

IEEE FOOTHILL

MARCH MONTHLY NEWSLETTER

READ MORE...

The IEEE Foothill Section held its March ExCom/OpCom monthly hybrid meeting at DeVry University. It was supposed to be a hybrid meeting, but we had technical difficulties...

...continue reading page 1 to 2

The IEEE PES Foothill Seminar, titled "Combined Zonal and Control Using Grid-Forming Converters (GFM) in a Complex Medium and Low-Voltage Island Grid,"

...continue reading page 2

MATHCOUNTS is a nationwide math coaching and competition program for middle school students. The local (also called Chapter) competitions take place in February...

...continue reading page 4

The IEEE Rising Stars Conference its 19th Year Anniversary in 2024, is a premier event uniting top engineering Young Professionals and Students worldwide. The conference aims to inform...

...continue reading page 6

Be updated and be part of the section's upcoming events and webinars. See the list of the activities of Hyperloop and the section on page 6.



This newsletter is brought to you by:

IEEE Foothill Section March 2024 ExCom/OpCom Monthly Hybrid Meeting

Prepared by: Max Cherubin | Proofread by: Prof. Gerald Herder

The IEEE Foothill Section held its March ExCom/OpCom monthly hybrid meeting at DeVry University. It was supposed to be a hybrid meeting, but we had technical difficulties with the virtual platform, so we only had an in-person meeting. Only seven people were able to attend in person. Though we only had a few in-person attendees, it was still a successful meeting. Some members who were not able to attend just sent their reports to the chair via email.

The chair has discussed a few things, and gathering volunteers will always be a common issue not just with the section but also with the IEEE Corp. The chair suggested having a monetary or just a gift certificate as a compliment for being a volunteer, but there was no luck with that suggestion. They also talked about having a travel section meeting where they can conduct monthly meetings with different universities under their section.

Membership Development

Kim Mosley was unable to attend the meeting due to a schedule conflict. However, she was able to update the chair via email regarding the section's membership status. Since the IEEE corporate dropped those members who no longer renewed their membership, we went from 1000+ members to 782.

Social Media and Website

Osman Ceylan reported that we had 74+ members on LinkedIn and 64 members on Facebook in January and February. We highly recommend that the section actively post their events or activities on our LinkedIn and Facebook pages to gather volunteers and advertise the section.

Technical Committee

PES chair Dr. Koji Yamashita presented on a webinar series on February 14 about Combined Zonal and Local Control using Grid-Forming Converters. See the report on page 3. The next webinar will be on April 3 about the Renewable Energy Demonstration Project in Hateruma Island with a Motor-Driven Synchronous Generator with Yusuke Kuniba, a presenter from Japan.

CS has a new interim chair, Bassem Maurice and he planned to look into possible presenter for CS.

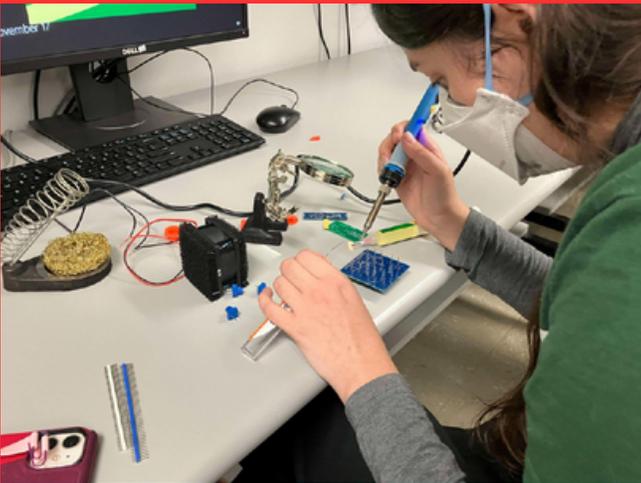
Student Branch Update

CPP Fall Semester Activity Report (Part 4):

Reported by Sameer Sharma

November 17, 2023: Soldering Workshop

To build highly-desired technical skills in the engineering industry within our members, we hosted a soldering workshop. We had about ten attendees who learned from us how to solder.



November 21, 2023: Clubgiving and Networking

Alongside five other Cal Poly Pomona chapters of engineering organizations than ourselves, we hosted potluck in celebration of Thanksgiving. The other organizations included the American Society of Mechanical Engineers (ASME), the American Institute of Chemical Engineers (AIChE), the Society of Women Engineers (SWE), Chem-E Car, and the American Institute of Aeronautics and Astronautics. Not only was their great food and relaxing atmosphere of distress members of all clubs from their upcoming finals, but there was plenty of opportunity for everyone to network with engineering majors of several different backgrounds, as there was around one hundred attendees.



