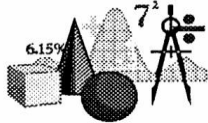# IEEE

SPARKS

Daytona Section Newsletter
September 2016

SEPTEMBER SECTION MEETING

Thursday September 22nd at the Halifax River Yacht Club, 6:00 PM
331 South Beach Street, Daytona Beach, Florida 32114

PRESENTATION TOPIC
UNMANNED AERIAL VEHICLE (UAV) AS A SERVICE

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CHAIR'S REPORT

Welcome back from summer! I know everybody is busy diving into the swing of things (your chair included), so this will be a short note.

Make sure to let us know if you would like to be an officer! Officer elections are in December, and we would love to get some fresh blood on the ballot.

Please vote in the IEEE election this fall. I can't say any more without being in conflict with IEEE Headquarter rules, but the Constitutional change is a matter of some not insignificant importance to our membership. Read the proposed Constitutional Amendment, Statements, and Rebuttals pamphlet carefully to be informed of its impact.

We're always looking for members with interesting stories about engineering and careers in general to speak with our students. Let us know if you'd be willing to do this!

Let us know if you're interested in promotion to Senior Member; senior members have 7+ years' experience in their field (some of which can be your education—for more details check the IEEE website or ask one of your officers) and have made some level of significant contribution.

We're also always actively soliciting ideas (particularly those with names attached) for interesting speakers. I for one am hoping we find a speaker on rockets and explosions resulting from rockets, but I'm sure other people have other interests.

As always, keep learning.

Jeanette

SEPTEMBER PRESENTATION

UNMANNED AERIAL VEHICLE (UAV) AS A SERVICE

UAV as a Service (UAVaaS) represents a ground-breaking concept that is pioneering the future of cloud computing within the domain of commercial UAVs. This concept seeks to reduce the financial overhead that burdens companies who use UAVs for agriculture, surveillance, emergency response, inspections, survey and real estate. Also addressed are privacy concerns with data collection/ownership as well as efficient real-time sharing of information.

When implemented, UAVaaS acts as a cloud-orchestrated rental service for UAVs. Companies now become multi-tenant operators in which they can connect to and timeshare UAVs owned by different entities and fly them whenever needed. This enables companies to only pay for the flight time used and data collected which removes the need to purchase UAVs at full price, pay for FAA registration, insurance and trained pilots.

OUR SPEAKER

Justin Yapp is a recent Master of Science in Cybersecurity Engineering graduate from Embry-Riddle Aeronautical University. He continues his academic research as a Ph.D. candidate in Electrical Engineering and Computer Science and teaches part-time. His current research in UAV as a Service recently won the Best Paper award from the NATO Modelling and Simulation for Autonomous Systems Workshop held in Rome earlier this year, and another conference presentation on this topic is scheduled for the 35th Digital Avionics Systems Conference in September. Justin hopes to continue his research and aims to find funding to develop a test bed in which UAV as a Service can be developed on a small scale.

APRIL'S PRESENTATIONS

As customary, our April meeting presentations were given by our our Science Fair awardees and ERAU students discussing their projects.

This year's Science Fair Senior Division winner was Julia Yu who gave a presentation on her project- Boids: A Bird Flocking Simulation
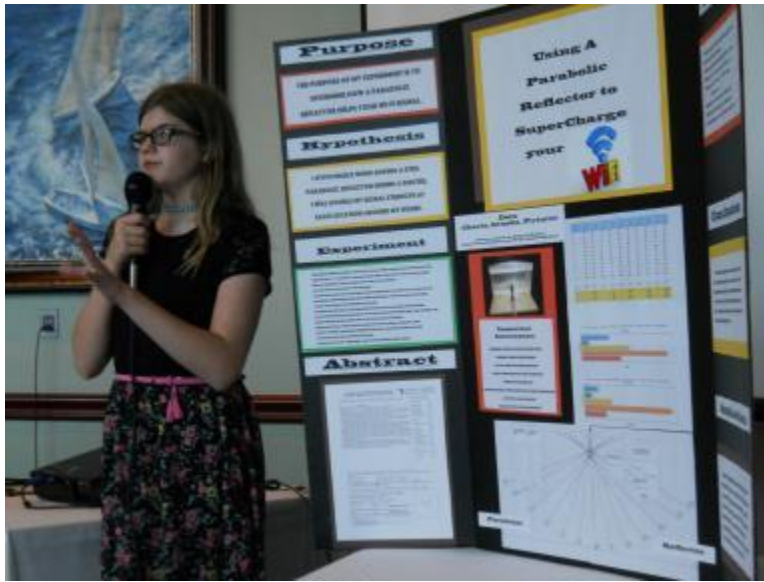
Our Science Fair Junior Division winner was Abigail Walker shown giving her presentation titled
Using a Parabolic Reflector to Supercharge Your WI-FI

