**September 2020 Newsletter**

**Message from the Chairman**

Wow - - -  Summer School moves quickly.  I see in my draft for the July Newsletter that I was anticipating the start of my Summer class on July 6th. I will apologize for being the source of you all getting the newsletter late – but I got totally occupied by the end of that very same class and its final!  This was in addition to a continuing pile of life events.  The one I would like to let you all know about is that I will be retiring as of August 31st.  TXState is anticipating pretty onerous budget cuts due to the anticipated state budgets and also likely drops in student registration. So they offered a pretty attractive package to older, expensive, Professors like myself.  With luck they will let me hang out and contribute, but I am preparing for a different routine in any case.

More importantly [than my own plans at least] – I am more than happy to announce that two of CTS’s leaders are being recognized by IEEE-USA for their contributions to the Society.  The virtual ceremony is after I write this note – but likely before it will be distributed to you – so I will simply brag that Mina Hanna and James Mercier are being recognized and copy their citations below.



**James Mercier**is the first of three members receiving the 2019 IEEE-USA George F. McClure Citation of Honor. Mercier’s nominator cited him for his “tireless devotion to making IEEE, industry professionals, students and academics better educated and connected.” Mercier is perhaps most visible in the Central Texas Section for his long-term role as workshop coordinator. The IEEE Life Senior Member almost single-handedly produces two popular workshops a year — generating significant revenue, while also ensuring that attendees keep up with their CEU credits.

A co-founder of the local IEEE Power & Engineering Society chapter, in 2011, Mercier pushed to incorporate the IEEE Power Electronics, IEEE Industrial Applications and IEEE Industrial Electronics Societies — eventually becoming known as IEEE (PI)2 Austin. His goal? To offer local members of all four societies a means to connect, participate in more professional activities, and continue to learn. The joint Chapter has since become a model for several others.



**Mina Hanna** is the first recipient of the IEEE-USA John Meredith Professional Service Award. An IEEE Senior Member, IEEE-USA is recognizing Hanna for his “outstanding contributions to the advancement of artificial intelligence technology, policy and strategy on behalf of IEEE-USA.” Since becoming chair of the then-emerging Artificial Intelligence & Autonomous Systems Policy Committee in 2017, Hanna has advocated its recommendations on global platforms from Washington, D.C., to Dubai, establishing IEEE-USA as an AI thought leader. In addition, he co-chairs the Policy Committee of the IEEE-Standards Association Global Initiative on Ethics of A/I Systems — helping to establish successful collaborations between the two AI programs that boost their impact. Hanna is on the Editorial Board of *IEEE Computer Magazine*, published by the IEEE Computer Society.  He is also editor of “Policy Corner,” a column on data privacy, which he co-wrote. Readers have accessed the column nearly 14,000 times. [See also: [Mina Hanna: IEEE-USA’s Passionate Advocate for Thoughtful, Ethical AI Policies](https://insight.ieeeusa.org/articles/meredith-award-recipient-mina-hanna/)]

Many of us know that the IEEE provides Web Conferencing capability when requested for appropriate meetings; I will be encouraging Technical Society leaders to use this opportunity and work to arrange meetings that we can attend remotely. In discussion at the last ExComm meeting, we found that IEEE offers individual WebEx accounts to leaders.  I investigated this and found it to be the standard 50-minute free account. However, they also highlighted that we have Google Meetings access through the IEEE Google account [like our email].  I have yet to check this out since I have ZOOM through the school, but I will later this month just to see if this is my path to one-time committee meetings and the like.  I have now attended several webinars offered by the Electron Devices Society and other Societies and find it both easy and informative. In the second section of my introductions I will give you a sampling of what is available.

[I figure I really should still promote our stuff over foreign meetings, or (gasp) even California ones.]  Watch the Analog and the mid-month Newsletter for notices of meetings to come although they can be viewed on vTools Events at your leisure.

