Florida West Coast Section (FWCS).

Serving over 2,100 members in the following Counties:

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The SunCoast Signal

The Institute of Electrical and Electronics Engineers, Inc.

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Next ExCom Meeting
Tuesday, July 11, 2023
Google Meet
Register with vTools
https://events.vtools.ieee.org/m/364087

PE Corner

Art Nordlinger, PE, Life Senior Member

Legislative Update

The Florida legislature considered two bills which are of interest to the practice of engineering. HB1091, which has been signed into law by Governor DeSantis, reduces the fees by half for both new and renewal professional licenses issued by the Department of Business and Professional Regulation between now and June 2025. The fee for new engineering licenses will be reduced from $100 to $50 and the renewal fee for engineers in February 2025 will be $46.88.

A bill that was considered in several committees but did not come to the floor for a vote is HB1333 and its related Senate bill, entitled Interstate-Mobility and Universal-Recognition Occupational Licensing Act. This bill would require the Department of Business and Professional Regulation to issue Florida licenses to anyone who holds a license in another state or US territory. It has been argued that this would help to alleviate shortages in staffing currently experienced in some professions (nursing was cited as an example). The counterargument, particularly as it applies to engineering, is that some states have, or have had, less restrictive requirements for licensure than Florida, and that this would allow practitioners to have a Florida license who might not otherwise qualify. It was also noted that those that do qualify can apply for and will be granted a Florida license. Florida currently has around 45,000 licensed engineers and licenses on average 200 new engineers per month, some of whom are new to the profession and others who are licensed in other states and apply for reciprocity.

IEEE FWCS ExCom

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WEB PAGE: https://r3.ieee.org/fwc/

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It is expected that this bill will come up again in the next legislative session.

The Florida Engineers Management Corporation (FEMC) Board, on which I currently serve, has an opening for a public (non-engineer) member. Though this article is primarily read by engineers who aren't eligible to serve in this capacity, if you know someone who is interested in serving they can contact the Board office for an application.

One of the current engineer FEMC Board members will reach the end of their term on October 31, 2023. The FBPE Board, who appoints FEMC Board members, will likely discuss a replacement at either their August or October meeting. If you, or an engineer you know, is interested in serving on the FEMC Board, contact the Board office for an application. If you have questions about serving on the FEMC Board, you can contact me or the Board office.

Whether you are a PE looking to attain required CEHs, or an engineer looking to learn something new or keep current with the latest trends in the profession, IEEE has seminars that will meet your needs.

IEEE COMPUTER SOCIETY

◆IEEE **Florida West Coast Section**

ÆSS **IEEE Aerospace and Electronics Systems Society**

An Overview of the RUST Programming Language

Date:	**Wednesday, July 12, 2023**	
Time:	**7:00 pm – 8:30 pm**	
Speaker:	**Dr. Jim Anderson, USF**	
Location:	**Virtual:**	**Google Meet; Link will be provided to registrants**
Cost:	**No Cost**	
CEH:	**No CEHs provided**	
Register:	**Online**	**https://events.vtools.ieee.org/m/363737**
Questions:	**Dr. Jim Anderson**	**jim.anderson@ieee.org**

Abstract: Many of us are familiar with some of the most popular programming languages: C and C++. C was developed over 50 years ago and C++ was created over 44 years ago. The world was a lot different back then and the security threats that software faces today did not exist. The NSA recently released a statement that both C and C++ are not recommended languages for new projects because of their security weaknesses. So what's a software developer to do?

In this presentation, we'll be introducing the RUST programming language. Rust was developed to provide a secure way to do systems level programming. The popularity of Rust has been soaring over the past few years. One measure of its acceptance is that the Linux project is now accepting code changes that are coded in Rust – no other language has this privilege.

We'll cover the structure of the Rust language, the types of variables that it supports, and how it goes about ensuring that code created in Rust will be "memory safe". Just as a cautionary note: over and over again Rust is identified as being the most loved AND the most feared new language to learn. We'll take some of mystery out of the arrival of this new language for you!

Speaker: Dr. Jim Anderson received his PhD in Computer Science from Florida Atlantic University, Boca Raton. He then went on an earned an MBA from The University Of Texas, Dallas. He has published over 125 books including CRC Press's "Software Defined Networking". Jim has worked for 16 different companies during his 33-year career including startups as well as Boeing, Siemens, Alcatel, Verizon, AAA, and Amgen. He has had opportunities to teach at Florida Atlantic University, The University of South Florida, and Florida Polytechnic University.

