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Special points of interest:

Official newsletter of
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Editor:

Submit articles for
consideration to:
hasling@ieee.org

*Ring in the 2012-2013 School Year at the IEEE BBQ Social
with Guest Public Speaker Jung Park*

*[RSVP](#) to enjoy networking, good food, & Jung's keynote on
Stereotypes*

DeVry University 1870 West 122nd Ave Room 121

August 14

6:00 pm—8:30 pm

Coming Soon

in September:

Look for the IEEE PES/IAS

*Cajun Style Shrimp Boil
Social Event*

at Brooklyn's Bar and Grill

Distinguished Lecturer:

Shinji Yuasa

*IEEE Magnetic Society
Event*

September 5 5:30 pm

*CU Boulder JILA X-Wing,
Conf. Rm X325*

IEEE Award for Ben Franklin Academy Student

Continuing its tradition of encouraging students to pursue activities in Science and Engineering, IEEE Denver funded a scholarship award for a Ben Franklin Academy student who has shown aptitude and achievement in science, math and technology. The recipient was required to have a grade point average of at least 3.5 in math, science and technology in at least two of the three school trimesters in a year. In addition, the student had to design (and possibly develop) an Apple® application related to the fields of science and/or math. I am pleased to announce that **Natalie Smith** – a very bright and enthusiastic student – received the award. She describes the process of building her app in this August IEEE issue. We also hope this would encourage other students of the school to be “scientifically curious” and engage themselves in paths of new discoveries.

- Abhi Sur

(Denver Section Vice Chair, Pre-College Education)

[Read what N. Smith said about her experience on next page](#)

Guest Author N. Smith and the Biome Builder App

“The IEEE Scholarship was a fantastic opportunity for me to design an app. I have always wanted to, but never had a specific idea of what the app would be.

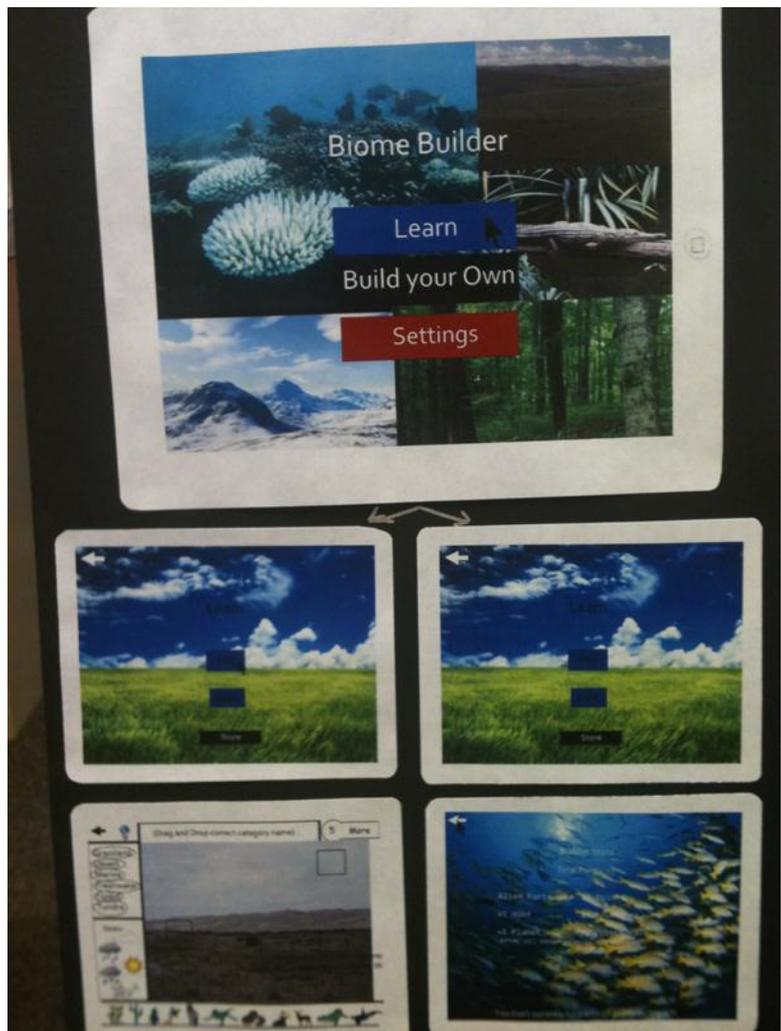
The first step in the process was to brainstorm topic ideas with my family. I decided on a topic that incorporated different habitats and the plants and animals that lived there, and thus biomes. I checked the App Store to see if anything like my idea existed yet and didn't find anything. Next, I determined what the “object” of the biome app would be. I decided that the user would be required to drag and drop an organism picture to match the portrayed habitat on the screen. When they had all the correct organisms, the user could proceed to the next level of the app. As the user progressed, they would earn points from each correctly placed organism. When the user had enough points, they could visit the Builder Store where enhancements could be acquired. A second section of the app would allow the user to design his/her own biome on the Moon, Mars, and several other planets. As the user designed the alien biomes, more planets were “unlocked”. More planets and alien organism parts could also be attained from the Builder Store.

