



IEEE FOOTHILL

Monthly Newsletter

(<https://ieee-foothill.org>)

September ExCom/OpCom Meeting

Prepared By: [Max Cherubin](#)

The September ExCom/OpCom was held via Bluejeans on Sept. 14, 2021. The meeting started at around 7 pm with the chairman's remark. The chairman announced there will be an upcoming survey regarding face-to-face or online meetings by October but it would still depend of the ongoing Delta Variant..

Section and Committees

As per membership status, we had a nice increase this month which brings our section members to 1032 primarily because of the students and we had a 1 senior elevation. The new and approved membership letter will be used in welcoming the new members.

On our social media account this month, we had two members added to Facebook. We are trying to create a different account for us to have an account that we can link all account management, events, updates so we can easily manage. Reminding all section members to post their events on our social media accounts.

Student Chapters

Students from various universities had some reports about their events and upcoming events.

Allysa Willcox, president of WiE Club in CSUSB reported that they do have a new set of officers and they are still looking for a treasurer. They attended the School of Computer Science's first faculty meeting. They even advertise the club on social media platforms such as Discord and held a public forum to get feedback from members. She shared as well some of their workshop ideas.

Jonathan Rosas from CalPoly Pomona said they will be having an internship panel event on Sept 20, previous internship students are going to be asked to talk about their experience with their internships.

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On Sept. 28 they will have a resume and cover letter workshop in preparation for their school's career fair. Their next event will be on October 15 which is a Soldering Workshop they developed a partnership with another organization on the campus which is called, Hyperloop. They are basically a kind of aerospace club.

Michael O'Dea from UCR said during the summer they worked on projects that are still ongoing such as RoboSub and US Unmanned Aerial Systems as well as the Solar Car. They had a botanical gardens tour scheduled on September 28, and they are now preparing for fall recruitment.

Prof. Nazila from DeVry University reported they had a couple of workshops, one was 5G and LabVIEW. They are getting ready to practice for the IEEE Extreme coding competition, and they will probably have one team. They might be having a second one and nominating a poster for the IEEE GHTC Humanitarian Competition. They are trying to have at least one event per month, and they advertise the club on social media for their workshops each month.

Technical Societies and Committees

MTT had a co-sponsored event last Aug. 19. It was a presentation from Prof. Patrick Reynaert from the University of Leuven on THz and mm-Wave Circuit and CMOS. They also had a Silicon Based Phased Array for 5G from Dr. Bodhisatwa Sadhu from IBM Watson. A joint presentation with the Buffalo New York Chapter of the MTT. On Sept. 18. Scott Wedge has a potential speaker lined up, which happened to be one of his new colleagues and new employee, a Ph.D. from Brazil doing specialized 3D Semiconductor device simulation.

Dr. Jenny Yu gave an update about the IEEE Student Engineering Team Challenge. 24 teams submitted, a total of 66 students. Due to the current situation of the pandemic, a lot of students and faculty as well as their industry partners have been affected. 12 teams so far have submitted their posters, 43 students participated. Winners will receive certificates and the price of the competition is still in discussion.

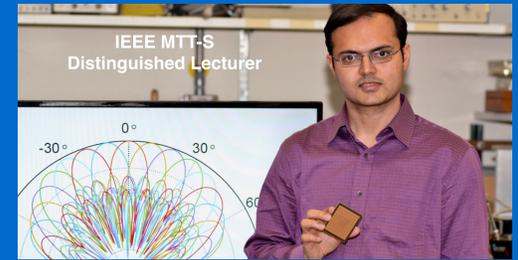
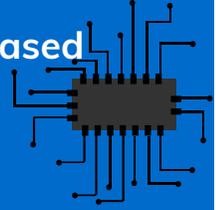
ComSoc had an event that was sponsored by VDL, the Virtual Distinguished Lecture. The speaker was Fawzi Behmann, the president of TelNet Management Consulting Inc. He clearly gave us an understanding of 5G and future generations such as 6G and beyond. Example of new classes of applications and services empowered by 5G/6G, the concept of virtualization and networking slicing for the dynamic launch of new services. Dr. Omar discussed as well the CalPoly Pomona 17th Annual CyberSecurity Fair which will be held on October 28. There will be some demonstration of work that the students have been doing over the last year and a poster contest. September 24 will be the submission of the deadline.

