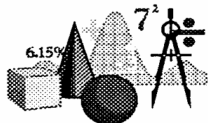




IEEE

SPARKS

IEEE Daytona Section Newsletter
October 2010



FROM THE HIGH CHAIR

The Daytona Executive Committee met last month and settled several open issues. We agreed to again financially support ERAU for 2011 Engineers Week (\$100) and the 2011 Southeast Con robotics competition (\$1500). Also we approved the expenditure to provide permanent lighting for the Small Radio Telescope (SRT) at the Museum of Arts and Science (MOAS). These are good examples of how our IEEE dues are benefiting our local community.

The nominating committee reported that their recommendations for 2011: officers are: Dr. Tianyu Yang for Chair, Tracy Wichmann for Vice Chair, Frank Baxter for Treasurer and Roger Grubic for Secretary. We are always looking for new volunteers and would welcome your participation.

Dr. Billy Barott is now the ERAU student advisor. Dr. Jianhua Liu has performed this task for the last several years and our thanks to him for a job well done. Bethune Cookman University apparently has interest in forming a student chapter. We will help them in any way we can.

Please remember to renew your membership for next year. Even Life members must renew. Many Life members donate the equivalent value of their dues to IEEE sponsored charitable organizations. Each year we try to follow up with members that have forgotten to renew. The IEEE (1) is a career benefit with continuing education activities and technical societies; (2) improves your technical knowledge via technical periodicals and eBooks; and (3) provides a personal benefit with the

insurance, travel and financial services available. See the IEEE web site.

At our next section meeting Dr. Brian Butka and William Gaughan of ERAU will speak about "Calibrating Speed Detection Devices for Extended Applications LIDAR and RADAR." This topic could be of help if you ever want to fight a speeding ticket or improve your knowledge.

Dr. Jing Wang, a professor at Bethune Cookman University, gave a very interesting talk at our last meeting about his work concerning the control of robots. His presentation included video clips of multiple robots using his algorithms to avoid objects and act in concert.

The IEEE is concerned about unemployment and will host a seminar on October 23, 2010, in Cocoa.

This event is not limited to the Brevard IEEE section. See the details on our website or the Region 3 website. Billy and Jeanette Barott attended the Career Development Seminar in Atlanta and will be a source of information about the IEEE employment activities and services. Contact them if you have questions or concerns.

Roger Grubic

OCTOBER PROGRAM

CALIBRATING SPEED DETECTION DEVICES FOR EXTENDED APPLICATIONS: LIDAR and RADAR

Speed detection devices are commonly used by law enforcement agencies to determine the instantaneous speed of vehicles. However, in civil engineering applications there is a need to measure the acceleration and deceleration of vehicles in addition to the instantaneous vehicle speed. This talk will discuss the principles of operation of both LIDAR and RADAR speed detection devices and investigate possible methods that can be used to calibrate the devices. Calibration of LIDAR devices requires generating pulses with extremely precise timing delays, this talk will detail Will Gaughan's solution to this problem using a field-programmable gate array (FPGA).

OUR SPEAKERS

Dr. Brian Butka is an associate professor in Electrical, Computer, Systems and Software Engineering at Embry Riddle Aeronautical University. Dr. Butka has previously taught Electrical Engineering at the United States Naval Academy and he has over 20 years of industrial experience in the mixed-signal design of custom integrated circuits. Dr. Butka's research interests include avionics and control for autonomous vehicles (primarily rotary wing) and the design and verification of safety-critical hardware. Dr. Butka is currently collaborating with Dr. Barott of ERAU on a bi-static radar project.

Will Gaughan is a graduate student pursuing the new Masters in Electrical and Computer Engineering. Will graduated in May 2010 with a BS in Electrical Engineering with a Systems Engineering emphasis. Will is currently working on a bistatic radar project with Drs. Butka and Barott. In his spare time Will has been known to play guitar and sing at local nightspots and restaurants.

BRAIN TEASER CHALLENGE SOLUTION SEPTEMBER 2010 BUTCH SHADWELL

Editors note: Sorry, looks like I've lost the BTC solution for September and haven't been able to retrieve the file in time for publication. Obviously the computers fault!

