



# SPARKS

## Daytona Section Newsletter

### November 2012



### FROM THE HIGH CHAIR

This is my last note to you as the Chairman. Our section has many notable achievements during the past two years, thanks to the diligent work of many section officers, who volunteered much time and energy serving in various capacities. A new slate of officers will start to serve the section in January 2013. Election for new officers will be held at the last section meeting in 2012. Once again, I would like to encourage our members to volunteer to serve this vibrant IEEE section. Please contact Roger Grubic [roger\\_grubic@ieee.org](mailto:roger_grubic@ieee.org) or Ron Gedney [R.Gedney@ieee.org](mailto:R.Gedney@ieee.org) if you are interested.

Here are some of the section's important events and activities during the past two years:

1. A new student branch was officially established under our section at Bethune-Cookman University (BCU). Due to the significant growth of student membership at BCU and Embry-Riddle, Daytona section was consistently ranked among the top in membership development in Region 3. Both ERAU and BCU robotics teams competed in SouthEastCon's hardware competition, and each year ERAU has multiple student teams competing in the IEEE Xtreme Programming Competition.
2. Our section actively participated in SouthEastCon, especially in 2012, when the conference was held in Orlando. ERAU held a special session on robotics and green energy, and sponsored an exhibition. Several members presented technical papers and a tutorial at the conference.
3. We supported the Electrical Safety Workshop (sponsored by the IEEE Industrial Applications Society) that took place early 2012 in Daytona Beach. The tour of the Daytona International Speedway was successfully organized by the Daytona section for workshop participants.
4. We continued to work on the small radio telescope project. We will seek to incorporate more educational activities in the future in coordination with the Daytona Museum of Arts and Science's expansion plan.
5. We continued to support the Engineering Week activities at ERAU, and give IEEE special awards to outstanding young students at Tomoka Regional Science Fair each year. Interesting presentations are given at our monthly meetings, and the computer society chapter continued to hold at least two events per year. The life member affinity group has been engaging life members through interesting tours of local firms.

Looking ahead, Daytona section is actively seeking further growth. Currently, we are working towards establishing a new student branch at Daytona State College. Also, a student affinity group in artificial intelligence is being formed at ERAU. We are considering the possibility of starting a women-in-engineering affinity group at ERAU as well. Finally, members of the IEEE control systems society in our section are working on starting a control society chapter.

We look forward to another year of active participation in Southeastcon, which will be held April 4-7, 2013 in Jacksonville, Florida. If you plan to submit a paper, the submission deadline is Dec. 14<sup>th</sup>. For more information on the conference's technical and student programs, please visit:

<http://ewh.ieee.org/reg/3/southeastcon2013/index.html>.

Last but not the least, please remember to renew your IEEE membership at your earliest convenience. Wish you all a Merry Christmas and prosperous 2013!

Thomas Yang, Ph.D.

## **NOVEMBER PROGRAM**

### **ELECTRIC PROPULSION**

With the rapid advancement in areas such as high energy/power density batteries, fast charging stations, and high efficient motors and motor controllers, ground electric vehicles (GEV) have gradually becoming a reality while air electric vehicles (AEV) are rising from the horizon. What is common in both GEV and AEV is the energy storage system and the powertrain system, jointly referred to as the electric propulsion system. To educate students of the College of Engineering at Embry-Riddle Aeronautical University in this exciting area, we plan to offer a new class titled "Electric Propulsion" for both undergraduate students and graduate students. This presentation will shed some lights of this class. First, we give a brief account of the history of electric propulsion. Then, we list the pros and cons of the electric propulsion system as compared to other systems. Next, we introduce the main contents of the course, including batteries, battery management, battery charging, various motor technologies and matching motor controllers, choosing appropriate technologies to suit different applications, and system integration. Finally, we present an example of electric propulsion system which can be used for both GEV and AEV.

### **OUR SPEAKER**

Jianhua Liu received a PhD degree in Electrical Engineering (with a minor in Statistics) from the University of Florida in 2004. From August 2004, he has been a faculty member in the Department of Electrical, Computer, Software, and Systems Engineering at Embry-Riddle Aeronautical University, Daytona Beach campus, where he is an Associate Professor of Electrical Engineering. His areas of research interests include wireless communications, signal processing, sensor networks, and electric propulsion.

