



SPARKS

Daytona Section Newsletter
November/December 2022
<https://r3.ieee.org/daytona/>



UPCOMING EVENTS

**Our November/December Section meeting will be held on
Thursday December 1, 2022 at 7 pm.**

The meeting location is at the Advanced Flight Simulation Center at Embry Riddle Aeronautical University, Room 216. A campus map with directions to the building is provided on page 6 of this newsletter.

OUR PRESENTATION

LEARNING HOW TO “SPEAK PILOT”: AVIATION ENGLISH TRAINING THROUGH VR, ASR, AND AI.

This presentation will review the new Preflight Immersion Laboratory Operational Training (PILOT) program standard phraseology training for radio communications that all new student pilots receive. It will be followed by a hands-on demonstration of the 360-degree VR video lessons, web-based ASR phraseology trainer, and the VR simulator in which student pilots can interact with artificial intelligence (AI) air traffic controllers in real-time.

OUR SPEAKER

Andrew Schneider is the Aviation English Coordinator at the Flight Departure for Dayton Beach, originating the position in 2020. His background is in applied linguistics specializing in second language acquisition, corpus linguistics, language policy and planning, and language testing. He is also a third generation pilot and an instrument rated ground instructor.

For questions regarding venue or information contact Allan Jusko, Editor
Call or text 386-846-5372, or email a.jusko@ieee.org

We are looking for volunteers for our Section’s Officer positions for the coming year. The pay is low (nothing, zilch, na da) but involvement is personally rewarding and helps to promote and encourage our future engineers and scientists. Experience being involved in an IEEE section is nice but not a requirement. Just a desire to help promote the profession and possibly learn something new along the way.

PAST EVENTS

The Daytona Section WIE, along with the Section, presented the monthly program on Wednesday, October 26, 2022, featuring an expert panel of women engineers employed in aerospace and aviation. We welcomed Mineris Figueroa and Angie Gonzalez from Northrop Grumman, Katherine Ghelarducci from the Kennedy Space Center, and Caeley Looney from L3Harris.



L-R: Caeley Looney, Angie Gonzalez, Katherine Ghelarducci, Mineris Figueroa, Rebecca DeMarco

Led by panel moderator and Daytona Section WIE Chair Rebecca DeMarco, panelists described how they became interested in engineering and what excited them about working in aerospace and aviation. The importance of air superiority for the defense strategy of the U.S. was put into focus, and panelists expressed that they liked to be on the cutting edge, to come up with new solutions, and to respond to learning challenges.

These female engineers are proud to act as mentors to the new generation, and they discussed their experiences in early operational testing, quality control. They hope to empower other female engineers to contribute successfully, and to “think out of the box.” Having had the opportunity to work along high-level experts provides them with a unique set of skills and expertise.

When prompted to cite the hurdles they had to overcome as women to achieve success, the panelists revealed their strategy of targeted networking within the workplace. They suggested to cultivate not just one, but several mentors who are willing to vouch for them to and pave the way for their suggestions to be heard. In addition, panelists disclosed personal experiences, for example, self-doubt: “Do I deserve this?” “Was I hired just to fill the corporate EEO quota?” The answer to such questions of course is yes! They certainly deserve recognition and respect from all their colleagues because they can attest to their expertise and their successful task and project accomplishments. And no! the corporate EEO quota had nothing to do with it.

In addition to Section members and the panelists themselves, approximately 20 university students attended the expert panel session where they received a plethora of valuable tips about internships and about the job application process, in general:

First, be aware that most resumes are prescreened by an automated software process.

- Do not put an "Objective" line. This section is no longer relevant.
- Instead, use keywords and format those characters in white.
- Therefore, only use white paper when printing a hardcopy of your resume for a job fair.
- Have several versions of your resume, and try to match the syntax of your experience with that of the job description.
- Use action verbs such as "led," "supervised," "managed..."
- At career fairs, bring plenty, plenty copies of your resumes.

At the career fair or interview:

- Be yourself: Prospective employers can spot when you put on an act.
- Be creative: Bring a tablet and show off your most relevant projects.

SMALL RADIO TELESCOPE UPDATE – BURNS SCHOOL

A brief history. Started in 2008, the Small Radio Telescope (SRT) project was funded by a grant from the IEEE to the Daytona Section to be used as a tool for educational purposes. The SRT dish was first installed at the Museum of Arts and Science in Daytona Beach. However, flooding from a hurricane damaged the building which resulted us taking the SRT down and storing it until another venue could be found. In 2020 an agreement with the Burns Science and Technology Charter School in Oak Hill allowed us to install the telescope with its associated hardware and software at the school for use by the teaching staff and students. After a couple of years work due to hardware and software upgrades, a team of section members got the SRT installed, up and running and is now being used by the school.

During the school year Science and Engineering Fairs are held at various local schools. These Fairs can have a number of science project categories and are held in conjunction with the larger Volusia County Science and Engineering Fair which takes place in late January. This year Dr. Hugh Ward, a Daytona Section member and part of our SRT project team, participated as a judge at the Burns Science and Technology Charter Schools Science Fair.

We are pleased to report, a student presenting in a category other than the one Dr. Ward was involved, was the first student to independently complete a Sun Observation Lab project using our SRT system as the basis of their project. That student is Amanda King, a 9th grade student at the Burns School. Amanda's project will be submitted to the Volusia County Schools Science Fair for consideration at the County level, and hopefully resulting in advancement in the County then the State level.

