

IEEE Foothill

NOVEMBER 2024 MONTHLY NEWSLETTER

IEEE Foothill ExCom/OpCom November Monthly Hybrid Meeting

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The IEEE Foothill Section held its November ExCom/OpCom monthly hybrid meeting last Nov. 12, 2024. The meeting started at exactly 07:07 pm. The chair had its opening remarks with a reminder about the section election. He also encouraged the students to attend Rising Stars 2025 which will be held in Las Vegas.

Social Media and Websites

Osman Ceylan, vice-chair, said we've been getting good engagement on LinkedIn since last month. Posting and sharing the section/chapter's event will help boost our section's engagement and the possibility of having more volunteers. The second batch of embroidered keychains is now available. Regarding the Nano VNA Kit that he ordered, it got canceled. So, the plan for a Nano VNA Training will be moved, and the date is tentative.

Technical Committees

MTT, Scott Wedge, is not available. However, Prof. Herder shared his experience as he attended CLASTECH 2024 at Eravant along with Bassem. CLASTECH is Coastal LA's annual Technical Seminar focused on MTT/APS topics. Charlie Jackson has run it for many years but is now stepping back. This year's CLASTECH had four speakers. First talk, discussed multiple microwave feed systems and reflector designs. The second speaker, Tom Musselman from Boeing Satellite, discussed high-power RF Design in Space Applications. The third speaker was Stefano Maci from Italy, past APS president in 2023, and he spoke about Meta Surfaces and Antennas in Space Applications.

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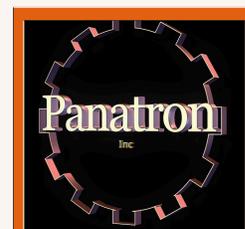
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This newsletter is brought to you by:

The last talk he wasn't able to attend because he had to leave early for an event back in CPP campus. Dr. Connor Balu from JPL talked about Photonic Inverse Designs for Compact, Low Loss, Terahertz Space Instrumentation. Overall it was a great talk like what we've had the last couple of years at Eravant.

Nanotech's Dr. Jenny Yu reported that last November 1st, they had an open VSP Aerodynamic Analyze Workshop, and the next one will be held on the 18th. It will be in person at CalPoly Pomona. She also shared photos and write-ups of their joint event with Nanotech Orange County and the Banshee UAV Club, the biggest club in CPP-Pomona.

Bo Chen from Photonics reported his event with the CPP-Pomona student branch last Nov. 1. Bo presented what kinds of lasers are and how laser light comes from the fundamental structure of laser. Then, he introduced the semiconductor laser. He explained some essential components for laser structure and fundamental semiconductor concepts, such as PN junction and how the laser works through electron combination. In the next senior series, Bo would like to engage with those students in some lecture challenges. The last one was on Dec. 6. Bo hopes that through these presentations, he can give those students the whole picture, from the basic concept to the actual laser structure and how we process together.

Dr. Tamer Omar of ComSoc reported he is working on an initiative for teaching microcontrollers to high school students along with David Gonzalez and Osman Ceylan; however, due to Osman's travel schedule, they won't insist on having him in this endeavor, but if time allows, he can join them anytime. Dr. Omar has been working with two schools since the beginning of the semester. One is in Chino, and the other is at CalPoly. They are still looking at what type of microcontrollers would suit their group. He is also considering having a joint talk with the Computer Society chapter.

Bassem Maurice of the Computer Society had an event last October 15 about Cyber Security as an Application of Decision, which was a joint event with the Phoenix Section. They had about ten attendees. There are no upcoming events yet for the chapter.

Koji Yamashita of PES reported, that they just finished their October webinar. He was in Palau, which was a small island in Guam. Unfortunately, he was sick at that time, so he couldn't document how many attendees. The webinar talked about the introduction to understanding the digital twin concept, or digital twin notion. This month, they had a speaker from Greece who will explain the digital twin applications, how we can apply digital twin, and the notion to the actual power systems. The title of the presentation is Data-Driven Frequency Dynamic Unit Commitment for Island Systems with High Renewable Energy Source Penetration. In December, he will have a talk with an engineer from the Energy Systems Integration Group. Her name is Julia Matevosyan. She will cover the GridCode in Transition. So, the journey towards integrating the Grid forming converters. The date will be on December 18. By next year, he will have ten speakers lined up, not just from the US but also outside US speakers.

Pankaj Bhowmik of YP, will attend the Rising Stars 2025 in Las Vegas. It is the YP premier event, basically designed to inspire or inform students and young professionals. It is a unique platform to connect with all kinds of industry experts and peers. There are technical innovation talks, professional development sessions, workshops, compute competitions and networking opportunities especially for students. They have started an event where team projects can present and there will also be reviewers coming in and reviewing projects then they will give an award for the top three projects. Aside from the presentation, the most awaited part is the networking opportunities that you can show through projects and meeting other people from various participating companies. So there will be topics like autonomous vehicles, artificial intelligence, space and manufacturing powers, sustainability, cyber security, internet of energy. Then again, the most important of all during that event is networking. Connect with other students and young professionals in the field of STEM.



Student Branch Update



CPP: CALPOLY-POMONA

Third General Meeting with guest speaker, Dr. Nir Regev. Dr. Nir Regev spoke about radar and AI in the industry and shared his industry experience. Dr. Regev currently teaches ECE3709 and ECE3715. We announced our NASA Minds Project, the IEEE-ASME gearbox project, workshops, guest speakers, and the JPL Tour.