### **2013 OFFICER NOMINATIONS**

The nominating committee has selected the following for officer positions in 2013:

Chair: Tracy Wichmann

Vice Chair: Jeanette Barott

Treasurer: Charles Husbands

Secretary: Allan Jusko

Additional nominations per our bylaws can be made by petition no later than 28 days after the slate is announced to the membership. The petition must be signed by 2% of the section membership.

If no additional nominations are made, the election will be held at the December 1 section meeting. If additional nominations are made, the election must be held by ballot.

## TALES FROM THE OLD PROFESSOR

### THE MERRY OLDSMOBILE

In the summer of 1963 I visited my cousin Jon in the farm country of Pennsylvania. Sunday afternoon, Jon and I went to Grandma's house in a nearby hamlet where my father and uncles were born and raised. My grandmother was an excellent cook and Jon and I loved her meals. What was truly amazing was she cooked most of the food on a wood-burning stove. Grandma also had a kerosene stove when she needed a quick and more intense heat.

After dinner, being quite bored with the Sunday afternoon chit-chat, Jon suggested that we take his car down the road a few miles and invite two farm girls he knew to go for ride in Jon's 1957 Oldsmobile Rocket-98 convertible. Jon's Oldsmobile was quite imposing. The first thing you notice is how big it is. Big is not adequate; mammoth, huge, or nautical would be more appropriate.

The next thing one would notice was the chrome. There was chrome everywhere. The outside, the inside, everything that could be plated was chrome plated. This car had more gadgets than one could imagine. It had the usual power steering, brakes and windows. It also had power seats, a power radio antenna and the radio stations could be selected via a foot switch on the floor. There was also an automatic headlight dimmer, called the Autronic Eye, that sensed oncoming automobile headlights and switched the Oldsmobile's headlights to low beam. This unit had a malfunction and instead of switching the headlights to low beam, it switched them off. Jon gave the Autronic Eye a black eye-patch of electrical tape to prevent this.

Although the car was only 6 years old, most of the gadgets did not work. The air conditioning did not work, but the car was a convertible and the open car provided plenty of air. The heat did not work either, but that was no problem as it was summer. I wondered how my cousin could afford this type of automobile. When Jon first showed me his prize, he pointed out the low mileage, only 20,000 miles. "Wait a minute" I blurted, there is no way this car only has only 20,000 miles on it. This odometer has been around once, that is 120,000 miles". "No", Jon corrected, "it's been around twice, 220,000 miles".

Let us return to our boring Sunday at Grandma's. We were ready to rocket over to the Yoder farm in the Oldsmobile to visit the girls when Jon noticed the gas gauge, one of the few instruments that still functioned. We were nearly out of gas. We had a problem. We had plenty of money to buy gas at 25 cents per gallon, but it was Sunday and no gas station was open in the church-going hamlet.

Then, Jon had an idea. Grandma kept a 5 gallon can of gasoline in the garage for the lawn mower. We could fill up the car with that gas and replace it on Monday. Rather than open the garage door we went in through the back entrance and in the semi-dark found two 5 gallon cans. I hoisted one can and Jon the other. "This one is almost empty" I said, to which Jon replied, "this one is full" and we poured the entire five gallons into Jon's car and returned the empty can to the garage.

"Let's see," I said, "we have five gallons at 9 miles per gallon; we could drive the girls on some nice back roads for an hour at no more than 45 miles per hour and stop by Zook's soda shop and back to the farm." It sounded like a good plan and we were off.

We hardly got to the end of Grandma's long driveway when the Rocket 98 started to run rough. Then we noticed a lot of black smoke coming out of the exhaust. In this car, the exhaust came out everywhere and we were engulfed in a smoky cloud. "Something is wrong", Jon said, "but it can't be too bad because we are still moving". "Maybe it will clear up when we get to the farm" I suggested. It did not clear up when we arrived at the Yoder farm, and Mr. Yoder asked if could we move the Olds away from the chicken coop because the chickens were susceptible to polluted air.

The girls were happy to see us and impressed with the Rocket 98, with its top down and chrome gleaming.

They hinted that they might like to go for a ride in the car but Jon said we had an important appointment and maybe tomorrow. The girls agreed and it seemed to suit farmer Yoder too.

Sadly, Jon and I smoked back to Grandma's. We could not work on the car until Monday because Grandma, a strict Mennonite, did not allow any work on Sunday. This rule, apparently, did not apply to cooking, but definitely covered working on automobiles.