Many Daytona Section members have supported and been involved in this project in so many ways. We are proud of our nearly 14 year commitment to help further science education and this wonderful result makes our efforts worthwhile.

However, as with any project there is still work to be done. Design and implementation of additional SRT labs, software testing and development, and reliability testing resulting in a finished product that can be used at different education levels is our goal. We invite any IEEE member interested in becoming involved, in whatever capacity or time frame that's convenient.

To those interested, please contact Dr. Hugh Ward at 386-848-0106, any help is appreciated.



Amanda King with her project “An Analysis of Radio Waves Emitted by the Sun and Cloud Coverage”

ANOTHER TALE FROM THE OLD PROFESSOR

The Dropouts: An Inventor’s Trilogy

Part 3. Step Aside Morse; Wireless Can Transmit Sound Now

New York City, 1909: A group of teenage boys would gather to fly model aircraft at a nearby armory. They were members of the Junior Aero Club of the U.S. and their mentor was Lillian Todd, the first woman to ever design an aircraft. In addition to aviation, most of the boys were interested in wireless. They formed another club with the encouragement of Miss Todd, the Junior Wireless Club, Limited. The Club name was changed to the Radio Club of America in 1911. The club’s roster over the years was like a Who’s Who of radio. The Club is alive and well today and the roster still reads like a Who’s Who. The 1909 founding officers included one of the premier experts in wireless of the day, Reginald Fessenden.

Fessenden was born in Quebec, Canada in 1866 and attended a number of schools where he excelled in mathematics. At Bishop’s University in Quebec he finished all or nearly all of the necessary course work for a degree but dropped out before receiving the degree.

Fessenden moved to New York City in 1886 with the hopes of gaining employment with the Edison Company. Although it took some doings, he was eventually hired by Edison as a semi-skilled worker; a tester for a team installing underground electrical cables in New York City. This was the same time Tesla

was working with New York City's street gangs. Fessenden quickly proved his worth and was promoted. Financial difficulties at the Edison camp resulted in Fessenden being laid off. However, Fessenden found a number of jobs to tide him over until he accepted a position as a professor in the newly formed electrical engineering program at Purdue. His tenure at Purdue was short lived. In a few years, with the aid of George Westinghouse, Fessenden joined the faculty of what is now the University of Pittsburgh.

In the first decade of the 20th century, name recognition in wireless was dominated by Marconi. Fessenden's pioneering work wasn't published until 1932 when an article appeared in the Proceedings of the Institute of Radio Engineers, IRE, now IEEE. Fessenden's research in wireless systems included being the first to demonstrate two-way wireless communications across the Atlantic in 1906. Marconi's spanning the Atlantic a few years earlier was only one-way. Another area of research was the wireless transmission of sound. Marconi's company was not interested in sound transmission by wireless as evidenced by the name of its US subsidiary, The Marconi Wireless Telegraph Company of America, also known as American Marconi.

The early use of Hertzian waves, more commonly known as radio or wireless, involved Morse code. This was due to the lack of technology to transmit sound. But without sound, only trained operators could make use of wireless, thus no hope of commercial broadcasting. Therefore, the early adopters of radio communication were the military, press services and radio amateurs. Without sound, the potential to reach millions of users was not possible. Other members of the Radio Club of America had great interest in broadcasting, most notably David Sarnoff of the Radio Corporation of America, RCA.

Fessenden's first sound transmission was in 1900 using a spark type transmitter and amplitude modulation. The quality was particularly bad due to the poor characteristics of the spark transmitter's carrier. Fessenden's later experiments used a high frequency alternator resulting in much improved quality. A Christmas Eve broadcast in 1906 included speech and music played on the violin by Fessenden himself and was reported being heard by a number of listeners. The number of listeners is debatable as Fessenden's transmitter power was quite low and the number of receivers in the area that could receive his broadcast were very few. Listeners or not, he had the knowledge and equipment to have made a sound broadcast at that time.



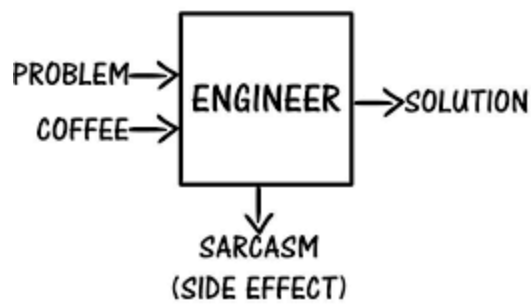
Fessenden in his wireless sound "studio". His violin is clearly visible in ..

Like other lone inventors in the early days of radio, Fessenden became entangled in legal proceedings involving patents with Sarnoff's RCA behemoth. Fessenden eventually was victorious over RCA but like many others, the court cases dragged on for decades. In addition to pioneering sound broadcasting, Fessenden was responsible for many other achievements in radio/wireless. In 1921 Fessenden became the fourth recipient of the IRE Medal of Honor. Today Fessenden is credited with receiving the IEEE Medal of Honor.

*Dr. Al Helfrick, Fellow, Radio Club of America,
a.k.a. The Old Professor*

DECEMBER 1ST MEETING LOCATION

The meeting will be held in Room 216 in the Advanced Flight Simulation Center, which is located at the lower left corner of the map show below (Red Arrow). For those coming from South on Clyde Morris Blvd, they need to make a left turn on the Aerospace Blvd. For those coming from North on, they need to make a right turn on Richard Petty Blvd and immediately a left turn on the Aerospace Blvd. There is a parking lot just beside the building. We can come in the building in the entrance on the east side of the building.



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