As is my habit - I would like to highlight three of the meetings held in the last month:

**27 August 2020 at 7:00:**AUSTIN-IEEE JOINT CHAPTERS BRING VIRTUAL EVENT ON "MOBILE TECHNOLOGY & MOBILE HEALTH" Guest Speaker: **GORA DATTA**

With the phenomenal rise of mobile devices & smart phones globally in the past few years, we have now entered the digital age.   This global transformation is bringing a change that is impacting our world in every way - how we interact, play, read, write, watch, study, research, work or even relax. Traditional methods of doing research, developing solutions and subsequent adoption and utilization by end-users in this information & digital age at a break-neck speed is also seeing a change that is rapidly adapting/adopting to this wave. Regulators are scrambling to stay ahead of the curve by defining policies and regulations that will help leverage its benefits but at the same time, hopefully, not throttle or chock innovation. Mobile Health is in the midst of this explosion!

In this talk, Mobile Health case studies are explored illustrating implementation experiences from around the globe. The talk touched upon a wide-ranging topics and applications of Blockchain; AI/ML/ES/AS and the emerging field of Data Science; VR/AR/MR/XR realities to avatars, Drones & Robots to 3D-printing to micro-controller boards & single board computers; innovations in medical devices & mobile health apps; big data, cloud computing, edge/fog computing to IoT…..smart pandemic management to air quality management…..a global perspective of advancing technology for the benefit of humanity.   The examples demonstrated how health problems of today’s information society and the needs of data and knowledge intense heterogeneous but STANDARDS based healthcare solutions are being met by bleeding-edge mobile solutions that were in the cradle of research till recently.

In summary, as we transition to a digital record framework (access, capture, and dissemination of information) the use of mobile health will continue to rise. As mobile devices become more and more ubiquitous, accessing our Health Information is only a few tap/swipes away!

**25 August 2020 at 6:30:    IEEE PI2 AUSTIN, AUGUST 2020, TECH MEETING, "THE FIU PEDESTRIAN BRIDGE COLLAPSE: HOW DID ENGINEERS ALLOW THIS TO HAPPEN?"**

On March 15, 2018, a 175-foot-long span collapsed while under construction at Florida International University.  Surprisingly, the bridge was in severe distress a few days before the collapse and engineers and workers were actively trying to strengthen the structure at the time of failure.  This talk examined the mistakes that experienced bridge professionals made that resulted in the deaths of one worker and five motorists.

**A special note I’d like to make:**Our Editor, Prof. Semih Aslan, is proposing to include a special, general-interest, technical note feature to reward you for making it all the way through!  We would welcome your feedback both on the relative interest in this sort of technical treat and also if you would have a short note that might be of interest to include.

Message from the CTS Chairman

Chairman, IEEE Central Texas Section

Larry Larson

[Larry.Larson@ieee.org](mailto:Larry.Larson@ieee.org)

A. 2020 Highlighted Events

The Central Texas Section is building a program of excellent events into the Summer of 2020.  In this message I intend to highlight a few of these for your consideration.  Pay attention to this and the mid-month Newsletter as more events are being booked each week.

**31 August 2020 at 5:00PM:    UT Graduate Student Chapter,  The Impact of the Imposter Syndrome [on everyone, every day]**

<https://events.vtools.ieee.org/m/238223>

The IEEE Graduate Student Chapter at UT Austin is delighted to host Dr. Kevin O Cokley, Professor, Department of Educational Psychology and African and African Diaspora Studies Department, College of Liberal Arts at UT Austin, for this seminar! He would be delivering a talk titled "The Impact of Imposter Phenomenon on everyone every day! ".

**22 September 2020 at 6:30PM:   IEEE PI2 Austin, September 2020, Tech Meeting, "New Developments in the Visualization of Wide-Area Electric Grid Information with Application to Grid Interconnection Studies"**

<https://events.vtools.ieee.org/m/236478>

**Abstract:**An ongoing power system challenge is how best to utilize and ultimately present information to a human user derived from either actual system sensors or engineering studies for large-scale electric grids.  In operations this data might come from measurement systems such as SCADA or PMUs, while in a study context it might be generated by a various applications such as power flow and dynamic simulations.  This presentation discusses some of the newer visualization techniques that are being deployed by the electric power industry.  These include animation, contouring, time-varying graphs, geographic-based displays, image blending, and data aggregation techniques. The techniques are demonstrated using a variety of actual and synthetic electric grids including some studies focused on the interconnection of large-scale electric grids.

