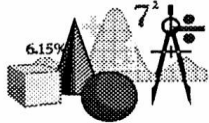




SPARKS

Daytona Section Newsletter
November 2016



NOVEMBER SECTION MEETING

Thursday December 1st at the Halifax River Yacht Club, 6:00 PM
331 South Beach Street, Daytona Beach, Florida 32114

PRESENTATION TOPIC

WHY IS SIRI SO ANNOYING? -TECHNIQUES AND LIMITATIONS OF NATURAL LANGUAGE HUMAN COMPUTER INTERACTION

CHAIR'S REPORT



It's been an honor to serve this section as Vice-Chair, and Chair, and it's with great expectations that I look forward to the new regime! Of course, no section runs without high quality volunteers and an active engaged membership, and ours is one of the best in the IEEE-USA for participation percentage (some advantage to being a small section, but we have more activity by raw numbers than many larger sections).

I'd like to remind all of you (in case the IEEE hasn't nagged you enough) that it is time to renew your membership for the upcoming year. The IEEE does have many, many membership benefits, most of which aren't commonly thought of (discounts on travel, on office supplies, on software, free google business account access with increased storage, and the list goes on). If you're somehow involved enough to read my letters, but considering not renewing, please let me know why! As always, we'd love to know what more we, as a local section, can do for you.

This month's talk will feature our current Vice-Chair, Dr. Keith Garfield, so is an excellent one to "not miss" in order for you to meet our new leadership. We will also be officially electing our new leadership, so it's definitely important for you to be there! (Just in case they decide to actually make me chair-for-life, as they keep threatening. Trust me, none of us want that.)

Jeanette

NOVEMBER'S PRESENTATION

WHY IS SIRI SO ANNOYING? -TECHNIQUES AND LIMITATIONS OF NATURAL LANGUAGE HUMAN COMPUTER INTERACTION

As more devices in our world become “smart” our need to interact with them grows, and the way in which we interact is likely to change. Speech interfaces are being introduced as a natural and intuitive mode of interaction. Unfortunately, the use of speech interfaces can provide a user with a false sense of system capability, which leads to frustration when those capabilities are not present. Dr. Garfield will discuss the challenges implicit in natural language processing and natural language understanding that limit vocal interfaces. He will also discuss techniques used to overcome or reduce the impact of those challenges.

OUR SPEAKER

Dr. Keith Garfield began his career as a structural engineer with McDonnell-Douglas, designing and testing space flight hardware used on a variety of satellites. Following that, he worked on the shuttle payload integration team at the Kennedy Space Center before becoming a researcher at the Institute for Modeling and Simulation at the University of Central Florida. Dr. Garfield teaches the formal mathematics and formal representations necessary to pursue software and computer engineering disciplines. Dr. Garfield uses his experience in the corporate and academic fields to relate classroom material to real world applications.

OCTOBER'S PRESENTATION

Our Daytona Section Chair Jeanette Barott gave a light hearted, but informative, representation of the engineer's role within society as portrayed through the lens of the liberal arts and entertainment industry. She spoke how the difference between a Scientist and an Engineer has been misused and typically misunderstood by the public. Her presentation defined the differences, as well as similarities, in functions between the scientist and the engineer.



DAYTONA SECTION OFFICER ELECTIONS

Election of Daytona Section Offices for 2017 will be held at our December 1st meeting.

The nominating committee's list of nominees is:

Chair – Dr. Keith Garfield

Vice Chair - Mr. Richard Kent

Treasurer - Dr. Jianhua Liu

Secretary – Mr. Ronald Gedney

Any member wishing to be placed into nomination for election to an office can contact a member of the committee before or at the meeting.

Nominating Committee members are, Allan Jusko, Dr. Billy Barott and Roger Grubic.

ANOTHER TALE FROM THE OLD PROFESSOR

WHAT EVER HAPPENED TO THE WOBBULATOR?

Young electrical engineers take for granted the phenomenal technology at their disposal. Those of us who designed circuits before semiconductors, know how difficult it was to achieve certain functions with pre-semiconductor electronics. As a start; consider implementing mathematical functions. Today, an inexpensive microcontroller with an easy to understand programming language can do all kinds of math. Analog signals? No problem; most microcontrollers have A/D and D/A capabilities, right on the chip.

Before microcontrollers, calculations were done with analog circuits. The venerable “op-amp” short for operational amplifier, was used for analog mathematical operations; hence the name “operational”. Op amps were used to add, subtract, and calculate integrals and derivatives. Multiplying and dividing? Now that was tough. For analog computers multiplying or dividing by a constant involved a “coefficient” potentiometer which was manually set. For multiplication of two variables then a motorized potentiometer was used. Needless to say, analog computers that involved motorized potentiometers were not very fast or reliable.

One distinctly difficult task using pre-semiconductor technology was generating signals with variable frequencies where the frequency was controlled by a voltage. Today the voltage controlled oscillator, VCO, is an extremely useful device and is used in many systems. The simple semiconductor device that makes VCO's easy to design at radio frequencies is the varactor diode. All diodes have a voltage dependent capacitance but varactors are optimized for use in radio frequency oscillators.

Swept radio frequency oscillators were in use for years before semiconductors. They were a necessary device for adjusting World War II radar receivers and later television receivers. But without the varactor diode, electronically varying the frequency of an oscillator was quite a challenge. This led to most sweep frequency oscillators using a mechanically-driven capacitor.