Dr. Omar discussed WTS, the symposium will be held at the CalPoly Pomona. They talked about doing part of the sponsorship. He shared as well the link for the details about the upcoming event <https://www.cpp.edu/~wtsi/>.

YP had 2 informal game nights, one was held last August 27 attended by around 12 people, and the second one was held last Sept 10 attended by 7 people. It went well, they intended to keep holding these on a rolling basis, just every 2 weeks after an hour where people can come by and play games. Right now, they are just doing every activity virtually.

Silicon Based Phased Arrays for 5G

By: Scott Wedge



On September 18, 2021, the Ap/ MTT and ED/CAS Chapters of the Foothill Section hosted Distinguished Microwave Lecturer Dr. Bodhi Sadhu is with the RF/ mmW Communication Circuits and Systems Group at the IBM T.J. Watson Research Center and is also an Adjunct Professor at Columbia University. The title of his presentation was Silicon-based Millimeter-wave Phased Arrays for 5G: Fundamentals to Future Trends. The meeting was co-hosted and coordinated with IEEE Buffalo New York Section's AP/ MTT Chapter. Attendance was excellent, with about 100 participants. Dr. Sadhu's lecture covered much ground; from historical usage millimeter-wave frequencies and phased arrays, the significant technological leaps made recently from mm-Wave integrated circuits, to today's challenges for 5G usage and opportunities for the future. Highlights of his presentation included discussions on his group's successes in developing dual-polarized IC transceiver phased array architectures that include integrated orthogonal gain/ phase controls for beam steering. This work was a recent ISSCC best paper award winner. His presentation concluded with a discussion on how Artificial Intelligence, Software Defined Radios, and 3D imaging technologies may lead to many more advanced applications when combined with these new mm-Wave phased array circuits and systems.

ComSoc: 5G/6G Enable Edge Computing and Edge AI

5G represents a major departure from previous cellular generations. It will only focus on speed, lower latency, and spectrum efficiency but will also empower a number of verticals including IOT, AI/ ML collecting, and aggregating data for edge computing, and with 6G at edge intelligence - AI performing analysis and generating insightful information for critical actions in real-time or not real-time applications.

The talk covers a clear understanding of 5G and 6G positioning, features, and roadmap. Architecture evolution pushing intelligence to the edge, provide an example empowered by 5G/ 6G, IoT, and AI including Enhance Mobile Services, Massive Machine-type Communications, Ultra-reliable and low latency communications.

5G's promise of greater speed and overall network performance brings huge opportunities not only for the Internet of Things, 4K video, augmented, and virtual reality, autonomous driving, mission-critical, and much more.

5G's vision & impact. Massive capacity and connectivity, efficient use of spectrum and network utilization, flexible and scalable infrastructure to enable value to add services affecting the following use cases (IoT, Wireless Sensor Networks, Smart Homes, Smart Grid, Intelligent Transport Systems, Virtual Reality/ Online Gaming, Medical Records).

5G applications using drones can be very useful in some cases like delivery of emergency kits or rescue equipment to a disaster area using drones. Search missions with HD imaging in disaster recovery zones, specifically areas of difficult access. Coordinated missions where multi drone fleets from multiple countries could be used to inspect an emergency area or perform specific tasks. Rapid deployment of a temporary cellular network using drones, enabling vital communications for disaster recovery.

5G/6G and edge computing takeaways. 5G commercial trials/ deployment are progressing (eMBB, mMTC, URLLC). Collaborative 5G & IoT transform from identifying symptoms to identifying the root cause leveraging mass connectivity, low latency, and higher speed. IoT, 5G/ 6G, and AI usher a beginning of collaborative, end-to-end scalable services aimed at improving business processes, quality of life, and personalization of services. Multi-access Edge Computing (MEC) and Edge Intelligence allows for faster processing closer to the equipment at lower latency. Network Slicing enables QoS service differentiation, optimizing the use of resources in the network and revenue generation.

Upcoming Events:

October ExCom/OpCom Meeting

October 12, 2021

IEEE Foothill Consultants Network Meeting

October 27, 2021

Cybersecurity Fair

October 28, 2021

WTS 2022

Wireless Telecommunication Symposium

**April 6-8 2022,
Pomona, California,
USA**

Social Media:



<https://www.facebook.com/ieeefoothill>



<https://www.linkedin.com/groups/13516173/>



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