In spite of his busy work schedule, Jim has been able to publish 5 papers and has been an invited speaker 8 times. Jim has been an active member of the IEEE for over 30 years and has held numerous leadership positions at both the local and regional level. Jim has been a member of Toastmasters for 22 years. He manages 5 highly successful blogs and is the owner of LinkedIn's most successful product management user group.

AESS — IEEE Aerospace and Electronics Systems Society   **IEEE Computer Society**   **◆IEEE Florida West Coast Section**   **IEEE Signal Processing Society**   **ComSoc** IEEE Communications Society

Deep Learning for mmWave and THz Beamforming Applications

Date:	**Friday, July 14, 2023**
Time:	**6:00 pm – 7:30 pm**
Speaker:	**Dr. Kumar Vijay Mishra, Ph.D, US Army Research Laboratory**
Location:	**In Person:** **USF Marshall Student Center, 4103 USF Cedar Cir, Tampa, FL 33620**
	Virtual: **Link will be provided to registrants**
Cost:	**No Cost**
Register:	**Online at https://events.vtools.ieee.org/m/360664**
Questions:	**Kumar Vijay Mishra - vizziee@gmail.com**

Abstract: The millimeter-wave (mm-Wave) massive MIMO communications/radar employ hybrid analog-digital beamforming architectures to reduce the cost-power-size-hardware overheads. Lately, there is also a gradual push to move from the millimeter-wave (mmWave) to Terahertz (THz) frequencies for short-range communications and radar applications to exploit very wide THz bandwidths. At THz, ultra massive MIMO is an enabling technology to exploit even wider bandwidth while employing thousands of antennas. The design of the hybrid beamforming techniques requires the solution to difficult nonconvex optimization problems that involve a common performance metric as a cost function and several constraints related to the employed communication regime and the adopted architecture of the hybrid systems. There is no standard methodology for solving such problems and usually, the derivation of an efficient solution is a very challenging task. Since optimization-based approaches suffer from high computational complexity and their performance strongly relies on the perfect channel condition, we introduce deep learning (DL) techniques that provide robust performance while designing a hybrid beamformer. In this lecture, the audience will learn about applying DL to various aspects of hybrid beamforming including channel estimation, antenna selection, wideband beamforming, and spatial modulation. In addition, we will examine these concepts in the context of joint radar-communications architectures.

Kumar Vijay Mishra (IEEE S'08-M'15-SM'18) obtained a Ph.D. in electrical engineering and M.S. in mathematics from The University of Iowa in 2015, and M.S. in electrical engineering from Colorado State University in 2012, while working on NASA's Global Precipitation Mission Ground Validation (GPM-GV) weather radars. He received his B. Tech. summa cum laude (Gold Medal, Honors) in electronics and communication engineering from the National Institute of Technology, Hamirpur (NITH), India in 2003.

He is currently Senior Fellow at the United States Army Research Laboratory (ARL), Adelphi; Technical Adviser to Singapore-based automotive radar start-up Hertzwell and Boston-based imaging radar startup Aura Intelligent Systems; and honorary Research Fellow at SnT - Interdisciplinary Centre for Security, Reliability and Trust, University of Luxembourg. He is the recipient of U. S. National Academies Harry Diamond Distinguished Fellowship (2018-2021), Royal Meteorological Society Quarterly Journal Editor's Prize (2017), Viterbi Postdoctoral Fellowship (2015, 2016), Lady Davis Postdoctoral Fellowship (2017), DRDO LRDE Scientist of the Year Award (2006), and NITH Director's Gold Medal (2003).

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He is Vice-Chair (2021-present) of the newly constituted IEEE Synthetic Aperture Standards Committee of the IEEE Signal Processing Society.

Since 2020, he has been Associate Editor of IEEE Transactions on Aerospace and Electronic Systems for which he was awarded Outstanding Associate Editor recognition in 2021. He has been elected Vice Chair (2021-2023) and Chair-designate (2023-2026) of International Union of Radio Science (URSI) Commission C. He is the lead/corresponding co-editor of three upcoming books on radar: Signal Processing for Joint Radar-Communications (Wiley-IEEE Press), Next-Generation Cognitive Radar Systems (IET Press Radar, Electromagnetics & Signal Processing Technologies Series), and Advances in Weather Radar Volumes 1, 2 & 3 (IET Press Radar, Electromagnetics & Signal Processing Technologies Series). He is also the founding member of IEEE Communications Society Integrated Sensing and Communications Emerging Technologies Initiative (ISAC-ETI). He has won many Best Paper prizes, including IET Premium Award (2021). His research interests include radar systems, signal processing, remote sensing, and electromagnetics.