When I was a very young electronics enthusiast I had a swept-frequency generator, usually called a “sweep generator” that I used to align the radios and televisions I serviced. My sweep generator always vibrated so much that small items on the shelf would dance around and eventually fall on to the work bench below. I also noticed that increasing the sweep width would increase the vibration and the exodus of small items from the shelf. Thinking that maybe something was loose and to satisfy my curiosity I removed the instrument from its cabinet and found a loudspeaker inside and clearly responsible for the vibration! I was introduced to the

wobbulator. Instead of a paper cone to generate sound, the loudspeaker had an aluminum disk attached to the voice coil which was a few fractions of an inch from another disk that was connected to the oscillator circuit. This was a mechanically-driven variable capacitor. This worked for small percentage bandwidths. But sweep generators that covered a broad band of frequencies used a motor-driven dial and recorded the frequency response of a unit under test on a X-Y chart recorder.

Generating any form of angle modulation, which includes frequency and phase modulation, with vacuum tube technology was tough. This was particularly so for the design of FM broadcast transmitters where the modulation had to be “high fidelity”. One of the radio stations where I was the chief engineer had an FM broadcast transmitter made by General Electric that used a “Phasitron” to generate the frequency modulation. Inside this marvel shown below, a rotating sheet of electrons was generated that had waves in the sheet that were shaped as a sine function. These were sometimes referred to as “ruffles” suggesting a fancy collar on a woman’s dress. A magnetic field was applied to the electron sheet by a coil that surrounded the tube causing the electron sheet to advance or retard as a function of the magnetic field. The modulation was applied to the magnetic field. It was a clever and very expensive device indeed and covered by General Electric’s patent protection.



We certainly had plenty of “trons” back in the early days. In addition to the Phasitron there were klystrons, magnetrons, cyclotrons, synchrotrons, bevatrons, Radiotrons, thyratrons, etc. Of course the common denominator of all of these devices was the electron and thus the “tron” suffix. An irony of some of the “trons”, such as the cyclotron, and the bevatron is they were particle accelerators and did not accelerate electrons but protons and ions. Conduction in semiconductors is by electrons and holes. Holes are actually the home base for an electron that is on vacation and wandering around the crystal lattice. Other wandering electrons can temporarily occupy the vacationer’s home base. This is the electronic equivalent of AirBNB. Just imagine if we named devices that use P type semiconductors but connect them to holes rather than electrons. We would have klystholes, magneholes, thyraholes, cycloholes....oh the thought of it!

I miss the fanciful device names from yesteryear. Modern electronic device names don’t have the same ring as early devices. Field programmable gate arrays? Microcontrollers? Functions today are more likely to be done in software rather than some sort of clever “tron”. Modern electronics hardware is just too boring. We should be more like our colleagues in the elementary particle physics world. They know how to make creative names like, leptons, mesons, pions, etc.; and of course the building block of all of this; the quark! The characteristics of these elementary particles include other clever titles such as spin, charm, strangeness, color etc. (I insure my readers that a Tale of how elementary particle physics became anything but elementary will be a future offering.) We in the electronics world need some 21st century wobbulators and trons.

Note: if any of my devoted readers are not familiar with the ultimate fanciful-named device, the Turbo-Entabulator, you need to use your search engine and view the video.

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>

Region 3 website

<http://www.ewh.ieee.org/reg/3/>

Other web sites of note

Melbourne Section website

www.ieeemelbourne.org

Orlando Section website

www.ieee.org/orlando

FUTURE MEETING DATES:

The dates for the 2017 spring session are: Jan 26, Feb 23, Mar 23 and Apr 27

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

2016 SECTION OFFICERS

Chair – Jeanette Barott

386-226-7405 jeanette.barott@ieee.org

Vice Chair - Dr. Keith Garfield

386-226-7081 garfielk@erau.edu

Treasurer - Dr. Jianhua Liu

386-226-7713 liu620@erau.edu

Secretary – Ron Gedney

386-478-1204 r.gedney@ieee.org

Membership Development –

Publicity/Media – Ron Gedney

386-478-1204 r.gedney@ieee.org

Social Media – Rebecca DeMarco

rebecca.l.demarco@ieee.org

PACE Representative –

Dr. William Barott

386-226-8973 barottw@erau.edu

Life Member Chair – Ron Gedney

386-478-1204 r.gedney@ieee.org

Computer Society Chair – Dr. Keith Garfield

386-226-7081 garfielk@erau.edu

Student Activities, (Co-Chairs)

ERAU - Dr. William Barott

386-226-8973 barottw@erau.edu

B-CU - Dr. Mubarak Banisakher

386-334-6555 banisakm@cookman.edu

ERAU Student Chapter Chair- Dean Laga

lagad@my.erau.edu

ERAU WIE Student Chair – Rebecca DeMarco

rebecca.l.demarco@ieee.org

Webmaster – Charlie Husbands

386-760-7163 chusbands@ieee.org

SRT Project Coordinator - Charlie Husbands

386-760-7163 chusbands@ieee.org

SPARKS Editor - Allan Jusko

386-671-3706 a.jusko@ieee.org

Six Phases of a Project

1. Enthusiasm
2. Disillusionment
3. Panic
4. Search for the guilty
5. Punishment of the innocent
6. Praise and honors for the non-participants

NOVEMBER 2016 MEETING

OK, so it's being held in December....details, details

Thursday December 1st 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– Why Is Siri So Annoying? -
Techniques and Limitations Of Natural
Language Human Computer Interaction

SPEAKER – Dr. Keith Garfield, Daytona
Section Vice Chair, ERAU ECSSE Dept.

AGENDA

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

Dinner Menu

Honey Glazed Ham with mashed potatoes and vegetables.

Grilled Chicken Breast served with mashed potatoes and roasted corn. Topped with a trio of cheeses and a cilantro cream drizzle.

Skillet Seared Shrimp tossed in a lemon-cream sauce with shallots and parsley, served over angel hair pasta.

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 Wednesday Nov 30th 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

a.jusko@ieee.org
