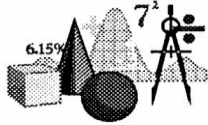




# SPARKS

Daytona Section Newsletter  
October 2019



2019 Outstanding Section Membership  
Recruitment Performance  
Daytona Section

## SECTION MEETING

Thursday October 24<sup>th</sup> at the Halifax River Yacht Club  
331 South Beach Street, Daytona Beach, Florida 32114

### PRESENTATION

#### THE ROLE OF DRONES IN LAW ENFORCEMENT

Detective Alexander Manjasek  
Daytona Beach Police Department

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## CHAIR'S REPORT



You are invited to the Thursday, October 24<sup>th</sup>, 2019, IEEE Daytona Section meeting at the Halifax River Yacht Club beginning with a 5:30 PM social ½ hour event. And, as many of you know, we have a number of other meetings and activities.

As part of my duties as Chair, I have the privilege to arrange and oversee the Daytona ExCom meetings, more formally known as the Executive Committee meetings for the IEEE Daytona Section. It is the ExCom that plans, schedules, and handles the activities, awards, speakers, finances, reporting, and other responsibilities of the IEEE Daytona Section. The ExCom is the major reason that the business portions of the Daytona IEEE Section meetings are so short allowing us to get to hear our interesting speakers sooner.

The IEEE Daytona Section is extremely fortunate to have a strong ExCom composed of smart, hardworking members. The people that comprise the ExCom have been, for the most part, your Chairs and Vice Chairs in the past and present plus the leads on student activities. Represented at the ExCom are Women in Engineering (WIE), Computer Society, and our Life Members, to name a few groups. Also, the ExCom ties the IEEE Florida Council and IEEE Region 3 (SE US) into the activities of the Daytona Section.

One of the more interesting projects the ExCom has undertaken involves a small radio telescope (SRT). The SRT is a sophisticated piece of equipment that currently needs a new home. We hope to find a home for the SRT soon so it can be used for both academic purposes and to explore the sky just for the fun of it.

Where am I going with all this? I want you to know that you are welcomed to attend our meetings and hear our interesting speakers just for the fun of it. And if you find yourself wanting to experience more, let me know. We may have something that we are doing that interests you or helps facilitate your education or boasts your career or stimulates your mind after retiring.

*Rich*

## SEPTEMBER'S PRESENTATIONS



Rich Kent presenting the 2019 IEEE Daytona Section Tamoka Science and Engineering Fair Senior Award to Brandon Saxnor from Spruce Creek High School



Dr. Richard Pat Anderson presenting the concept of Urban Air Mobility

## **OCTOBER'S PRESENTATION**

### **THE ROLE OF DRONES IN LAW ENFORCEMENT**

The Daytona Beach Police Department (DBPD) entered into unmanned aviation in June, 2017, with an initial staffing of five pilots. These pilots underwent training through Embry-Riddle Aeronautical University, and received certification as unmanned remote pilots through the Federal Aviation Administration (FAA). The unit currently has nine pilots assigned, and five drones of differing sizes and capabilities.

DBPD drones have been deployed for hostage negotiations, searches for missing people and fleeing felons, high risk warrant services, and traffic assessment operations. Drones have photographed and mapped the scenes of traffic fatalities and homicides.

The pilots are trained and tasked to conduct counter drone investigations, to ensure that private remote pilots adhere to regulations governing drone flights for both commercial purposes and hobby enjoyment, especially during special events in the city.

### **OUR SPEAKER**

Detective Alexander Manjasek, Daytona Beach Police Department

## ANOTHER TALE FROM THE OLD PROFESSOR

### IT'S EXPONENTIAL!

It seems today that almost any parameter that increases more than just a little bit, the rise is reported as “exponential!”. Back in June, the number of jobs added to the US economy was nearly three times the jobs added the previous month. The rise was declared by some journalists as “exponential!”. Two data points can be connected by almost any function and the independent variable is time in this case.

So, let us fit a simple  $A \exp(a(t-t_0))$  function, an exponential function, to the two jobs data points and project the next month's jobs report using the exponential function. Most likely the next month the actual data would hugely “miss estimates” and the whole financial world would enter a tail spin; or perhaps an “exponential decline”.

So, what does the plot of the monthly jobs added reports look like over the six-month period before June? It's shown below. Not very “exponential”.