Brief History of the US Army Research Laboratory

Before the forming of the ARL, the United States Army had research facilities dating back to 1820 when the laboratory at Watertown Arsenal, Massachusetts, studied pyrotechnics and waterproof paper cartridges. This facility would evolve into the Materials Technology Laboratory. Most pre-WWII military research occurred within the military by military personnel, but in 1945, the Army published a policy affirming the need for civilian scientific contributions in military planning and weapons production. Non-military involvement before this time was frequent; however, methods for contribution to warfare technology was on limited and incidental basis. On June 11, 1946, a new research and development division of the War Department General Staff was created; however, due to internal forces within the military which supported the traditional technical service structure the division was closed. A variety of reorganizations took place over the next four decades, which put many organizations in command of Army research and development.[3] Often commanders of these organizations were advocates of the reorganization, while some middle level management was opposed to the change.

The ARL represents the realization of a memorandum dated January 6, 1989 from the LABCOM Commander recommending integrating the corporate laboratories into a single entity. As part of the Base Realignment and Closure of 1989/1991, the consolidated research facilities would be located primarily at Adelphi Laboratory Center and Aberdeen Proving Ground. This would also relocate the majority of operations at MTL to APG. The Federal Advisory Commission reviewed and accepted the creation of ARL in 1992.

Federated Laboratories Beginning in 1996, the Army Research Laboratory entered into innovative cooperative agreements with industrial and academic partners to form "federated laboratories," or "FedLabs", to perform research in broad areas important to the U.S. Army where the ARL could extract significant leverage from work being performed in the commercial and academic arenas. The first three FedLabs were in Advanced Displays, Advanced Sensors, and Telecommunications. Each FedLab was a large consortium of companies, universities, and non-profit organizations, with both an overall industrial leader and an ARL leader. The cooperative agreements forming the FedLabs were somewhat unusual in that the ARL was not a mere funder of research, but an active consortium participant.

IAS IEEE INDUSTRY APPLICATIONS SOCIETY

◆IEEE Florida West Coast Section

IEEE PES Power & Energy Society®

Motor Bus Transfer (MBT) Seminar
IEEE Std. C37.96-2012
IN-PERSON

Date:	**Friday, August 25, 2023**
Time:	**9:00am – 4:30pm (Eastern Time - New York)**
Speaker:	**Tom Beckwith – Former CEO, Beckwith Electric Co, Inc.**
Presentation:	**Motor Bus Transfer (MBT) Seminar - IEEE STd. C37.96-2012**
CEH Credits:	**Seven (7) CEHs**
Cost:	**Members: $100/Non-members: $200/Students: $10**
RSVP:	**Register at https://events.vtools.ieee.org/m/360236**
Location:	**Seminole Electric Cooperative, Inc. – 16313 North Dale Mabry Hwy, Tampa, Fl 33618**
Questions:	**Robert DeMelo robert.demelo@ieee.org**

This seminar will explore several new findings from recent research regarding motorbus transfer. Recent IEEE PSRCC work has demonstrated that a long-held transfer acceptance criterion has poor correlation to motor torque and gives passing grades to severely excessive torques upon transfer. Time-based transfer criteria are ineffective and permit severely out-of-phase transfers or conversely may preclude perfectly good synchronous transfers. A Motor Bus Torque Ratio metric is proposed as the aggregate peak torque at transfer expressed as a multiple of the aggregate load torque prior to transfer and displays a high correlation to the phase angle at transfer with little effect from voltage or frequency difference at transfer. If it is torque that reduces the life expectancy and damages motors or driven equipment, or both, as suggested in industry standards, then the industry must use a torque-based criterion to assess if transfers are being completed within acceptable torque limits.