Once I planned the main features of my app, I had to physically design them. Using Pixie, a computer-painting program, I added backgrounds, text, and created “buttons” where the user would click. I found real pictures of different habitats on Earth and the surface of other planets online and inserted them into the various screens. When the design was complete, I contemplated a title for the app. From many possibilities emerged Biome Builder! This title encompassed the entirety of the app and had a nice ring to it.

Through hard work I created my app design of Biome Builder. I thought of the topic and brought it to life in Pixie. Thank you IEEE, for this amazing opportunity!”

- Natalie Smith

(6th Grade, Ben Franklin Academy, Douglas County School District)



General Electric's Denver Service Center Tour



The IEEE Power & Energy Society/Industrial Application Society (PES/IAS) Joint Denver Chapter sponsored a summer tour event that was held at General Electric's (GE) Denver Service Center on Friday July 13th. Twenty electrical and other engineers from the area attended the tour and were able to see how various motors, generators, transformers and other industrial equipment could be reconditioned or rewound depending on equipment condition and the customer's requirements and application. Special thanks go out to GE's **Dennis McNamara** – Motor/Generator Specialist and **Bill Hudson** – Sales Manager for giving the tour and allowing us to view their facility.

The service center conducts repairs on all makes and sizes of motors, alternators, transformers, switchgear, fans, pumps, compressors and other equipment. Some interesting projects seen on the shop floor during the tour included:

- a 1MW wind turbine alternator
- AC and DC traction motors of different sizes for locomotive application
- a 1500hp coal mine hoist motor
- a 700hp DC motor for steel mill application
- many different types of rotors and several different transformers
- transformer cores in various rebuild stages.

Also seen during the tour were the electrical and mechanical equipment used to facilitate the work. This included; a 600 ton press used for shaft and bearing work, a large Rafamet boring mill with its 16 foot swing capacity for especially large equipment rebuilds, a 300kV hi pot testing machine, a vacuum pressure impregnation tank, a large CNC lathe with 2 different machining beds, a 40,000 lb balancing machine, a transformer core rewinding machine and many other various tools and equipment. The tour was very informative and showed the complexity involved with restoring older electrical and mechanical equipment to almost new condition.

Also conveyed during the tour was that customers are taking better care of their electrical equipment through preventative maintenance practices. This means that most equipment coming through the shop requires only reconditioning and not rebuilding. This translates into less cost, less time in the facility while still bringing the equipment back to its original specification. We also learned that rotors versus stators typically are the weak link when restoring motors and generators.



Thanks again to the GE Service Center for allowing us to take a closer look at their facility.

- Bill Stoick, P.E.

(Treasurer/Vice-Chair, IEEE PES/IAS Denver Chapter)

First TISP Workshop in Denver Section

The Teacher in Service Program (TISP) was started by the IEEE Florida West Coast Section in 2001. The program has developed over 100+ lesson plans that aim to teach the concepts of Science and Engineering through fun projects. TISP workshops are conducted by IEEE volunteers to orient teachers with the lesson plans which could be included within their teaching curriculum. The program emphasizes on IEEE volunteer interaction (as opposed to volunteer-student interaction). Denver section made a modest start in this journey and organized its first TISP workshop (June 9, 2012) for teachers in the Douglas County School District. Teachers from three schools in the school district worked on two hands-on lesson plans: *Build a Candy Bag* and *Ship the Chip*. The teachers found these hands-on activities very engaging and a great way to show how engineering concepts can be included in real life projects. Our instructors – **Dusty Fisher** and **Neeraj Bhatia** - kept the sessions very interactive with real life challenges and twists as the teams were building their projects.

At the end of the workshop, teachers expressed an interest in remaining engaged with IEEE activities and getting exposed to new activities in the region. With IEEE Denver, they would get creative ideas to imbibe new methods and content in their teaching approach. They also suggested that it would help teachers to plan future TISP sessions and content based on grade levels to make it more relevant for their individual classes that they are involved with.

This event wouldn't have been possible without the help and support of the following IEEE members from the Denver section and R5 region: Dusty Fisher, Jim Look, Krista Hasling, Jennifer Kramer, Jim Harrer and Neeraj Bhatia (Region 5). I would also like to thank the Denver Executive Committee for supporting this initiative. We hope to have many such events in the future.

- Abhi Sur

(Denver Section Vice Chair, Pre-College Education)



Above: Ship a Chip
Left: Build a Candy Bag

GOLD (Graduates of the Last Decade)

GOLD is an affinity group in IEEE catering to the needs of the young professionals - specifically those within 10 years of their first degree. The Denver Section GOLD group focuses on a variety of events including:

- local lab/facility tours
- happy hour/networking events
- technical and non-technical talks

If you are within 10 years of your first degree and interested in volunteering a few hours a month to help us plan OR just interested in attending GOLD events as the IEEE point of contact, contact Jennifer Kramer at jenniferkramer@ieee.org

We would love to have officers from all around the Denver metro area including the tech center and south Denver, downtown Denver, and the north Denver/Boulder area. If you aren't GOLD and would like to help out, we could use your help! If your company can offer a tour, you have an area of interest for young professionals, or just want to get involved, please email Jennifer the appropriate contact information.