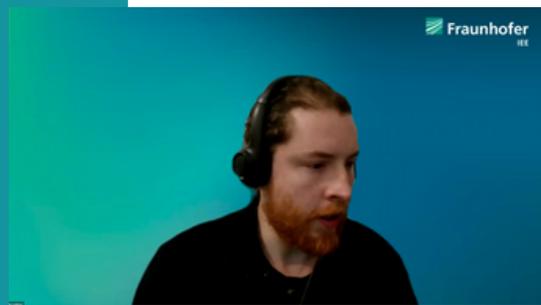
For more updates on the [IEEE CPP-Pomona Website](#), check the link.

PES: Combined zonal and local control using-forming converters (GFM) in a complex medium and low voltage island grid

Reported by: Koji Yamashita

The IEEE PES Foothill Seminar, titled “Combined Zonal and Control Using Grid-Forming Converters (GFM) in a Complex Medium and Low-Voltage Island Grid,” was held online on February 14, 2024. Dr. Luis David Pabon Ospina from the Fraunhofer Institute for Energy System Technology delivered an insightful presentation, highlighting new findings regarding the necessary amount of GFMs and connected voltage levels to stabilize an isolated distribution grid.

A total of 22 participants attended this webinar. During the session, participants learned about the difference in grid support capabilities between conventional grid-following converters and grid-forming converters (GFMs) before gaining insights into the necessary amount of GFMs and connected voltage levels. Dr. Ospina also discussed the limitations of the root-mean-square model in representing oscillations and advocated for the necessity of the electromagnetic transient model. Furthermore, he alerted the audience to the ineffectiveness of traditional corrective actions against voltage collapse when converter-driven oscillations is undamped.



Introduction

A zonal control is proposed in a complex island grid that hosts grid-forming (GFM) and grid-following (GFL) inverter-based generators (IBGs). Three main questions are addressed:

- Q1: What is the minimum required GFM installed capacity for stable operation after the disconnection from the transmission network?
- Q2: Is it better to have several distributed GFM inverters in the low-voltage grid (400 V), or to have a few large GFM inverters connected at medium-voltage (20 kV)?
- Q3: Is the inverter's local control enough to guarantee long-term stability and adequate island operation, or is a centralized control necessary?

2 15/02/2024 Part of this work has been presented during CIGRE Cairns Symposium – Sep 2023 Fraunhofer IEE

Conclusions and future work

- This paper addressed stability issues in island distribution networks with GFM and GFL inverters.
- It is confirmed that a sufficient amount of GFM units is necessary to keep stable short-term dynamics and avoid undamped oscillations.
- In the studied case, 25-30% of the installed capacity should have GFM capability.
- Installing fewer, but larger GFM units at 20 kV seems like a more practical approach and could potentially minimize the effects of issues related to protection, control interaction, etc. Such phenomena may require EMT simulations, which remain future work for detailed distribution networks.
- Unless very high percentages of GFM units are installed, secondary control is necessary.
- This paper proposes and validates a zonal control that coordinates the efforts of the DGUs in its own area by calculating the control corrections that are necessary to bring distribution voltages inside adequate values.
- In this way, in a couple of seconds, the local control of inverters (including GFM) provides a fast response to a disturbance and enhances short-term dynamics while the zonal control coordinates the various DGUs in order to refine the local corrections in a time frame of some tens of seconds.

28 15/02/2024 Part of this work has been presented during CIGRE Cairns Symposium – Sep 2023 Fraunhofer IEE

Upcoming Webinar: Overview of Demonstration Project Aimed at Harnessing Renewable Energy on Remote Island - April 03, 2024, 2:30 PM



This webinar showcases two demonstration projects:

1. Grid stabilization project with advanced battery controls on

Speaker: Yusuke Kinuba

Miyako Island, and 2. a 100% renewable energy supply project using MG set on Hateruma Island.

The speaker is from Okinawa Electric Company.

If you want to know more about this webinar and attend it, just click this [link](#) to know more details and to register.

MATHCOUNTS 2024

Reported by: Kevin Wood

MATHCOUNTS is a nationwide math coaching and competition program for middle school students. The local (also called Chapter) competitions take place in February, state competitions in March and national competition in April. Competition consists of written, individual and team rounds and an oralround, which is unofficial at the local and state levels but official at the national level. Local and State Competitions rely solely on donations/grants and volunteer time.

Specific of East San Gabriel Valley Chapter Competition

School Stats:

- 22 schools, 154 students, 32%
- The top 25% of students and top 40% of schools and other statistical reports will be posted at the California Mathcounts website in March.