ERAU Students Sean Holden and Philip Kletzli of the EcoCAR 3 Team giving their presentation
on the Advanced Driver Assisted System

ERAU Students Cierra Sparks and Fares Almuhanna presenting on their Academic Scheduling System

ERAU Students William "Casey" Layne and Krushan Patel presenting the DME Syatem for Sense and Avoid

ERAU Students Rebecca DeMarco and Justin Gogas presenting their project MEERS, Mobile Extreme Environment Research Station with technical support by Dr. Brian Butka

ANOTHER TALE FROM THE OLD PROFESSOR

Vacuum Valley
Everybody knows what Silicon Valley is all about. But did you know there was once a Vacuum Valley?

The "silicon" in Silicon Valley comes from the major constituent of semiconductors; the element silicon or Si. But the main material for early semiconductors was germanium, Ge. The first transistors and many other electronic devices were made and developed in New Jersey at Bell Labs. Perhaps New Jersey could be called Germanium Valley.

None of the Bell Labs facilities in New Jersey were in valleys. The idea that New Jersey has valleys would be new to many people who only know the state from the New Jersey Turnpike particularly near Newark Airport. Most drivers passing Newark on the Turnpike are trying to exit the state before they become asphyxiated and intent on surviving the horrific traffic.

Those in the know, such as your humble correspondent who lived his whole life in New Jersey before emigrating to Florida, the state has beautiful valleys, streams, rivers, beaches and so on. The valleys of New Jersey are in the north as South Jersey is flat, sandy and mostly scrub pine.

The most eastern valley is the Rockaway Valley with the Rockaway River passing through. Over the mountain, to the west is the beautiful and much larger Berkshire Valley. Both of these valleys are in historic Morris County which plays a huge role in the early development of radio/electronics.

The transistor was invented at Bell Labs in Holmdel, NJ. Bell Labs had a large facility in Whippany; very close to the Rockaway Valley. The Whippany facility was responsible for a significant number of advancements in electronics during and after WWII.

North of Whippany is the town of Boonton and its sister, Boonton Township, both of which are in the Rockaway Valley. The "Boontons", (although separate towns, they share a mailing address), were home to quite a few famous pioneering electronics companies.

The oldest and the source of talent for the creation of other local companies was Radio Frequency Laboratories, RFL. Founded in 1922, RFL was an R&D company licensing its patents to radio companies for commercial and consumer products. RFL did not manufacture products. RFL is credited with inventing the signal generator which is essential to designing and manufacturing radio receivers. An RFL division; Aircraft Radio Corporation, ARC, made aircraft transmitters and receivers. Jimmy Doolittle used ARC equipment in his 1929 demonstration of "blind flight"; taking off, flying a closed course and landing without any reference to the outside world using only radio beams for guidance. When RFL could not purchase a vacuum tube to perform some function for a new invention, they made their own. When the ARC division grew to be larger than its parent company it absorbed the parent and RFL was no more. That did not last for long as the original founders of RFL started a new RFL in the original buildings resulting in two separate companies on the same grass-strip airport.

The Boonton Radio Company made a broad line of test equipment. Measurements Corporation located in the town of Boonton also made a line of radio-related test equipment and was a pioneer in the design of television test equipment. A signal generator company, Ferris Instruments was in a small building down town. These companies dated from the 1930's and earlier. After the War in 1945 "Johnny" Johanson who machined the precision condensers, (hey kiddies, a condenser is what we call a capacitor today), required for ARC equipment started Johanson Manufacturing Company. Johanson built a factory at the ARC airfield and thus became the third company at the little airport. Hewlett-Packard entered the scene in the 1950's by buying Boonton Radio and setting up their power supply factory just up the hill from the Rockaway Valley in the adjacent town of Rockaway Township. In the 1960's Quan-Tech Laboratories was started making precision audio frequency measuring equipment in Boonton.

An aerial view of the Aircraft Radio Corporation Airport circa 1944 looking North. The Rockaway River is directly under the aircraft taking the picture. Although ARC is long-gone, Johanson and RFL are still there. Jimmy Doolittle practiced his 1929 blind flight demonstration from the field.

One very important company in Boonton deserves special mention. Boonton Research Laboratories was founded in 1929 by Stuart Ballantine. The company later changed its name to Ballantine Laboratories. Ballantine was a brilliant scientist and inventor and received numerous awards. The Franklin Institute awards a medal in his name for achievements in science.