Circuit Construction Workshop

We kicked off our first event of the Fall 2024 semester with a circuit construction workshop with 27 people in attendance. Students learned how to use a breadboard and created simple circuits with LEDs, resistors, and capacitors. Additionally, the students learned how to work with integrated circuits by creating a 555-timer circuit. The first-year electrical engineering students had the opportunity to learn how to use the lab equipment properly, which includes both digital multimeters and power supplies, giving them a headstart in their future lab classes.



UCR: UNIVERSITY OF CALIFORNIA - RIVERSIDE

The UCR student branch had its general meeting. Their transition when it comes to documentation, the historian will take care of the photos in every meeting.

They did not take many photos during the meeting; however, they had three people in attendance from Solar Car. The photos attached were from their second general meeting last November 5. Danny Topete, chair, will make sure to take photos in every activities or event to make sure that they have something to report with and they will have a study Jam since it's in the middle of their midterms.





Joshua Lazzarini Beginning His Slideshow

On November 1st, 2024, the IEEE Foothill/Orange Count joint sections Nanotechnology Council (NTC) Chapter and Banshee UAV Senior Project conducted a workshop at CalPoly-Pomona to demonstrate the capabilities of Open VSP for aerodynamic analysis. The workshop was hosted by BANSHEE's Aerodynamics Sub-Team Lead, Joshua Lazzarini. He began the presentation by talking about how Open VSP is an open-source software from NASA that can calculate key aerodynamic properties of 3D models. Students were then shown how the software can be used to design a fighter aircraft using data to make adjustments to a model. This was done by demonstrating calculation methods for low-speed and supersonic airflow. The workshop then pivoted to help students with their own personal projects. Mr. Lazzarini further demonstrated the modeling of wing geometry and methods to convert 2D drawings to a 3D aerodynamic model using a student example. He was also able to give design tips for improving airflow characteristics. These processes gave students a way to conduct their own future aerodynamic analysis to design aircraft suited for a number of design requirements. Students said they enjoyed learning about software that isn't offered in the regular course curriculum. There were five student attendees.

This workshop was the first for BANSHEE UAV and will pave the way for more in the future. The senior project plans to hold several each semester to give students of all engineering disciplines opportunities to learn skills they wouldn't learn within their major-specific course work.



SENIOR PROJECT HOLDS OPENS VSP AERODYNAMIC ANALYSIS WORKSHOP

The IEEE PES Foothill Seminar, titled “From Traditional Power System Simulation to Digital Twins,” was held online on October 21st, 2024. Prof. Chen Shen from Tsinghua University began by exploring the transition of the digital twin concept. Dr. Shen started with the original notion of the digital twin: creating a virtual replica of a physical object, system, or process. He then highlighted the subtle differences in how this concept is applied depending on the target of the virtual replica.

Next, Dr. Shen clarified the technically precise definition of a digital twin as it applies to power system dynamic simulation. He emphasized how advances in computer science, communication, and sensor technologies have enabled more accurate representations of power system configurations and conditions in simulation platforms. As a result, contingency analysis and simulations of future grid behavior following a contingency have become feasible, even before actual events occur in the real grid.

Dr. Shen also showcased various tools based on the digital twin concept that support grid planning and grid operations and assist grid operations in managing complex scenarios from security perspectives.

A total of 11 participants attended this webinar. Although the number of attendees was small, power engineers engaged in proactive discussions about the digital twin concept for power systems. While the slides are not available, the recorded video can be accessed. Interested individuals can contact Dr. Koji Yamashita at kyamashita@ucr.edu to request access to the video stream.

The upcoming webinars will focus on digital twin applications in power systems. On November 20th, Nikos Hatziargygiou will present a digital twin application for frequency stability in a small island grid.

The screenshot shows a webinar slide with the following content:

- Header:** 电机工程与应用电子技术 (Department of Electrical Engineering), Tsinghua University logo.
- Title:** From Traditional Power System Simulation to Digital Twins.
- Speaker:** Shen Chen, Oct. 22nd, 2024.
- Section 1: My team and I's understanding of the concept of digital twins**
 - Why different understanding? Actually, there are several concepts pertaining to digital twins.**
 - 01:** The model corresponding to a physical object in digital space.
 - 02:** The cyber-physical system composed of a physical object and its digital twin, which maintain synchronization, parallel inference and closed-loop interaction.
 - 03:** Technologies relate to the construction of digital twins of physical objects, such as simulation, analysis, prediction and control decision based on digital twins.
- Section 2: Our Exploration and Practice**
 - CloudPSS-XStudio, a digital twin workshop for power systems**
 - Developer kit includes three handy tools, which enable third-party developers to develop advanced digital twin applications!
 - SimStudio:** For Modeling and Simulation.
 - FuncStudio:** For integrating and dispatching function kernels.
 - AppStudio:** For developing and launching Applications.
 - To access the CloudPSS-XStudio platform, users only need a terminal (PC/Mac/tablet/phone) with a browser installed on the client side.
 - Access to <https://www.cloudpss.net> for the XStudio platform.

Upcoming Events

IEEE FOOTHILL SECTION
EXCOM/OPCOM DECEMBER
MONTHLY HYBRID MEETING

December 10, 2024

IEEE FOOTHILL
CONSULTANTS DECEMBER
MONTHLY MEETING

December 04, 2024

RISING STARS 2025

January 3-5, 2025



25 IEEE RISING STARS

JANUARY 3-5 | LAS VEGAS

ELEVATE * EMPOWER * EXPLORE

Join our 2025 conference to network with bright students, young professionals, and industry experts, and attend panels of technical speakers, professional workshops, and job recruitment fairs.

SAVE THE DATE



BE PART OF US!

The IEEE Foothill Section needs volunteers. Join our growing community, and together, let us promote and share our knowledge in STEM.

For more questions and inquiries, email us at sec.foothill@ieee.org.



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Happy Thanksgiving 

