 2022; interests in supporting various facets of structural mechanics have become an important goal in evaluating innovations that include the use of blockchain algorithms for network security monitoring to protect cryptocurrency as data-in-transit and recently mentored professional students including bank attendees with MIT. She is an innovator and has served as a computer scientist, engineer, developer, and contributor of guidance with NIST and ISOs with IEEE since 2010

Her expertise includes leadership, security management, reference architecture, risk management, vulnerability assessments, security plan development, continuous monitoring evaluations, database design, plus executive management solutions for enterprise implementation as a former CEO/CISO. As a former government employee executive, Dr. Landreville supervised audits of state systems as the federal government officer managing the Region which consisted of five states and their associated systems. She also served as a Management and Program Analyst for the Office of General Counsel and the Office of Inspector General for the Dept. of Veterans Affairs. She is an author, contributor, reviewer, working group member, and former guest speaker for NIST and a working group member for INSA and IEEE in the creation of industry standards that were adopted by federal agencies, military organizations, and state systems. You can read her full bio here.

NIST IR 8006 **NIST Cloud Computing Forensic Science Challenges**. In evaluating the security of networks, findings are critical in determining the cause and effect of an incident. One of my research goals is to complete the capabilities of software to strengthen the supply chain. Ethereum blockchain has the ability to secure networks and protect government and military assets. There is more potential in using this innovation coupled with smart contract authentication to acquire maximum security. I have prepared several papers and courses for eForensics and taught Digital Forensics for the University of Maryland several years ago. The NIST document is a result of our working groups volunteering to establish guidance in determining the methodology and solutions best for identifying and resolving vulnerabilities and threats. The initiation of blockchain security is currently in progress to align with automated security controls and in assigning controls that will provide maximum security within the software and to protect this software through a viable supply chain. I have been a member of the Intelligence and National Security Association (INSA) as a Cybersecurity Council and Technology Council member. Our efforts in increasing communications among agencies and supportive organizations has created a means of advancing security with tools and innovations.

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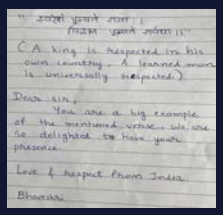
# Member Spotlight Dr. Kaylan Sen

## Fulbright Scholarship Awarded to IEEE Pittsburgh Section Member

Dr. Kaylan Sen has received a Fulbright Specialist Program Award. Dr. Sen is one of over 400 U.S. Citizens who share expertise with host institutions abroad through this program each year. You can read more about this phenomenal achievement here in the Pittsburgh Section bulletin (January 2022 edition).

This is Dr. Sen's second Fulbright assignment. His first assignment was 5 years ago after Mey and I published our first book, titled "Introduction to FACTS Controllers: Theory, Modeling, and Applications," IEEE Press and Wiley, 2009.

On his most current assignment There were 140 students and a dozen faculty members, attending my classes for 4 hours per day for 2 weeks. The best part was a hand-written note from a student. I had a grand welcome banner at the University entrance. He also spoke at 2 different local universities and at a national seminar on April 2.



**Dr. Sen** will start his PES Distinguished Lecturer (DL) activity again in-person on May 22, traveling to 3 universities in Dublin, Birmingham and London. You can find more information on SMART Power Flow Controllers – A Necessity for Future Power Grid here. As he moves about the world and sparks inspiration, intellect, and innovation, he reminds us:

"*Each one of us is a tiny speck, passing through the universe with a great potential to make a difference*!".

Please feel free to reach out to him at sentransformer@yahoo.com for additional information on this **Around the World** contributions or for PES DL activities.

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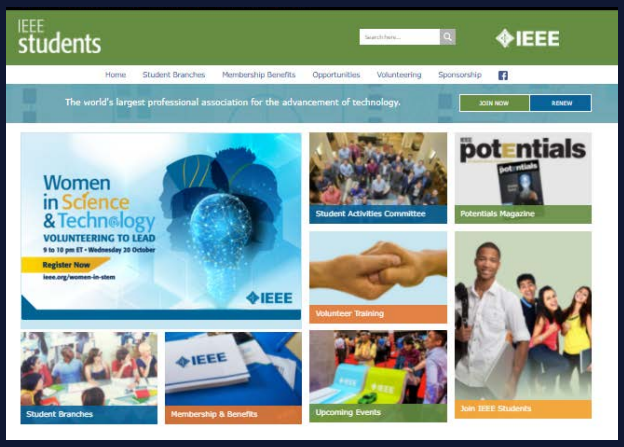
# IEEE Students

## Take the Next Step Together

Accelerate your growth by associating with like-minded people and take advantage of all benefits the IEEE Student Membership offers.