Sticking with exponential functions: recently several significant earthquakes were felt in California. One was magnitude 6.4 and a later quake was 7.1 on the Richter scale. The last part about the Richter scale was not included in most newscasts I heard. It was up to us to figure out it was the Richter scale. There are actually several scales to describe the magnitude of earthquakes. Charles Richter's scale is the logarithm of the **AMPLITUDE** of the seismic waves

during an earthquake. I can hear some voices saying “but the Richter scale is based on logarithms not exponential functions”. There is a problem right there. Logarithms and exponentials are inverse functions of each other.

To describe the magnitude of something using logarithms one needs a reference. Richter used a specific type of seismometer and the reference was quite arbitrary. Essentially, Richter made magnitude zero represent seismic waves that could not be felt by humans and barely measured by the seismographs of the period.

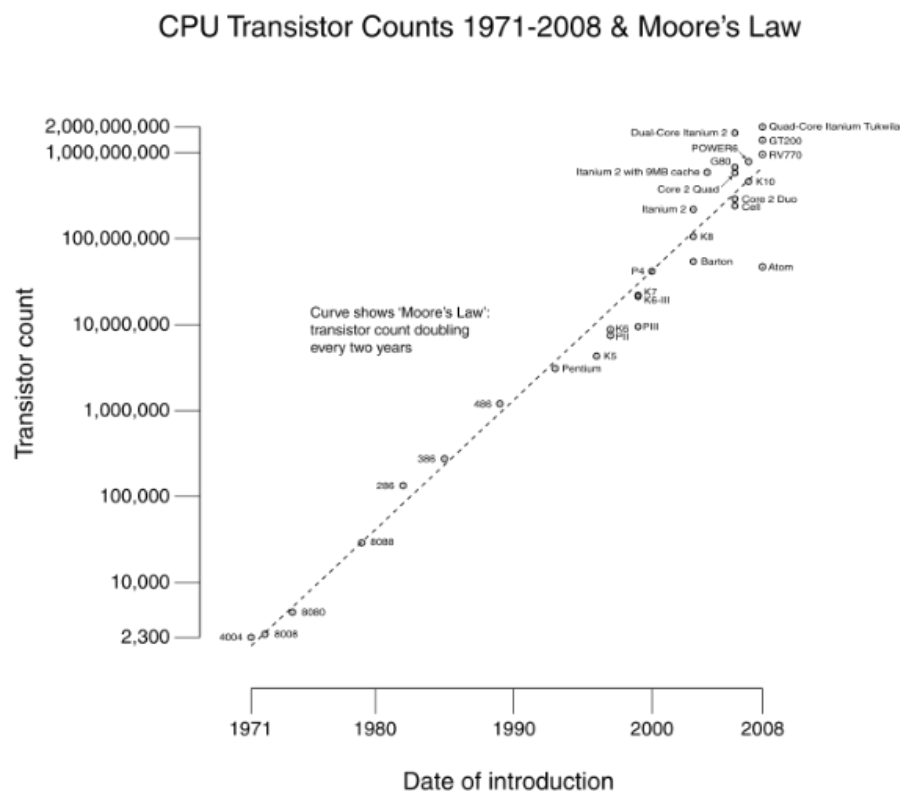
*Note to journalists: that is a real exponential function for you. Also, message to journalists, there are more modern scales for defining the severity of earthquakes. (It seems that only reporters still use the old, 1935, Richter scale.)*

Since we are discussing the lack of understanding of exponential functions, allow me to address the most misunderstood exponential function of all: decibels. I have never understood why so many do not use decibels properly, and I am including engineers in

this group. Take sound levels as an example. They are usually referred to as “decibels”. Yeah? Relative to what? You need a reference.

It is ironic that Charles Richter was quoted as saying “Logarithmic plots are a device of the devil”.

Is there any trend that may be reported in the popular press that is truly exponential? So far Gordon Moore’s law fits an exponential function quite well. The semiconductor icon predicted in a 1965 paper that the number of transistors on an integrated circuit would double every year. That was later modified to double every two years. This is pretty close to what has actually transpired. There have always been discussions that Moore’s law will eventually run out of steam but it seems to go on and on.