We are only as strong as our members and the help we receive! We look forward to a great year in 2012-2013!

- Jennifer Kramer

From the Vice-Chair : Keeping an Eye on 'Big Science'

"You can observe a lot just by watching."

-Yogi Berra

Over the past few months, I've been able to preview a few 'Big Science' programs which should interest the engineering community. In April I completed a two-year stint with the [US Antarctic Program](#) which has operated here in the Denver area over the past 20 years and is positioned for another decade of research and operational support. The [Blue Ribbon Panel on the future of Antarctic Research](#) has just been released in July and should make for a great read.

A trip back to Washington DC for the annual IEEE National Capitol Area banquet provided a front-row seat to a keynote address – '[The History of the Universe In a Nutshell – From the Big Bang to Life and the End of Time](#)' by Nobel Laureate Dr. John Mather (NASA-Goddard Senior Project Scientist for the [James Webb Deep Space Telescope program](#)). Dr. Mather's work on the Cosmic Background Explorer (COBE) Far IR Absolute Spectrophotometer (FIRAS) led to the discovery of cosmic anisotropy (hot and cold spots in background radiation), now believed to be the primordial seeds that led to the structure of the universe we know today.

["Exploring Titan By Boat"](#) was a June lecture by Dr. Ellen Stofan at the Denver Museum of Nature and Science. This fascinating talk (let's explore the methane seas of Saturn's Titan moon) was part of the public relations campaign for the [NASA Discovery Program](#), competing low-cost proposals for the next Deep Space mission.. Dr. Stofan is a principal in the [Titan MARE Explorer](#) program.

In July the [Power Electronics and Machines in Wind Applications \(PEMWA 2012\) Symposium](#) (sponsored by PES/IAS) spent 3 days focusing on the latest research and development in wind power electronics, wind power generators, and wind power integration, presented and discussed by leading wind turbine manufacturers and researchers. My thanks go to symposium chairs Dr. Ed Muljadi (NREL) and Dr. David Wenzhong Gao (University of Denver) for the invitation to promote our [2013 IEEE Greentech conference](#) at the symposium in Golden, CO.

Finally, I'd like to pay tribute to the preeminent science fiction writer and visionary Ray Bradbury who has inspired so many people with his storytelling, science enthusiasm and visions of space exploration. Mr. Bradbury's earthly departure coincided with the [Transit of the Sun by the planet Venus \(captured here by the Mauna Loa Observatory\)](#) – a fitting exit. Look around...engineering opportunities await your exploration.

- Tim Weil

(2011 Denver Section Vice Chair)

IEEE Denver Section 2013 Elections

Instead of getting excited or annoyed by the presidential advertisements on the TV, IEEE Denver Section wants to invite you to be more proactive – become a candidate of the 2013 Executive Committee (ExCom). I was fortunate to be elected as IEEE Denver section vice-chair in 2011. According to the IEEE by-laws, I became the 2012 chair in January. The last 18 months have been a wonderful journey. Having not been an active IEEE member for decades, I resumed being very engaged in 2011. I want to tell you that I have been enjoying a very rewarding return of investment. This invaluable experience is far more than the time I put in. In addition, I have received friendships and support from past chairs and ExCom members. IEEE Denver section has more than 3500 members. As a Chair and Vice-Chair, I have the privilege to meet and know many outstanding talents in the Denver engineer community.

If you want to enhance your professional experience and add an IEEE leadership experience to your resume, IEEE Denver section is definitely a place for you. I encourage you to consider con-

tributing your talents to IEEE Denver section in 2013. You can meet and work with IEEE headquarters staff members and elected officers including IEEE President, Region 5 officers and director and your friends in the Denver area. I started my volunteer work as a Vice-Chair of Electronic Communication in 2010. I encourage you to start your volunteer journey in IEEE, by either starting as a Denver Section Vice-Chair candidate or a Vice-Chair of a particular area. There are many positions and you can find the one that is right for you.

For details, please go to www.ieee-denver.org.

As a chair of the IEEE Denver section nomination committee, I would like to invite you to contact the committee directly : myself (Louis.tsai@ieee.org), Tim Weil (trweil@ieee.org) and Cliff Alston (cjalston@comcast.com) for a 2013 position. Tim will be the 2013 Denver Section Chair. Cliff has been a treasurer for IEEE Denver section since January 2011 and he is also a past chair. We look forward to hearing from you.

- Louis Tsai

(2012 Denver Section Chair)

IEEE Denver Section

Mission Statement

Enrich the professional and personal lives of the Rocky Mountain Region members, developing them into valued contributors to society through quality programs, continuing education, career development and community service; in collaboration with IEEE, industry, government and academia.



The IEEE Denver Section is comprised of over 3600 engineers and technical professionals in the Denver - Boulder area.

<http://www.ieee-denver.org>