The seminar will cover the following:
- ♦ Why Transfer Motor Load Sources
- ♦ Basic Applications: Primary-Backup, Main-Tie-Main, Multiple-Option Source Selection

- ♦ IEEE Std C37.96-2012 Motor Bus Transfer Classification – Methods & Modes
  - Automatic and Manual
  - Closed Transition Method – Hot Parallel Transfer
  - Open Transition Method - Fast, In-Phase, Residual Voltage
  - Open Transition Modes – Simultaneous, Sequential

- ♦ IEEE Std C37.96-2012 Conditions Across Normally Open Startup or Bus Tie Breaker
  - Effects of a Fault
  - Out-of-Step (OOS) Generator Trip
  - System Separation between Incoming Supply Sources
  - Supply Source Transformer Winding Phase Shift
  - Transient Effects upon Disconnect of Motor Loads
  - Motor/Load Characteristic Effects on MBT

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- ◆ Failed Residual Voltage Transfer – Case Study
- ◆ Transfer Initiate, Inadvertent External Operation, Lockouts
- ◆ Load Shed During Transfer
- ◆ ANSI/NEMA Standard C50.41-2012 Resultant per unit V/Hz Limits
- ◆ Bus Transfer Spin Down Testing, Acceptance Testing, Setting Considerations
- ◆ Spin Down Analysis & Settings Calculations – Case Study
- ◆ Sequential vs. Simultaneous Transfer, The Need for Speed – Case Study

- ◆ IEEE Fast Transfer Sync Check Relay Performance Test Protocol Results
- ◆ IEEE Residual Voltage Transfer Relay Performance Test Protocol Results
- ◆ Motor Bus Transfer System Dynamic Performance Test Protocol Results and Observations
- ◆ A Motor Bus Transfer Torque Ratio Criterion applied to Live Open Transition Transfers Under Normal Operating Load Conditions - Observations and Conclusions
- ◆ Test Results from Modeling of Transient Currents and Torques on Motors during Residual Voltage Motor Bus Transfer

Tom Beckwith - Tom has over fifty years' experience in the electric power industry. As CEO of Beckwith Electric Co. from 2009 to 2020, Tom provided the leadership to develop and implement strategies for product development, marketing, sales, manufacturing, quality control and staffing.

Through the Beckwith Electric Center for Learning, he has travelled around the U.S. and the world presenting Protection & Control seminars to power companies and industrials.

Tom has a Bachelor of Science degree in Electrical Engineering (BSEE) from Case Western Reserve University and a Master of Business Administration (MBA) degree from the University of South Florida. He is a member of the IEEE PES/IAS, Petroleum & Chemical Industry Committee, and has co-authored three papers for the IEEE Transactions on Industry Applications.

Since 1972, he has served on working groups in the IEEE PSRC, Transformers Committee and the IEEE IAS Industrial & Commercial Power Systems Committee. He is co-inventor of a U.S. patent on a

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IEEE FWCS PES/IAS ExCom
Thursday, July 27, 6:30 am – 7:30 am
Virtual
https://events.vtools.ieee.org/m/333494
Contact/Questions: Robert DeMelo, robert.demelo@ieee.org

SAVE THE DATE
USF College of Engineering
15 September 2023

Join the IEEE Computer Societies of Florida West Coast Section, University of South Florida, and Florida Polytechnic University for a technical program featuring IEEE Computer Society president-elect Jyotika Athavale.
Questions: Andrew Seely, Andrew Seely andrew.seely@ieee.org

Florida Electric Cooperative Association (FECA) 2023 Engineers Conference

On June 12th, the Florida West Coast PES/IAS worked together with David Bousot from Tampa Electric and Mike Cunningham from Qualus to present on the topics of System Protection for Solar Collector Substations and Fiber Optics, respectively. David and Mike did a fantastic job covering their topic areas with much gratitude and appreciation be-ing shared by the almost 70 attendees from IEEE and the Florida Electric Cooperative Association (FECA) engineers. FECA is made up of 18 distribution and generation & transmission cooperatives throughout Florida. This annual event is a great collaboration opportunity between the cooperatives and IEEE PES/IAS.