For non-students, you can continue to help build out IEEE's organizational pipeline by recruiting new student and faculty sponsors for **Student Branches** and affinity groups, , volunteering for the SAC committee, being an Ambassador, or becoming a program **Sponsor**,




### Opportunities Abound

- Student Branch Affiliated **Awards** Open Now
- Become a **Virtual Speaker**
- Host a **SPAx** Event
- Participate in an IEEE Contest
- Find a **Scholarship** or Funding
- Participate in **Humanitarian** Activities
- Earn a **Badge**

## Submit Your IEEE EAB Awards Today!

IEEE Educational Activities Board (EAB) Awards recognize and honor major contributions to engineering and technical education. The nomination deadline is Monday, 2 May 2022. Nominate someone today!

### TryEngineering 2022

*An exciting two-week, on-campus engineering summer program for high school students held at premier universities across the United States Info here.*

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# Central Area

The Central Area covers the following IEEE R2 Sections:

- Central Pennsylvania
- Erie
- Johnstown
- Pittsburgh
- West Virginia
- Susquehanna

Chair: James A. Beck

## NLBSE 2022, May 08 2022

The objectives of this workshop are to bring together researchers and industrial practitioners both from NLP and the software engineering community to collaborate, to share experience, to provide directions for future research, to encourage the use of NLP techniques and tools for addressing software engineering-specific challenges. Full Conference Information here. Printable Flyer here

## Fairware'22, May 09 2022

The International Workshop on Equitable Data & Technology brings together academic researchers, industry researchers, and practitioners interested in exploring ways to build fairer, more equitable, data-driven software. Full Conference Information here

## MET 22, May 09 2022

MET: The International Workshop on Metamorphic Testing will bring together researchers and practitioners in academia and industry to discuss research results, experiences, and insights into MT. Conference Information here.

## SBST 22, May 09 2022

Search-Based Software Testing (SBST) is the application of optimizing search techniques (for example, Genetic Algorithms) to solve problems in software testing. Conference Information here.

## RoSE 22, May 09 2022

4th International Workshop on Robotics Software Engineering (RoSE'22)

Conference Information here.

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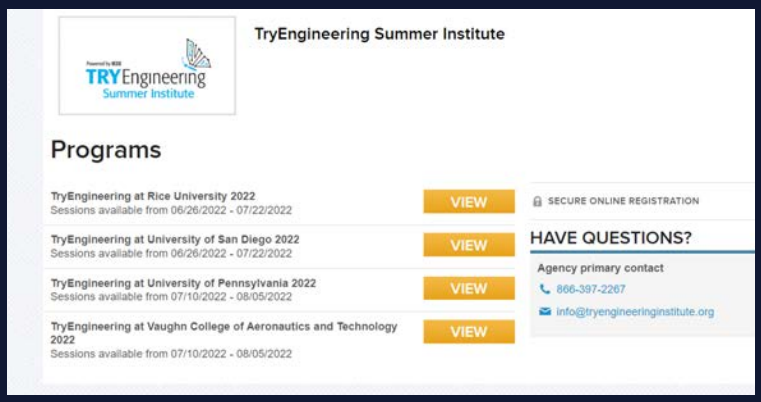
# East Area

## DREXEl IEEE DragonHacks 2022

**Drexel IEEE** is pleased to share that we will be holding **DragonHacks**, our annual 24-hour **hackathon**, April 30th-May 1st, 2022!