**Other Organizations:**

Dear Colleague,   
As part of our commitment to advancing the vision and mission of the Electron Devices Society, we are pleased to invite you to attend our next scheduled webinar. Details are listed below.

 Topic: Graphene on cubic silicon carbide: a platform on silicon for More-Than-Moore integrated technologies

Presented by: Prof. Francesca Iacopi

Read: [Biography](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Feds.ieee.org%2Fimages%2Ffiles%2FWebinars%2Ffrancescaiacopibio.pdf&data=02%7C01%7Clarry.larson%40txstate.edu%7Cbd4c7aeafcef417f1f6b08d84a6fef11%7Cb19c134a14c94d4caf65c420f94c8cbb%7C0%7C1%7C637341191903687327&sdata=JIuIKsqB9tFMR%2Bd0sCSIRITOnVLr9UknGMPXvEYqHWA%3D&reserved=0)

Date: 2 September 2020

Time: 8 AM – 9 AM EDT

[EDS Webinars](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Feds.ieee.org%2Feducation%2Fwebinars&data=02%7C01%7Clarry.larson%40txstate.edu%7Cbd4c7aeafcef417f1f6b08d84a6fef11%7Cb19c134a14c94d4caf65c420f94c8cbb%7C0%7C1%7C637341191903697316&sdata=Za%2Bj7Q3gdaw0m34dti2bICTdi992c9n%2BerTQ%2BQOh9T8%3D&reserved=0)

**Abstract:** The continued progress of semiconductor technologies strongly relies on the continued innovation in electronic (nano)materials and their successful integration into novel and reliable devices on silicon, which can be fabricated consistently at the wafer –scale. Graphene was the first material discovered within the now large 2D family, and holds vast promise for integrated technologies. In particular, graphene possesses a variety of exceptional functionalities ranging from electronics, optics/photonics, electrochemical and biocompatibility properties, which could complement well silicon technologies. However, despite the interest, its introduction in semiconductor technologies is still lagging behind. We will review some of the specific challenges that graphene has encountered in terms of semiconductor applications, with particular focus on the need for direct, consistent and up-scalable synthesis and some of the reliability aspects. We will then share our unique approach to obtain graphene on silicon substrates over large areas and in a site – selective fashion, based on a solid-state source approach using silicon carbide on silicon, combined with a liquid-phase-epitaxy growth of graphene enabled by a catalytic alloy of nickel and copper. This technology has allowed us to reveal for the first time the electronic transport properties of epitaxial graphene on 3C-SiC on silicon over large scales, and to learn that, more so than defects, the control of the graphene interfaces as an area that deserves key focus for a successful integration of graphene. We also show how, depending on the chosen application, well engineered defects in graphene are key to achieving the wanted performance. We will review our progress and current understanding of this new technology, and illustrate how it could augment current silicon technologies for More than Moore applications from electronics to photonics and energy storage.

All participants will receive WebEx details prior to the event.  We sincerely hope that you will join us for thisevent [Register Now!](https://nam04.safelinks.protection.outlook.com/?url=https%3A%2F%2Feds.ieee.org%2Feducation%2Fwebinars%2Fregister&data=02%7C01%7Clarry.larson%40txstate.edu%7Cbd4c7aeafcef417f1f6b08d84a6fef11%7Cb19c134a14c94d4caf65c420f94c8cbb%7C0%7C1%7C637341191903707318&sdata=T4WKfIqFYcvorm7UN%2Bn8YwDzmLcPwKCZfWo2DMwADT4%3D&reserved=0)