David Bousot from Tampa Electric Presenting

Mike Cunningham from Qualus Presenting

Art Nordlinger, Robert DeMelo, Regan Sink, Kayla Allemang

FECA Engineering Conference Attendees

Green Tech Guru, Dr. Govind Chavan, Sheds Light on His IEEE Journey and Vision for the Future
Interview with Dr. Govind Chavan, IEEE Senior Member, by Roberto Montero, Electrical Engineering student at the University of South Florida

Dr. Govind Chavan, a Senior Scientist at ABB, and a Senior Member of IEEE, has been making strides in the field of green technology, with a specialization in power electronics engineering. With a strong footing in the professional domain, Chavan has carved out an exceptional career journey, hailing originally from Bombay and acquiring significant expertise in electrical power train design, fault current protection, and lightning transients. Chavan's interest in electrical engineering (EE) was sparked in 11th grade, largely due to the enigma of Lenz's law and its interplay with the principle of energy conservation. This early fascination with physics paved the way for his successful career, leading to his impressive work with Silicon IGBTs, SiC MOSFETs, Silicon SCRs, and Silicon IGCTs.

One of his most significant accomplishments, a testament to his stellar work, is his paper for IEEE titled "Application of Static Synchronous Series Compensators in mitigating Ferranti Effect". In the paper, Chavan discusses a novel application of SSSC, a VSC-based FACTS device connected in series with a transmission line. The research underlines how SSSC can effectively regulate voltage spikes caused by the Ferranti effect in unloaded transmission lines, opening up new opportunities in power transmission control.

IEEE has played a significant role in Chavan's career, with its conferences offering essential platforms for sharing insights and networking. Chavan highlights the organization's valuable support in fundraising for projects and grants, as well as its role in providing up-to-date information in his research fields. As a member of the Power & Energy Society (PES), he attests to the invaluable resources and opportunities that IEEE provides.

When asked about the future of the EE field, Chavan presented an insightful perspective. As Electric Vehicles (EVs) continue to rise in popularity, he anticipates increased public infrastructure with a DC emphasis.

To young engineers entering the field, Chavan advocates for a hands-on approach, underscoring the value of practical experience. "See how these things work. Also, test models in reality, reality is the best simulator," he advises. Looking back on his journey, he highlights that relying excessively on simulations over hands-on experience is a pitfall best avoided.

In his journey to drive green technology forward, Dr. Chavan leverages his experience, lessons learned, and passion for EE. His work in the realm of power transmission and his ongoing contributions to IEEE exemplify his commitment to his field and his desire to foster innovation for a more sustainable future.

Senior Member Roundup
Saturday, July 29, 12:00 pm - 4:00pm
OnLine
Register here: https://events.vtools.ieee.org/m/363118
Contact / Questions:
andrew.seely@ieee.org   hermann.amaya.us@ieee.org

TopGolf Networking Event

Date:	**Saturday, July 29, 2023**
Time:	**6:00PM – 8:00PM (EST/EDT)**
Speaker:	**N/A**
Location:	**Topgolf Tampa 10690 Palm River Road, Tampa, Florida 33619**
Cost:	**$20 per person (limited to 16 people)**
CEH Credits:	**No CEH's provided for this event.**
RSVP:	**Online at: https://events.vtools.ieee.org/m/362155**
Questions:	**Diane Aristizabal, dianaaristizabal@ieee.org**

Join IEEE FWCS WIE for our Summer social!

Enjoy a fun 2-hour networking event at Topgolf,

with golf, snacks, and great company.

Seats are limited,
RSVP by July 27!

Save the Date
IEEE Florida West Coast Section
Year End Gala
Saturday, October 28, 2023
St. Petersburg Yacht Club
Inviting ALL Active Members to participate in the Year End Gala
to celebrate the Section Success

FWCS RAS HISTORY at USF FCRAR May 2023
May 18-20 2023
http://fcrar.robolat.org/

Alfredo Weitzenfeld, PhD--Host
Professor Associate Chair of Graduate Affairs
Director Biorobotics Lab
Phone: (813) 974-4905
Email: aweitzenfeld@usf.edu

The History of IEEE FWCS RAS Chapter 2010-2023

Presented by Sean Denny
Chair RAS Chapter, IEEE STEM Champion

The IEEE Florida West Coast Chapter of Robotics and Automation (RAS) was organized in 2010 by founding Chair George Schott. Two Chairs followed since Kenneth Fiallos (2012-2015) and Sean Denny (2015 to Present). Our motto is: LEARN about Robotics in a class environment; DO—Provide opportunities to participate in local Robotics; TEACH members of the community advantages of Automation.