Ballantine was president of the Institute of Radio Engineers, IRE, one of the two societies that combined to create the IEEE. Ballantine wasn't the only Boontonian to be president of the IRE. Lewis Hull, the president and founder of ARC was also an IRE president and lived in Boonton Township only a block from your humble correspondent. Oh! I forgot to tell you that The Old Professor was also a Boontonian.

Certainly the Boontons and the Rockaway Valley area played a significant role in the advancement of electronics and deserves recognition like Silicon Valley. Since the vast majority of the achievements involved designs using vacuum tubes I am proposing that the Rockaway Valley of New Jersey be called "Vacuum Valley" and gain the respect it deserves.

One last point: The Boonton Electronics Company, (not Boonton Radio), was never in Boonton. It started on the second floor of Shalit's Drug Store in Morristown, NJ. Mr. and Mrs. Shalit had a son named Gene. As Paul Harvey would say; "Now you know the rest of the story".

Al Helfrick

DAYTONA SECTION SHIRTS

We are pleased to offer Daytona Section polo shirts for our Section members. The shirts are embroidered with the IEEE Logo and DAYTONA SECTION on the left and your name and grade, if desired, on the right. The shirt is a high quality 5 oz, 65/35 poly/cotton pique in Royal Blue with white embroidery. Available in S - 2XL in men's as well as ladies sizes. Price is $29, including tax, for S-XL size's, 2XL size is $3 additional.

For more information or to order shirts contact: Allan Jusko 386-671-3706 or a.jusko@ieee.org. Indicate shirt size and name and grade if desired. Shirts must be paid for before ordering, typical turn-around time is 2 weeks. Arrangements can be made to pick up shirts or have them shipped to you.

DAYTONA SECTION COFFEE MUGS

The Daytona Section has available coffee mugs with the IEEE Daytona Section Logo and are available for $7.00. Purchase one or more to show your support and pride in our Section.

Contact Ron Gedney at 386-478-1204 or r.gedney@ieee.org for more information.

EDITORS NOTES

The **SPARKS** newsletter is also available on our website **http://www.ieee.org/go/daytona**

Other web sites of note

Region 3 website	**Melbourne Section website**	**Orlando Section website**
http://www.ewh.ieee.org/reg/3/	www.ieeemelbourne.org	www.ieee.org/orlando

FUTURE MEETING DATES:

The remaining meeting dates for the 2016 fall sessions are: Oct 27, Dec 1.

IEEE MEMBERSHIP PINS

Membership pins are available for all member grades. Check out this website for more information.
http://www.ieee.org/membership_services/membership/products/pins.html

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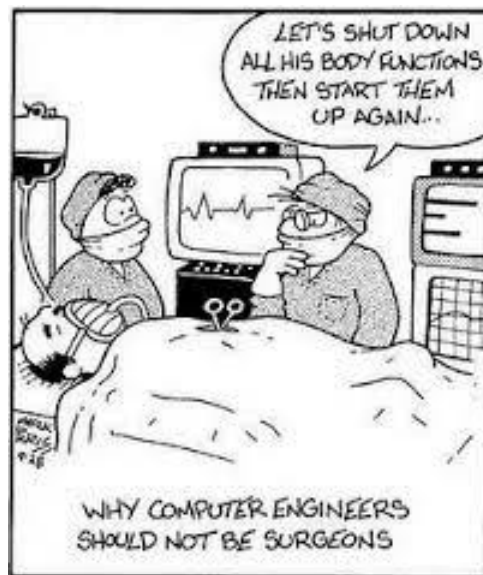**Webmaster – Charlie Husbands**
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SEPTEMBER 2016 MEETING

Thursday September 22nd at the Halifax River Yacht Club
331 South Beach Street, Daytona Beach, Florida 32114
Just south of the Fire Station at the corner of Beach and Orange Streets

TOPIC – Unmanned Aerial Vehicle (UAV) As A Service

SPEAKER – Justin Yapp, ERAU

AGENDA
5:30 PM Greetings & Cocktails
6:00 PM Dinner
7:00 PM Presentation

Dinner Menu

Chicken Marsala with garlic whipped potatoes and roasted vegetable medley

Tender slow roasted pork tenderloin marinated with a mojo-lime seasoning, with garlic whipped potatoes and roasted vegetable medley

Lemon-Cream Shrimp, Skillet seared shrimp tossed in a lemon-cream sauce with shallots and parsley, served over linguine

The dinner price includes roll and butter, salad, dinner, coffee or tea, gratuity and tax

Members and guests $20.00 each. Students $10.00 each

**Please contact Allan Jusko by <u>Wednesday the 21st at noon</u>
to give us a count for dinner or for further information**

If you make reservations and are unable to attend, call at least 12 hrs prior to the event to cancel.

The Section is charged for all dinners ordered, please let us know if your plans change

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