Funding:

- Edison Internation - a grant funding five chapters and the state competition
- IEEE - donation
- Southern California Edison - in kind donation of facility use and support personnel
- SCE employee/retiree volunteer matching program

Volunteers:

- 30 volunteers from SCE, IEEE, Cal Poly, Northrup Grumman, Cal Tech, Huntingtin Library, Zillow, Maury Microwave, AMA Group, UCLA, CPUC, San Marino High School, Tapcart, Industrial Waste Utilization
- SCE employees participating: Anne Marie Blankenship, Pam Deahl, Ted Gribbke, Charles Kim, Natalie Mendez, Lisa Nash, Jennifer Ocampo, Richard Song, Felipe Zaragoza
- IEEE members participating: Art Sutton, Osman Ceylan, Al Worland

Expenses: Total \$1750 which includes \$1,100 for trophies & awards, \$500 for food for participants & volunteers, and \$150 for supplies/copies/postage

HIGHLIGHTS FROM THE EAST SAN GABRIEL VALLEY COMPETITION

- 1st Place Team - South Pasadena Middle School, Coach Tracy Ho
- 2nd Place Team - Chaparral Middle School, Coach Ivan Macias
- 3rd Place Team - Alvarado Intermediate School, Coach Linda Kim
- 4th Place Team - South Pointe Middle School, Coach Gary Dresser
- 5th Place Team - Flintridge Preparatory School, Coach Makeline Martin
- 6th Place Team - Polytechnic School, Coach Alexandra Kim

Photos during the MATHCOUNTS 2024 is on the next page.



YP: Rising Stars Conference 2024:

Celebrating a Decade of Innovation and Inspiration

Submitted by: Pankaj Bhowmik - YP Chair

The IEEE Rising Stars Conference its 19th Year Anniversary in 2024, is a premier event uniting top engineering Young Professionals and Students worldwide. The conference aims to inform, excite, and inspire attendees through a diverse program featuring Technical Innovation Talks, Professional Development session, Workshops & Competitions, and Networking opportunities.

Thank you to the Foothill Section (Thanks to the chair, Max Cherubin) for sponsoring my trip (Pankaj Bhowmik: IEEE Foothill Section - Yp Affinity Group Chair) to this conference. I have attended many technical conferences over the past decade of my technical career. But this conference was very different to the kind that I usually attend.

Here undergraduate and graduate IEEE student branches were empowered to showcase students' projects and participate with potential employers in the job fair. Attendees have the chance to engage with technology professionals renowned for their expertise in emerging technologies such as Autonomous Vehicles, Artificial Intelligence, Space & Manufacturing, Power & Sustainability, Cybersecurity, and IoT. These young undergrad and graduate students are our future young professionals and they are being encouraged by IEEE to call it as their professional home through such events.

As for Young Professionals involved with IEEE Volunteer Work and Leadership, we got to meet our fellow peers from across the North America Region. It was fun exchanging ideas, sharing our challenges and then getting to know each other for future collaboration opportunities.

The event provided a platform for knowledge exchange and networking, empowering participants to tackle technical and professional challenges and forge valuable connections for future success.

Key highlights of the conference include:

- **Technical Speakers:** Industry experts share insights into cutting-edge fields like AI/ML, Robotics, Space Exploration, and Medical Devices, offering attendees a glimpse into the future of engineering.
- **Professional Development:** Sessions focus on career progression and entrepreneurship
- **Workshops & Competitions:** Hands-on learning experiences and skill showcases allow attendees to demonstrate their expertise and creativity in various fields.
- **Networking Opportunities:** Recruiters from corporate sponsors, along with speakers and peers, provide valuable job prospects and industry insights.

The conference's Professional Development sessions are particularly impactful. They help attendees navigate the evolving job landscape and emerge as leaders in their fields. By fostering networking and learning from industry leaders, Rising Stars Global equips participants with the tools and connections necessary for success.

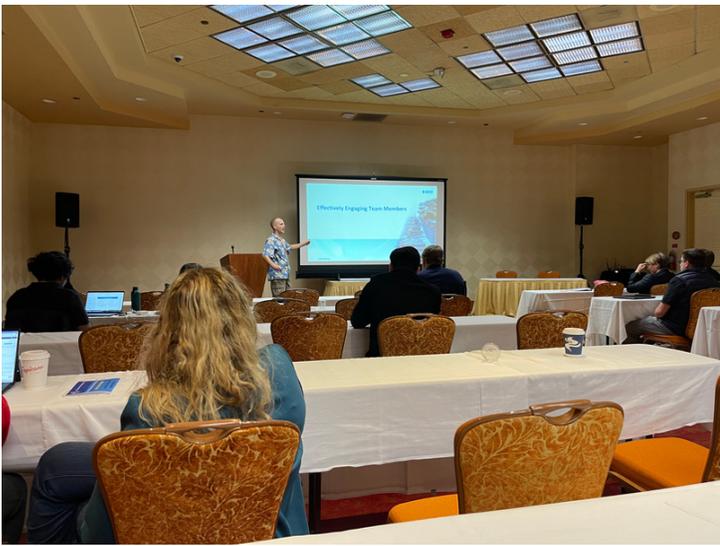
Here is a collage of pictures below:



All IEEE YP Leaders posing for a picture after a Day Long Workshop Session.