BRAIN TEASER CHALLENGE OCTOBER 2010 BUTCH SHADWELL

We bought a new 61" HDTV last Christmas. It is the DLP type, though it has some interesting innovations. Instead of the usual projector lamp and color wheel for the light source, this set uses three high output LEDs (red, green, and blue). No color wheel and motor and no projector lamp to replace. In case you are not familiar with DLP TVs, DLP stands for digital light processing. It is based on the use of a MEMS (micro electro mechanical system) device with 2,073,600 tiny mirrors that can be electro-statically moved. The mirrors are adjusted 360 times per second successively displaying the red, green, or blue components of the image, so that we get up to 120 complete display frames per second. The amount of red, green or blue light that is added to an individual pixel (picture element) by its respective mirror, is controlled by how long the mirror allows that color light to project to the screen. Each mirror pulse width modulates the light to control how much red is blended with how much green and blue. Your eye integrates these pulsing light sources into 10,000 levels of brightness for each of the three color components.

Let's say that my high output LEDs have a forward voltage drop of 4 volts at 25 degrees C at the junction and the forward voltage drops 3mV per degree C. Then I supply forward current to one of these LEDs through a 100 ohm resistor and a 10VDC source. So tell me the current through the LED when the junction gets up to 100 degrees C? I know this is a simple one, but I have been struggling with writers block. Good luck.

Reply to Butch Shadwell at b.shadwell@ieee.org (email), 904-223-4510 (fax), 904-223-4465 (v), 3308 Queen Palm Dr., Jacksonville, FL 32250-2328.

(<http://www.shadtechserv.com>) The names of correct respondents may be mentioned in the solution column.

SEMINAR ANNOUNCEMENT

Career Survival for Engineers and Scientists in the 21st Century

A 1-day career management seminar provided by: IEEE-USA Career & Workforce Policy Committee (CWPC) in cooperation with IEEE-USA Employment and Career Services Committee (ECSC) to be held on Saturday October 23rd in Cocoa, FL

More information can be found at the Region 3 web site <http://ewh.ieee.org/reg/3/>.
The direct link is http://ewh.ieee.org/reg/3/CWPC_Flyer_Cocoa_October_2010_v2a1.pdf

ERAU STUDENT BRANCH

The Student Branch at Embry-Riddle has begun designing an autonomous search & rescue robot for the Southeastcon 2011 Hardware Competition. The robot will utilize simple line-following techniques, as well as infrared rangefinding for navigation and obstacle-detection. We are also fielding a team for the IEEEExtreme 24-hour programming competition on Oct 23.

James Gregoire

EDITORS NOTES

The **SPARKS** newsletter is also available on our website. The website address is shown in the Section information box to the right.

Our neighboring Sections in Melbourne and Orlando also sponsor activities and meetings that also may be of interest to our members. We encourage you to visit their websites.

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

Melbourne Section website
www.ieeemelbourne.org

Orlando Section website
www.ieee.org/orlando

FUTURE MEETING DATES

The last meeting date for the fall session is: *Tuesday* December 7th.

2010 SECTION OFFICERS

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The website address for the Daytona Section is:
<http://www.ieee.org/go/daytona>

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OCTOBER MEETING

Thursday October 28th 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

AGENDA

6:30 PM Cocktails

7:00 PM Dinner

8:00 PM Program

It's Italian Night

Chicken Parmesan

Veal Marsala

Shrimp Scampi

Please call with your menu selection

OUR SPEAKERS – Dr. Brian Butka,
Will Gaughan

TOPIC– Calibrating Speed Detection Devices for
Extended Applications: LIDAR and RADAR

{All Entrees served with

{Pasta, Vegetable du jour,

{Roll and Butter, Garden Salad,

{Coffee/Tea

All entrées \$18.00 each, Students \$10.00 each. A Veggie plate is available upon request for \$10

Please contact the secretary with your dinner selections or for program information. Dinner selection's must be in by Wednesday morning so the club has time to order and prepare

Allan Jusko

Secretary

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

IMPORTANT: If you make dinner reservations and are unable to attend, call at least 24 hours prior to the meeting to cancel. The Section is charged for all dinners ordered.