First thing Monday morning Jon and I looked for the source of our problems. We opened the hood and checked everything. Everything checked out OK. Then Jon said, "Here comes Grandma and she is carrying a gas can". "We are dead, what are we going to do.", I asked, "maybe we could tell her...". I was cut off by Jon who said, "maybe we should tell her the truth; that we stole her gas". "Good morning boys". "Good morning grandma", we replied. "Would you two please do me a favor and run down town in your car and fill this can with kerosene....." "Kerosene?". we shouted, looking at each other. "Yes, kerosene!", grandma retorted, "I must have forgotten to fill up my second kerosene can and I need some fuel to make you two waffles for breakfast".

In a giant black cloud Jon and I went down the mountain road to town and got 5 gallons of kerosene for grandma and filled up the Oldsmobile with gasoline which diluted the kerosene enough to stop all of our problems.

I learned a very important lesson that day and so did Jon. Now, Jon always sniffs gas cans before he pours the contents into his car.

Al Helfrick, Ph.D.

## **ERAU NEWS ITEMS**

Two Embry-Riddle professors, Dr. Brian Butka and Dr. Albert Helfrick attended the 31<sup>st</sup> Digital Avionics Systems Conference held the 14<sup>th</sup> to 18<sup>th</sup> of October in Williamsburg, VA. This conference is jointly sponsored by the IEEE and the American Institute of Aeronautics and Astronautics, AIAA. Dr. Butka presented a paper on Bistatic Radar and Dr. Helfrick presented two papers on the conference theme of history of avionics. Dr. Helfrick also presented a tutorial on digital avionics.

## **IEEE Xtreme Programming Competition**



At this year's IEEE Xtreme programming competition, ERAU competed 3 teams. Nine Embry-Riddle students competed in this event, held from 8pm on Oct 19 to 8pm on Oct 20.

From left to right, participants included: Chris Wright, Newton Kirby, Forrest Crooks, James Hasselman, Evan Tvrdik, Justin Weltmer, Justin Albano, Steve Bryden, Bryan Santos

In addition to the students, six IEEE members from ERAU served as proctors for this event.

Results from this international competition are not yet available. The IEEE recently posted the following notice:

“Due to a recent storm in the Northeast portion of the USA which has caused catastrophic damage, the release of the final results of IEEEExtreme 6.0 will be delayed until further notice. Thank you for your patience and understanding.”

### 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 \$28, including tax, for S-XL size's, 2XL size is \$4 additional.

For more information or to order shirts contact  
Allan Jusko  
3706 Longford Circle  
Ormond Beach, FL 32174  
386-671-3706 or [a.jusko@ieee.org](mailto: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 you support and pride in our Section. Contact Roger Grubic at 386-441-8958 or [roger\\_grubic@ieee.org](mailto:roger_grubic@ieee.org) for more information.

## CALENDER OF EVENTS

SouthEastCon- Jacksonville, April 4-7, 2013

## EDITORS NOTES

The **SPARKS** newsletter is also available on our website. The website address is shown below.

### Website address for the Daytona Section

<http://www.ieee.org/go/daytona>

### Region 3 website

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

### Melbourne Section website

[www.ieeemelbourne.org](http://www.ieeemelbourne.org)

### Orlando Section website

[www.ieee.org/orlando](http://www.ieee.org/orlando)

\*\*\* **MEETING NOTE** \*\*\* The November/December meeting will be held at ERAU on Saturday December 1<sup>st</sup> instead of the Halifax River Yacht Club. Please see the information at the end of this newsletter for more details.

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# November/December 2012 MEETING

**Saturday December 1<sup>st</sup>** at Embry Riddle Aeronautical University  
600 S. Clyde Morris Blvd, Daytona Beach, FL 32114  
Lehman Engineering & Technology Center, Room 170

## **AGENDA**

Meeting – 11AM - 2PM

Presentation – 11:30 – 12:30

**OUR SPEAKER** - Jianhua Liu, Ph.D.  
Associate Professor, ERAU

**TOPIC** – Electric Propulsion

## **Pizza and soft drinks will be provided**

IEEE members are requested to contribute \$5 towards the refreshments, students are free

**Members, please contact Allan Jusko by November 28<sup>th</sup> with your intention to attend so we can order appropriately or for more information**

Allan Jusko

Editor

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