

THE BEEET



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Tucson Meeting sponsored by the Joint Chapter (AP/MTT/EMC/COM) and the Student Branch of Microwave Theory and Techniques:

Implantable Wireless Medical Devices and Systems

Speaker: J.C. Chiao, University of Texas at Arlington

LOCATION: University of Arizona, Room ECE 530

DATE: Tuesday April 2, 6:00 pm

Refreshments Provided (pizza and soft drinks)

Radio frequency identification (RFID) has been utilized to increase efficiency and care quality in hospitals for patient information management, drug and equipment inventory, scheduling, and staffing. To further improve healthcare while aiming to reduce costs, major technical challenges still exist. Limited sampling and acquisition of physiological parameters during the interaction between caregivers and patients provide incomplete information about the patients. Better care with higher diagnosis accuracy can be provided if more and time-lapsed data can be obtained without causing patients discomfort or limiting their mobility. Meanwhile, patient data documentation has become too cumbersome. The lack of portability and accessibility of the physiological information prevent real-time management by caregivers and patients themselves.

This lecture focuses on the development of wireless micro devices and systems for clinical and biological applications. The systems are based on technology such as wireless energy transfer for batteryless implants, miniature electrochemical sensors, nanoparticle modified surfaces, microelectromechanical systems and microwave communication. In this talk, several implantable wireless diagnosis and therapeutic treatment systems will be discussed. An integrated wireless body network for chronic pain management has been demonstrated with wireless closed-loop integration of neurorecorders to recognize pain signals and neurostimulators to inhibit pain. Batteryless disease (GERD), an endoscopically-implantable

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wireless gastro-stimulator for gastroparesis management, and a wireless bladder volume monitoring implant for urinary incontinence management. These applications enable new medicines to improve human welfare and assist better living.

BIOGRAPHY

J.C. Chiao received his Ph.D. degree at California Institute of Technology in 1995, and served as a Research Scientist at Bell Communication Research, Assistant Professor at University of Hawaii, and Product Line Manager and Senior Technology Advisor at Chorum Technologies from 1996 to 2002.

He joined UTA as an Associate Professor in 2002. He is now a Jenkins Garrett Professor of Electrical Engineering and Joint Biomedical Engineering Program at University of Texas - Arlington; and an Adjunct Associate Professor in the Internal Medicine Department at UT-Southwestern, Medical Center.

Dr. Chiao is a senior member of IEEE. He has published numerous peer-reviewed papers, edited several proceedings and books, and chaired several international conferences. He obtained five awarded and six pending patents. He received the 2011 O'Donnell Award in Engineering presented by The Academy of Medicine, Engineering and Science of Texas (TAMEST). He also received the 2011 Dallas Fort Worth Metroplex Technology Business Council Tech Titan Technology Innovator Award, and 2011 Lockheed Martin Aeronautics Company Excellence in Engineering Teaching Award. His webpage is at <http://www.uta.edu/faculty/jcchiao/>

Message to the Tucson Section

By Joseph Wu

I'd like to invite everyone in the Tucson Section to participate in IEEE. In the last year, we've conducted activities for schools, the University of Arizona, and for you, the membership. These activities are a great way to get involved in IEEE and show the impact of engineers in our community.

We have a great core of volunteers but we could always use your help. I'm asking people to get involved. With more people the Tucson Section could do so much more for the membership and this community.

If you're interested in helping out or becoming an officer, contact us through the following website:

<http://ewh.ieee.org/r6/tucson/>

Become an IEEE Senior Member!

Do you want to become a senior member of the IEEE? The IEEE wants to promote qualified candidates to senior membership! If you have 10 years of professional experience of which five years of significant professional performance, you are qualified for a senior member upgrade. Educational experience such as a bachelor's degree in an IEEE-designated field counts 4 years to that number, a master's degree counts 5 years and a doctorate counts 6 years. In order to find out more, point your web browser to www.ieee.org and search for senior membership!

Senior Membership:

<http://www.ieee.org/web/membership/senior-members/>

Applications can be found online. You will need the references of three current senior members or fellows. If you need assistance, contact Joseph Wu at joewu@ieee.org.

Save the date....

The next meeting has not yet been scheduled.

Most years, the Tucson section of the IEEE is dormant during the summer months. We generally align meetings with the U of A semester schedule. However if you're interested in putting on a meeting, let us know and maybe we can put something together!

Keep Up with the Tucson Section: Join our email list!

The Tucson Section email list delivers the latest IEEE Tucson news right to your email box. To join, simply send an email to

listserv@listserv.ieee.org

Put the following in the body of the message:

[subscribe TUCSON-SECTION-ALL yourfirstname yourlastname](#)

You'll receive an email with instructions for confirming your new subscription.

Other News

Upcoming Conferences

2013 Wireless Telecommunications Symposium (WTS 2013)
17 Apr - 19 Apr 2013, Chandler, AZ
www.csupomona.edu/wtsi

2013 20th IEEE International Conference and Workshops on Engineering of Computer Based Systems (ECBS)
22 Apr - 24 Apr 2013, Scottsdale, AZ
cps-vo.org/ecbs2013

2013 Seventh IEEE/ACM International Symposium on Networks-on-Chip (NoCS)
21 Apr - 24 Apr 2013, Tempe, AZ
www.nocsymposium.org

U of A Student Branches

In the Tucson Section, there are active student branches. The Student Branch Chapter of the MTT frequently brings in speakers from the distinguished lecturer series.

The U of A main student branch is also active. They have been running an open lab space in the ECE department, helping out various senior projects, and even putting together an Arduino workshop in their spare time.

If you're interested in finding out what they do, or want to help out with a donation go to:

<http://uaieee.com>
<http://www2.engr.arizona.edu/~mtt/>

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General IEEE Information

1-800-678-IEEE(4333)

We need to hear from you!

How can we make IEEE a better organization? We can only do it with your help. As a volunteer organization, IEEE depends on your participation to accomplish all of our goals.

As you can see from this newsletter, there are lots of activities where you can actively contribute. Are you good at organization? Volunteer to head one of our Chapters or to help organize our general meetings. Want to show off or improve your internet skills? Volunteer to help with our Web site. Interested in promoting our field to the next generation of engineers? Help with Engineers Week, or as a judge for any of our student competitions.

Even if you only have a little bit of time, there's sure to be an IEEE opportunity that will interest you. Even if you have no free time at all, but have ideas for meetings or activities that promote engineering and the IEEE, let us know! We'd like to hear from you. Please contact Joseph Wu at joewu@ieee.org.

We're on the Web!

Visit us at:

<http://ewh.ieee.org/r6/tucson>