## TryEngineering at PENN 2022




### Program Dates

July 10 – 22, 2022, July 24 – August 5, 2022

More Information here

The East Area covers the following IEEE R2 Sections

- Philadelphia
- Southern New Jersey
- Lehigh Valley
- Delaware Bay

Chair : Joseph Burns

## Lehigh Valley Events

### 2022 MORTON STUDENT PAPER CONTEST

The Walter B. Morton student paper contest was established in memory of the past Chief Electrical Engineer of the Pennsylvania Power and Light Company. Registration and ADDITIONAL Information HERE

### OVERHEAD POWER LINES CONDUCTOR SAG & TENSION, THE FUNDAMENTALS

This presentation is an introduction to the field of conductor Sag & Tension. It will reveal the basic concepts involved in the behavior of overhead conductors that are strung up under tension between structures and operated under a range of electrical loading conditions. Also described are the influences on conductor behavior by external forces such as ice accumulation, hurricane winds, solar heating, and varying ambient air temperatures. Registration here.

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# South Area

The South Area covers the following IEEE R2 Sections

- Baltimore
- Northern Virginia
- Washington D.C.

Area Chair: Don Herres

## DECARBONIZATION AND VIRTUAL POWER PLANTS

Join us for the **IEEE PES Baltimore Virtual Technical Presentation** on May 3, 2022 from 12 PM to 1 PM Eastern Time.

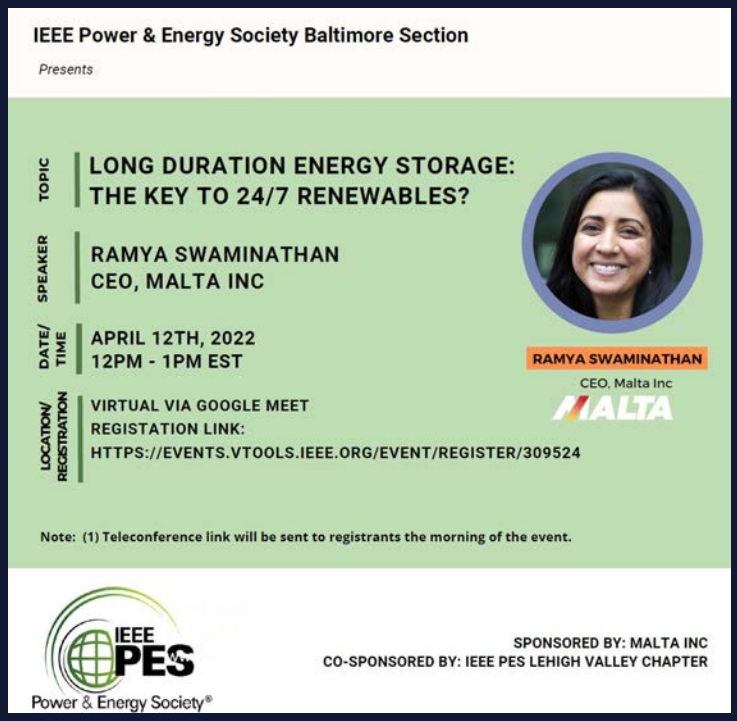
In order to decarbonize, states must both increase clean energy generation and work to fully electrify end-uses as quickly as possible. At the same time, adding space heating, EV, and other loads to an increasingly renewables-centered grid runs the risk of making current load-shape challenges worse.

In this webinar, **Recurve CEO Matt Golden** explains how FLEXmarket Virtual Power Plants can help solve this problem by integrating energy efficiency, demand response, and other behind-the-meter demand flexibility to reduce and shift peak loads by paying aggregators for delivered grid value.

Matt will describe how California has recently embraced this model to address its summer reliability emergency by allocating $150 million to FLEXmarket Market Access Programs for 2022-23, and how the same approach can be applied to other jurisdictions.

Register here today.

## CATCH THE REPLAY FOR THIS ONE!

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# West Area

The West Area covers the following IEEE R2 Sections

- Akron
- Cincinnati
- Cleveland
- Columbus
- Dayton
- Lima
- Youngstown

Area Chair: Chang Liu

## The Cleveland Section Presents

**April 21** from 4:pm to 5:30pm

Remote presentation by *Dr. Julie Cohn*, author of The Grid: Biography of an American Technology on, **When the Grid was "The Grid"**. Registration and details here.

**April 29 from 5:30pm to 8pm**

Cleveland IEEE will be hosting *Russ Harrison* for his work in Washington DC on US technical policy and other items of national scope.