With apologies to Charles Richter and his disdain of log plots, the figure shows a log/linear plot of the transistor counts of integrated circuits by the year of introduction from 1971 to 2008. (An exponential function produces a straight line in a log/linear plot.) And with all of that being said, I will continue my quest to educate students about exponential functions and their cousins; logarithms.

*Dr. Al Helffrick, a.k.a The Old Professor*

## PE CORNER

### 2019 FLORIDA STATUTE CHANGES THAT AFFECT ENGINEERING PRACTICE

I’m interrupting my series on obtaining a PE license with the article on the statute changes that the governor recently signed into law that affect engineering practice. Many of the changes affect obtaining a license, so the content of those upcoming columns are significantly affected by these changes.

Currently, only graduates with engineering science degrees from Board-approved programs are eligible for licensure in Florida. The new law allows graduates with bachelor's degrees in engineering technology from Board-approved programs to apply for a PE license.

With the addition of engineering technology degrees comes an update to the experience required for licensure. Applicants with bachelor's degrees in engineering science will still need four years of engineering experience to apply, where those with bachelor's in engineering technology will be required to have six years of engineering experience. Next, Florida will join a growing number of states that have decoupled experience requirements from eligibility to take the PE exam. Those who have passed the Fundamentals of Engineering exam will be able to take the Principles & Practice of Engineering exam before completing the years of experience needed to apply for licensure.

In Section 471.023, F.S., the new law replaces the existing Certificate of Authorization for engineering firms with a free registry. Engineering firms will no longer be required to apply for a CA. Instead, firms must register their business with the Board and be qualified by a Professional Engineer (the "Qualifying Engineer") licensed in Florida. There are several requirements relating to both the Qualifying Engineer and the engineering firm, including informing the Board when the Qualifying Engineer changes and who is replacing that person, within certain timeframes. Plans call for current and active Certificates of Authorization to be rolled over into the new registry, with CA numbers becoming registration numbers. Companies seeking to offer engineering services in Florida who don't currently have a CA will be issued numbers once they have successfully registered with the Board.

A change to Section 471.025, F.S., redefines the responsibilities of original engineers of record and successor engineers. The new law requires successor engineers to assume full professional and legal responsibility of engineering documents when assuming an existing project from another engineer. The successor engineer must treat the original engineer's documents as if they were the successor engineer's original product, which includes signing and sealing those documents. The revision also releases the original engineer from professional responsibility and civil liability for prior work assumed by a successor engineer.

Last, a PE with a license that has gone null and void will be able to go through a process to have their license and number reinstated. This allows for retention of the history of the license and for the licensee to retain the same license number. A revision to Section 471.019, F.S., requires the Board to establish rules for a licensure reinstatement process.

These laws go into effect October 1, 2019 so the FBPE is diligently working to update the rules associated with these changes. There are a few additional changes not discussed here as well.

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

Art Nordlinger, PE, Senior Member

### 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 \$30, 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](mailto:a.jusko@ieee.org).

### FUTURE MEETING DATES:

The final date for the fall session is: Nov 21

### EDITORS NOTES

Visit our Daytona Section website: <https://ewh.ieee.org/r3/daytona/>

### ENGINEERING HUMOR



## **2019 SECTION OFFICERS**

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# OCTOBER 2019 MEETING

**Thursday October 24th** 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**– The Role of Drones in Law Enforcement

**SPEAKER** – Detective Alexander Manjasek, Daytona Beach Police Department

## AGENDA

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

## Dinner Selections

**Flat Iron Steak**- with Mushroom and Dijon mustard cream sauce served with Garlic Mashed Potatoes and Steamed Broccoli

**Chicken Alfredo**- creamy Alfredo Sauce over Linguine

**Grilled Salmon**- with a cream dill sauce Garlic Mashed Potatoes and Steamed Broccoli

All Dinners come with HRYC House Salad and Bread Service, Coffee or Tea

**Members and guests \$20.00 each**  
**Students \$5.00**

## IMPORTANT DINNER NOTE!

**The Yacht Club is requiring us to give them a dinner count by the Tuesday afternoon before our meeting. As always, all members and guests are welcome to attend the meeting and presentations, however any dinner requests received after Tuesday afternoon may not be accepted**

**Please contact Allan Jusko by Tuesday October 22nd at noon to give us a count for dinner or for further information**

**If you make reservations and are unable to attend, call prior to the event to cancel.**

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

Allan Jusko Editor

386-671-3706