**A Great List from the leader of the Northern CA Packaging Society:  
  
Packaging of Electronics for Medical, Health and Wearables Applications**[[more]](http://www.cpmt.org/scv/?p=1227)  
    -- Dr. Mark D. Poliks, Binghamton University  
    -- **Thursday**, September 10, 2020     -- 8:00 AM PDT (on the Internet) *-- heterogeneous integration, advance packaging, new materials, assembly technologies, forecasts ...*  
There is increasing interest in wireless medical and health monitoring. The adoption and continued innovation in flexible hybrid electronics is expected to drive this industry in the years to come -- greater functionality in thinner and smaller spaces for both medical-grade and consumer-grade-based health monitors, as well as implantable and other medical devices. While traditional medical electronics may remain conservative in design, the adoption of flexible hybrid electronics for wearables that significantly advance packaging and assembly technologies are in the early stages. The integration of a variety of components and die (including thinned and unpackaged processors, memory, sensors, MEMS, RF, optical, power sources, etc.), together with printed circuits on thin flexible substrates, will create the next generation of wearable medical systems. Many new materials, assembly methods and applications are now demonstrated in the literature.  
This presentation will describe these technologies including the target applications, the materials, deposition methods, components, device integration and reliability. It will discuss trends and challenges expected in the coming years.  
Info and registration: [eps.ieee.org/education/eps-webinars.html](https://eps.ieee.org/education/eps-webinars.html)

**Webinars** from around the IEEE (PELS, CS, TEMS, others) plus MEPTEC and UC-SC. These may not be in our EPS field, but could be of interest to you or others:

**Memory Errors in Production Systems: Insights from the Field**[[more]](https://site.ieee.org/scv-eds/)  
    -- Dr. Sudhanva Gurumurthi, Principal Member of Technical Staff, AMD  
    -- **Friday**, August 28, 2020     -- 12:00 PM PDT (on the Internet)  
-- reliability aspects of such scaling, bit-cell reliability, commercial hardware, resilient systems ...

**Quantum Networks: From a Physics Experiment to a Quantum Network System**[[more]](https://learning.acm.org/techtalks)  
    -- Prof. Stephanie Wehner, Delft University of Technology  
    -- **Tuesday**, September 1, 2020     -- 7:00 AM PDT (on the Internet)  
-- designing the Quantum Internet, new technology, scalable, protocol, capabilities ...

**Better Human Feedback Loops**[[more]](https://site.ieee.org/scv-tems/)  
    -- Matt Diebolt, VP, Poll Everywhere  
    -- **Thursday**, September 3, 2020     -- 7:00 PM PDT (on the Internet)  
-- mental model, culture, relationships, strong intuition, when to apply ...

**Ongoing Transition to Small-Form-Factor Packages and SiP**[[more]](http://meptec.org/meptecsemiindus1.html)  
    -- Brandon Prior, Prismark Partners, LLC  
    -- **Tuesday**, September 8, 2020     -- 11:30 AM PDT (on the Internet)  
-- smartphones, fine-pitch laminate, increased functionality, smaller modules, WLCSP, FO-WLP ...

**Packaging of Electronics for Medical, Health and Wearables Applications**[[more]](https://eps.ieee.org/education/eps-webinars.html)  
    -- Dr. Mark D. Poliks, Binghamton University  
    -- **Thursday**, September 10, 2020     -- 8:00 AM PDT (on the Internet)  
-- heterogeneous integration, advance packaging, new materials, assembly technologies, forecasts ...

**Magnetization Dynamics and Damping**[[more]](https://site.ieee.org/scv-mag/event/magnetization-dynamics-and-damping/)  
    -- Dr. Tim Mewes, University of Alabama (Mag DL)  
    -- **Tuesday**, September 15, 2020     -- 7:00 PM PDT (on the Internet)  
-- magnetic materials, hard-drive heads, spin-transfer torque MRAM, precise control, new insights ...