There will be a catered dinner, but we are still working out the details. Russ Harrison's last speaking event was well received by IEEE members and their guests, and we look forward to his insights.

Registration and details here.

# Columbus Section First

**IEEE-GSB: Inaugural Spring Banquet & Networking Event**

Organized by Ms. Heli Naik – OSU-GSB Chapter President (*pictured middle*)

Section Chair Ms. Helen Winfrey with Attendees

Reference the Full Write Up here.

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# Columbus is Rocking the IEEE R2 House!

## Ohio Engineers 2022 Legislative Day

Virtual Program - Friday, April 22, 2022

Ohio PEs will learn about the federal infrastructure package and its impacts here in Ohio. To address this theme, we have a tremendous lineup of speakers, including authorities from U.S. Senator Rob Portman's office, American Society of Civil Engineers, Ohio Department of Transportation, Burgess & Niple, DriveOhio, American Electric Power / IEEE, and BroadbandOhio. In addition, we will hear from the State Board of Registration's enforcement supervisor who will provide half an hour of professional ethics/rules education, and learn about legislation that impacts your PE license via a half-hour segment by Governmental Policy Group.

Register Here by April 19 or call 614-223-1144

Topics and Speakers include the following: Full line-up here

- **How the Bipartisan Infrastructure Investment & Jobs Act Will Benefit Ohio** (Kevin Hoggatt)
- **The Infrastructure Bill: A National View** (Emily Feenstra)
- **The Infrastructure Bill & Ohio Transportation Infrastructure** (David Slatzer, PE)
- **The Infrastructure Bill & the Brent Spence Bridge** (Mark Bernhardt, PE)
- **Smart Mobility & DriveOhio** (Howard Wood, MS)
- **Optimal Planning of Energy Storage Systems to Enhance Electric Distribution System Reliability** (Xuan Wu, PhD, PE, PMP)
- **Broadband in Ohio: Current Projects & Looking Ahead** (Peter Voderberg, JD,)

# SEMICONDUCTOR PACKAGING: THE FUTURE IS NOW

-- emerging applications, on-shoring, US univ programs in semiconductor packaging, curriculum development, workforce ... Register today!

Madhavan Swaminathan of Georgia Tech

Biography:

Madhavan Swaminathan is the John Pippin Chair in Microsystems Packaging & Electromagnetics in the School of Electrical and Computer Engineering (ECE), Professor in ECE with a joint appointment in the School of Materials Science and Engineering (MSE), and Director of the 3D Systems Packaging Research Center (PRC), Georgia Tech (GT) (http://www.prc.gatech.edu). He also serves as the Site Director for the NSF Center for Advanced Electronics through Machine Learning (CAEML: https://publish.illinois.edu/advancedelectronics/) and Theme Leader for Heterogeneous Integration, at the SRC JUMP ASCENT Center (https://ascent.nd.edu/). Prior to joining GT, he was with IBM working on packaging for supercomputers.
He is the author of 550+ refereed technical publications and holds 31 patents. He is the primary author and co-editor of 3 books and 5 book chapters, founder and co-founder of two start-up companies, and founder of the IEEE Conference on Electrical Design of Advanced Packaging and Systems (EDAPS), a premier conference sponsored by the IEEE Electronics Packaging Society (EPS) currently in its 20th year. He is an IEEE Fellow and has served as the Distinguished Lecturer for the IEEE Electromagnetic Compatibility (EMC) society. He received his MS and PhD degrees in Electrical Engineering from Syracuse University in 1989 and 1991, respectively.

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# JOIN AN AFFINITY GROUP

IEEE Life Members Affinity Group

IEEE young professionals

IEEE Women in Engineering

# JOIN A COMMUNITY

IEEE BLOCKCHAIN
IEEE brain
IEEE DigitalReality
IEEE Future NETWORKS
IEEE QUANTUM
IEEE rebooting COMPUTING

## Collaborate, Engage, and Follow Us in 2022

# SUPPORT OUR STUDENTS & ENTREPRENEURS

IEEE students
We See the Future of Engineering in You.

IEEE Entrepreneurship

# ATTEND AN R2 EVENT

IEEE MEETINGS, CONFERENCES & EVENTS

IEEE vTools

IEEE Collabratec

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