Electrathon of Tampa Bay Racing co-founded by Ken Fiallos. Ken was in charge of an Electrathon Instrumentation & Telemetry Project to augment student learning opportunities with the Electrathon Racing cars. They transmit the AMPS, VOLTS, SPEED, and DISTANCE data via conventional Ethernet Wireless.

Terri Willingham was in charge of FIRST Robotics Team Duct Tape in 2010 and now the Director at the AMROC Center at University Mall. Along the way, Terri Willingham turned "the Hive" at the John F Germany Library from an old computer center into a Maker Space Hub from 2014-2019, Gulf Coast Maker Fair, and the annual FIRST Roboticon Competitions.

Ralph Smith was in charge of Computer Mentors who helped Tampa Bay children with STEM.

St Petersburg College

a. Chad Mairn demonstrated Virtual Reality in Robotics (September 2019)

b. Dr Sidney Martin hosted a campus wide Energy Event (September 2022) at the University of South Florida:

Each year RAS had a joint meeting with the USF students to discuss their Robotics Projects at the annual IEEE Southeast Con.

Rose Mack introduced us to FIRST Robotics competitions in 2007 we were invited to judge. She was a panelist at the IEEE Teacher In Service Symposium in Tampa 2012. Rose was Pinellas County Schools Secondary Supervisor and Math Supervisor, retiring in 2015. She has been the Master of Ceremonies for all local Robotics Competitions BEST, BIZBOTS, and ROBOFEST.

Continued from Page 11

Ken Fiallos wanted to branch out on Competitions by establishing the Florida Robotics Alliance. Scholarship money bought Arduino Kits later donated to USF. We brought alternative Robot Competitions: BEST Competition 2013 at Lennard High and BIZBOT Competition 2015 at Wharton High.

ROBOFEST was invented by IEEE Michigan Professor Dr. CJ Chung. Emma Alaba was the local organizer for annual competitions yielding a game plus exhibits. During 2012-2015, events moved from Clearwater, St. Pete, to Oldsmar. Robofest continued at Nielsen Media in Oldsmar (2016-2019). We also did World Robotic Olympiad, Thanksgiving Parades and the World Championship June 2017.

Final ROBOFEST was at Nielsen in 2020 just before the Pandemic. 2021 was a virtual competition. 2022 was live back in Clearwater. 2023 at the St Pete Beach Community Center was Emma's official retirement. David Steele has been coming to ROBOFEST events since 2015 with a fully functional remote controlled R2-D2. He also has built 3D dioramas of castles, mars landings, and medieval battle scenes.

RAS Meetings started in 2010 at Seafood Restaurants on Courtney Campbell Causeway in Tampa. Highlights were an Arduino Based Wireless Home Alarm System, Robots in Factories, Legged Robots, and Prosthetics.

Venues included: Westshore DeVry University (2012-2015), The Hive at John F Germany Library (2015-2020); Virtual via ZOOM (2020-Present).
2014: Osceola High School, Arduino Motor Controller Demonstrations, 3D Printing at Tampa's Museum of Science and Industry, and Pinellas County STEM Fair,. Sean Denny was awarded a STEM award from Hillsborough County Schools

2015: Ken Fiallos retired and was awarded a STEM award from Hillsborough County Schools.

2016: Bill Waggener Raspberry Pi Presentation.

2017: Field Trip to Lakewood High School Robotics Lab showed the students building electric cars, drones, and a fully working BB-8 Droid under teacher Jason Ness. Returned for a followup in 2018.

RAS and the Consultants Network hosted a joint meeting on Cybersecurity at the St Pete Yacht Club, November 2018.

2019: Mike Okneski's Raspberry Pi Presentation; Jim Stosic Uber Presentation; Pinellas STEM Fair, Farewell to Fredi Beck from Electrathon, Tour of Shorecrest High School's Robotics Program.

Websites
https://r3.ieee.org/fwc/chapters/ras/
www.TryEngineering.org

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Sean Denny, Chair FWCS RAS Chapter and Professor Alfredo Weitzenfeld, Ph.D - Host

ELECTRATHON RACING

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	1 Month		6 Months		12 Months	
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3/4 Page	$110	$143	$530	$663	$925	$1,110
Full Page	$140	$182	$670	$838	$1,175	$1,410
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IEEE FWCS
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St. Petersburg, FL
33734-7067

Florida West Coast Section Tampa

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July 2023 - Calendar of Events *(For more information see "Inside the SunCoast Signal" → Page 1)*

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