**The Early History of Nuclear Forensics from the Speaker's Point of View**[[more]](https://www.eventbrite.com/e/the-early-development-of-nuclear-forensics-a-personal-view-tickets-117361143339)  
    -- Dr. Sidney Niemeyer, Lawrence Livermore National Laboratory (retired)  
    -- **Wednesday**, September 16, 2020     -- 11:30 AM PDT (on the Internet)  
-- 1991-2007, difficulty, smuggling analysis, radiological attribution, getting it started at a national level ...

**Known Good Die (KGD) Workshop: The Need**[[more]](https://www.kgdworkshop.org/)  
    -- David Greenlaw, Nvidia; Yuri MItnick & Zoe Conroy, Cisco  
    -- **Wednesday**, September 16, 2020     -- 8:00 AM PDT (on the Internet)  
-- Day 1: making KGD silicon work in your supply chain; end-to-end data ...

**Artificial Intelligence and Machine Learning for Demand-Side Response**[[more]](https://resourcecenter.smartgrid.ieee.org/education/live-webinars/SGWEB0139.html)  
    -- Ioannis Antonopoulos, Benoit Couraud, Valentin Robu  
    -- **Thursday**, September 17, 2020     -- 8:00 AM PDT (on the Internet)  
-- Smart Grid, power system regulation, commercial and residential end-users, principles of AI techniques ...

**Known Good Die (KGD) Workshop: The Strategy**[[more]](https://www.kgdworkshop.org/)  
    -- Bernice Zee, AMD; David Armstrong, Advantest; Bob Patti, NHanced Semiconductors, Inc.  
    -- **Thursday**, September 17, 2020     -- 8:00 AM PDT (on the Internet)  
-- Day 2: advanced packaging failure analysis challenges; change from boards to multi-die assemblies ...

**Patenting Strategies, Trends for Vehicular Technology Innovations in 2020**[[more]](https://www.eventbrite.com/o/ieee-vts-vehicular-tech-society-santa-valley-28083496953)  
    -- **Thursday**, September 17, 2020     -- 12:00 PM PDT (on the Internet)  
-- cutting edge, vehicle hardware and software, when to pursue, maximizing protection ...

**Known Good Die (KGD) Workshop: The Solutions**[[more]](https://www.kgdworkshop.org/)  
    -- Jan Vardaman, Techsearch International; Jeff David, PDF Solutions; Gerald Steinwasser, Muhlbauer; Woo Young Han, Onto Innovation  
    -- **Friday**, September 18, 2020     -- 8:00 AM PDT (on the Internet)  
-- Day 3: still talking about known good Die after 30 years; improving SiP quality and reducing cost through machine learning and predictive analytics; die sorting & inspection; die crack prevention and detection ...

**LifeLeaf: The Truly Non-invasive Continuous Glucose Monitoring Wearable**[[more]](https://www.eventbrite.com/e/medical-devices-and-iot-helping-diabetics-worldwide-tickets-95768276493)  
    -- Sweta Moitra, VP of Marketing, LifePlus  
    -- **Tuesday**, September 22, 2020     -- 12:00 PM PDT (on the Internet)  
-- wearable smartwatch,description, functionalities, benefits, target market ...

**IoT-based Architecture of Wearable Health Monitoring**[[more]](https://www.eventbrite.com/e/medical-devices-and-iot-helping-diabetics-worldwide-tickets-95768276493)  
    -- Dev Bhattacharya, chair of the SCV Consumer Electronics Society Chapter  
    -- **Tuesday**, September 22, 2020     -- 1:00 PM PDT (on the Internet)  
-- wearable sensors, latency, security, privacy, edge processing, cloud computing ...