All IEEE Rising Star attendees posing for a picture on the last day before wrap-up



Chad Kidder presenting a workshop session for IEEE YP leaders on Effectively Engaging Members



Kathleen Kramer (3rd from left), IEEE President Elect-2024, along with other mentors in the Mentorship Workshop for IEEE YP Leaders



Scott Tamashiro, Chair for IEEE Rising Star 2024, presenting a keynote after dinner



IEEE Rising Star 2024 attendees from around the globe



(Left-to-right) Tony Hua-Wong - YP Chair Seattle Section, Haruna Gana - YP Chair Alabama Section, Pankaj Bhowmik (YP Chair Foothill Section, Brianna Tengan YP Hawaii Section



(Left-to-right) Alberto Tam Yong, - IEEE YP Chair R6 for Orange County, Pankaj Bhowmik - YP Chair Foothill Section, Tony Hua-Wong - YP Chair Seattle Section



Students being awarded for best project presentation category

UPCOMING EVENTS

- IEEE Foothill April ExCom/OpCom Monthly Hybrid Meeting
April 09, 2024
- IEEE Foothill Consultants Network
April 03, 2024
- CPP x CBU: IoT Arcade and Autonomous RC Car Competition/ Showcase
April 19, 2024

CPP Hyperloop Workshop Schedule

Spring 2024, Fridays | www.cpphyperloop.tech

February
16

Python Applications Workshop
Lecture
2/16/2024 | 6:00pm - 8:00pm
Cal Poly Pomona, Building 9, Room 9-425
RSVP by: 2/16/2024
Host: Alex Ov

March
29

3D Printing Workshop
Lab
3/29/2024 | 5:00pm - 8:00pm
Cal Poly Pomona, Building 9, Room 9-425
RSVP by: 3/27/2024
Host: Yash Karwal

February
23

Circuit Analysis Workshop
Lecture
2/23/2024 | 6:00pm - 8:00pm
Cal Poly Pomona, Building 9, Room 9-425
RSVP by: 2/23/2024
Host: Maggie Hoang & Yash Karwal

April
05

ESP-8266 IoT Workshop
Lecture
4/5/2024 | 6:00pm - 8:00pm
Virtual, Zoom
RSVP by: 4/5/2024
Host: Yash Karwal

March
01

Circuit Construction Workshop
Lab
3/1/2024 | 5:00pm - 8:00pm
Cal Poly Pomona, Building 9, Room 9-425
RSVP by: 2/28/2024 | Price: \$16
Host: Maggie Hoang & Yash Karwal

April
12

PCB Design Workshop
Lecture
4/12/2024 | 6:00pm - 8:00pm
Cal Poly Pomona, Building 9, Room 9-425
RSVP by: 4/12/2024
Host: Victoria Nguyen & Christopher Lai

March
08

Graphic Design Principles
Lecture
3/8/2024 | 6:00pm - 8:00pm
Cal Poly Pomona, Building 9, Room 9-425
RSVP by: 3/8/2024
Host: Bethany Chang

April
19

Soldering Workshop
Lab
4/19/2024 | 5:00pm - 8:00pm
Cal Poly Pomona, Building 9, Room 9-425
RSVP by: 4/17/2024 | Price: \$16
Host: Maggie Hoang

March
15

CAD Workshop I
Lab
3/15/2024 | 5:00pm - 8:00pm
Cal Poly Pomona, Building 9, Room 9-425
RSVP by: 3/15/2024
Host: Addie Hasson & Yash Karwal

April
26

Arduino Workshop I
Lab
4/26/2024 | 5:00pm - 8:00pm
Cal Poly Pomona, Building 9, Room 9-425
RSVP by: 4/24/2024
Host: Yash Karwal

March
22

CAD Workshop II
Lab
3/22/2024 | 5:00pm - 8:00pm
Cal Poly Pomona, Building 9, Room 9-425
RSVP by: 3/22/2024
Host: Addie Hasson & Yash Karwal

May
03

Arduino Workshop II
Lab
5/3/2024 | 5:00pm - 8:00pm
Cal Poly Pomona, Building 9, Room 9-425
RSVP by: 5/1/2024
Host: Yash Karwal



WE WELCOME VOLUNTEERS!

If you want to become one, you can email us at sec.foothill@ieee.org



SOCIAL MEDIA

