Spartan Engineer Grad News

Electromagnetics Research
By Andrew Baczewski

The Electromagnetics (EM) Research Group works on leading-edge problems in both fundamental and applied electromagnetics. Working in the Engineering Research Complex, professors Shanker Balasubramaniam, Leo Kempel, and Ed Rothwell head the lab. They work with a team of 21 graduate students and two Post-Doctoral scholars. Their work helps support companies such as the Boeing Corporation, Delphi Automotive Systems, and Dow Chemical Company. Additionally, the EM group works closely with government partners including scientists and engineers at the Naval Research Laboratory and Wright-Patterson Air Force base.

“...it is a great blend of things that really excite me, like mathematics and physics, but with a lot of important real-world applications.”

Grad Student Naveen Nair of the Electromagnetics Research Lab

Work in the EM Group is done at many different stages including design, characterization, simulation, and theory. One novel design produced by the group is a self-structuring antenna which utilizes genetic algorithms to change its electrical shape based upon environmental conditions. This is advantageous as it allows the antenna to adapt to different orientations and surroundings to achieve optimal reception. Another design is a low-cost synthetic aperture radar which can be used to successfully produce images of objects behind lossy dielectric materials. The development of this device is vital to fields such as chemical processing or homeland security, in which the inexpensive and non-invasive inspection of containers must be performed quickly and accurately.

In the area of simulation, the EM Group works on conformal antennas, particularly leaky wave antennas. Leaky wave antennas are low-profile, wide bandwidth antennas made of microstrip circuitry. Due to their simple construction they can be readily integrated into circuit fabrication processes and their size makes them well-suited for vehicle mounting. Simulations of these systems using finite-element boundary-integral methods are being developed, with the goal of modeling them in real-world environments, such as on the side of a vehicle.

One of the additional thrusts in simulation is the development of fast algorithms and the use of high performance computational resources. Fast algorithms and high performance systems allow the size and complexity of simulated phenomena to be scaled up considerably. These same methods can also be used to study systems in other fields of engineering, physics, and biochemistry. For example, the overhead associated with growing and testing nanostructures in the laboratory is often prohibitive. With fast nanostructure growth simulations, the parameter space of growth conditions can be traversed in a virtual laboratory for a fraction of the cost. These simulations can then be reproduced experimentally and adapted to the development of large scale nanostructure fabrication processes. For more information visit, http://www.egr.msu.edu/em/index.htm

Help! What will I do when I graduate?

In a recent survey with MSU PhD engineering students, we asked how can we help with career planning. Most students requested workshops and seminars. Below is a list of upcoming Career Planning workshops geared toward graduate students.

**March 11 - Noontime Seminar**
Career Planning for Engineering PhD’s Seminar & Fitch H. Beach Awards Presentation
12:00 – 1:00 p.m. Limited Seating
3540 Engineering Building

*March 19 - From CV to Resume- Developing written credentials for nonacademic positions.*
5:00 - 7:00 p.m.
6 Student Services Building

*March 26 - Mastering the Interview*
5:00 - 7:00 p.m.
6 Student Services Building

*Registration is required for these workshops, for information visit grad.msu.edu/stuwork.htm*
Graduate Student Resources
Compiled by Lynda White

Writing Center
www.writing.msu.edu
The Writing Center offers one-on-one consulting services for writers at all stages of the writing process. Any MSU student or small group of students can make an appointment to bring any writing they may be composing (from essays, resumes, or dissertations to web pages, digital movies, or slideshow presentations) to discuss with a writing consultant in the center. Writing consultations generally last 50 minutes and can be scheduled online at http://www.rich36.com/msu.

Council of Graduate Students
cogs.msu.edu
Check out this website for information on services available to MSU Graduate Students. Check “Services” for information on:
Copy Center
Student Legal Aid
Short-term Loans
Thesis and Dissertation Copying
Endowment Funding

Olin Health Center
www.olin.msu.edu
Did you know, MSU pays for the first three medical office visits of each school year for students enrolled in MSU classes? This is only the office visit, and does not include lab, X-ray, medical procedures and supplies, etc. For these charges, and for the fourth and subsequent visits, Olin will first bill the insurance plan, and then the patient for any costs not covered by insurance. Go to website for more information on Olin’s services.

International Students & Scholars
www.oiss.msu.edu/about.php
The office of International Students and Scholars has helpful information for international students including immigration, financial aid, driving in Michigan, healthcare, student clubs and community resources.

Teaching Assistant Program
tap.msu.edu
This site has a wide variety of resources for TA’s.

Health Insurance
www.hr.msu.edu/HRsite/Benefits/Students/HealthCov/
The web site includes information on student health and dental insurance.

Free Workshops for Grad Students!
grad.msu.edu/stuwork.htm
The Graduate School at Michigan State University offers workshops on various topics including career planning, dissertation and thesis preparation. A list of workshops can be found at their website. Bookmark this page and check it often. You do not need to register. These workshops fill up quickly!

Dissertation Support Group
This is a group to support graduate students who are currently working on their doctoral dissertations. Lunch will be provided.
Beginning February 5, 2008, Tuesday’s from noon-1 p.m.
113 Linton Hall

REGISTRATION IS REQUIRED
To register send an e-mail to, gradwrsp@msu.edu.
The following 5 pieces of information are REQUIRED for registration: your name, department, e-mail, and name and date of the workshop.

Grad Spotlight:
Jonathan D’Angelo
Compiled by Brad Hall

D’Angelo is a 4th year electrical engineering grad. He received his masters in 2006 and is currently working toward a PhD.

1) What is your area of research?
Fabrication and characterization of thermoelectric power generation modules. Thermoelectric power is the conversion of waste heat to electricity. My research is focused on the fabrication of new thermoelectric materials, and using them to build efficient modules.

2) Tell us about your experience.
Grad school is a wonderful time. I hear from others that it is the best time in your life because you get to focus on one project. I work hard and choose what I do from day to day. I have goals and I am able to use any means necessary to complete those goals.

3) Tell us about your hometown.
I am from Clinton Township MI, and graduated from De La Salle Collegiate in 2000.

4) What do you enjoy in your free time?
When it is warm outside, I like to golf, mountain bike, and road bike. Every year I participate in a 300 mile bike ride for the Make A Wish foundation.

5) What is the best part of your grad experience?
Working and learning from my advisor, Dr. Hogan. Watching him, I learn everyday how to be a better researcher and overall better person.

6) Any plans for after graduation?
Fly to the moon.