**Lockheed's Spy Satellite Programs: Looking from Above the Iron Curtain**[[more]](https://site.ieee.org/sv-techhist/?p=810)  
    -- Sam Araki, Miles Johnson, Jim Carlock, Terry Zaccone, Hugh Satterlee and Bill Monroe  
    -- **Thursday**, October 8, 2020     -- 1:30 PM PDT (on the Internet)  
-- CORONA program, first eye-in-the-sky, camera, film, recovery capsule, Thor/Agena, breakthrough technology

**UneeQ: Move Aside Chat Bots Here Come the Digital Human**

TAG will be featuring the Digital Human technology. While bots provide speed, scale, and efficiency they do not provide the human touch that UneeQ’s Digital Humans do. At our Friday, **September 25th** virtual meeting (from 8 to 9 a.m.) **Danny Tomsett, CEO** of UneeQ, will talk about the impact that Digital Humans have by providing an emotional connection and introduce the human touch to Digital Transformation.

**RSVP at**[**tagaustin.org**](http://tagaustin.org)

Bill Kleinebecker Austin, Texas

“To plant a garden is to believe in tomorrow.”    --Audrey Hepburn



Chairman, IEEE Central Texas Section

Larry Larson

[Larry.Larson@IEEE.org](mailto:Larry.Larson@IEEE.org)

Message from CTS Chairma

**Membership Development**

***Annual IEEE Election – VOTE…VOTE….VOTE!***

**Annual Election Process Has Begun:** Look for your annual election ballot package to have arrived in August or by early September. All members eligible to vote will receive a paper ballot and a postage-paid reply envelope via first-class mail. Included is information about how to vote electronically. VOTE NOW AT [**www.ieee.org/election**](http://www.ieee.org/election).

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·         [Intelligent Control of Connected and Automated Vehicles](https://innovate.ieee.org/access-select-ieee-elearning-library-courses-free/?LT+LG_WB_Innovate_CU_eLearning_Library_New_Course_Programs)

·         [Values by Design in Algorithmic Era](https://innovate.ieee.org/access-select-ieee-elearning-library-courses-free/?LT=LG_WB_Innovate_CU_eLearning_Library_New_Course_Programs)

·         [The Digitized Grid](https://innovate.ieee.org/access-select-ieee-elearning-library-courses-free/?LT=LG_WB_Innovate_CU_eLearning_Library_New_Course_Programs)

·         [Transparency and Accountability for Robots and Artificial Intelligence Systems](https://innovate.ieee.org/access-select-ieee-elearning-library-courses-free/?LT=LG_WB_Innovate_CU_eLearning_Library_New_Course_Programs)

Check these and others out at [www.ieee.org/elearning](http://www.ieee.org/elearning)

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**Monthly Tutorials:**Verilog HDL Verification Using Python

***Files:***

[**https://github.com/IEEECTX/September2020\_Verilog\_Verification\_with\_Python**](https://github.com/IEEECTX/September2020_Verilog_Verification_with_Python)

***Video:***

[**https://www.loom.com/share/a004b0a6558f4dc595c55f02fdbf8366**](https://www.loom.com/share/a004b0a6558f4dc595c55f02fdbf8366)

**IEEE CTX September 2020 EVENTS**

Listed below are the IEEE Central Texas and Lone Star Sections/Chapter events/activities/meetings scheduled for November. For detailed information on the Central Texas and Lone Star Sections, please visit website at:

<https://r5.ieee.org/ctx/>

CTS Event list please click here (<https://bit.ly/3atwQSK>)

|  |  |
| --- | --- |
| 08 September 2020 07:00PM | [Austin- Capital Macintosh Users Group- “5G is here – What do we expect differently?”](https://events.vtools.ieee.org/m/239425) |
| 10 September 2020 12:15PM | [IEEE PI2 Austin, September 2020, ChapComm, Officers Meeting](https://events.vtools.ieee.org/m/238381) |
| 15 September 2020 06:15PM | [CTS LIFE MEMBER And CTCN Sep 15 Joint Meeting - Future of Travel](https://events.vtools.ieee.org/m/238901) |
| 22 September 2020 06:30PM | |  | | --- | | [IEEE PI2 Austin, September 2020, Tech Meeting, "New Developments in the Visualization of Wide-Area Electric Grid Information with Application to Grid Interconnection Studies"](https://events.vtools.ieee.org/m/236478) | |

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IEEE Conference Search can be found at

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