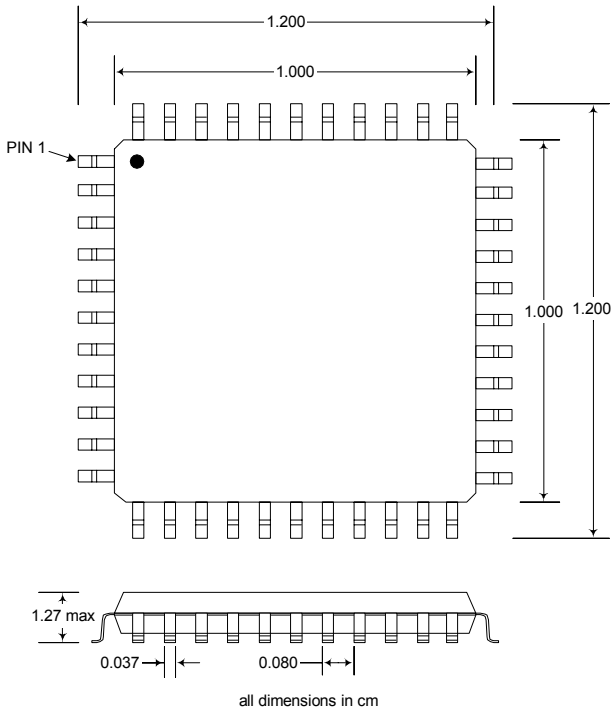

ELECTRICAL AND COMPUTER ENGINEERING SENIOR DESIGN DAY

Friday, May 2, 2008

Electrical and Computer Engineering Department
The University of Connecticut

www.ee.uconn.edu/SeniorDesign

Schedule	
2:00 – 3:20	**Project Demonstrations (ITE C19 and ITE C43)**
3:30 – 7:50	**Oral Presentations (ITE 125)**
3:30 – 3:40	Welcoming Remarks (Rajeev Bansal)
3:40 – 4:00	Inventory Control System *Daniel Fain (EE), Robert Hohner (EE), Ezzeddine Zayati (EE)* An Inventory Control System provides automatic identification of inventory objects, which can include any kind of physical or fixed asset: merchandise, consumables, circulating tools, or capital equipment. Our senior design project is a real time inventory control system that is capable of automatically sending a wireless alert message to restaurant personnel when a customer's drink needs to be refilled: It is a SMART COASTER! *Sponsor: ECE Advisor: R. Bansal (ECE)*
4:00 – 4:20	Photo Acoustic Tomography Imaging System II *Neil Pande (EE), Digish Shah (EE), Joseph Smith (EE)* The objective of our project is to construct a biomedical imaging system using a technique known as photoacoustic imaging. An imaging system of this type employs a high-power laser that shines briefly on a biological tissue sample, causing it to heat up and expand slightly, producing sound waves. The sound waves are picked up by transducers and converted into electrical signals, which are amplified and sent to a data acquisition system. The signals are converted to digital form, which a computer uses to synthesize an image. Our project tasks are to test each individual circuit board involved in the multiplexing and amplification process of the electrical signals, to design and obtain a case for our imaging system, to assemble all components inside the case, and to test the operation of the integrated system both before and after it is connected to the transducer array and the data acquisition system. *Sponsor: ECE Advisor: Q. Zhu (ECE)*
4:20 – 4:40	Photo Acoustic Tomography Imaging System I *Catherine Emmons (EE), Weihao Lu (EE), Juan Ocampo (EE)* The purpose of this project is to make a high-speed data acquisition board (DAQ) that will have an input coming from a receiver board and an output that will be saved into the memory of a personal computer (PC). The DAQ will be transferring information to the PC via a peripheral component interconnect (PCI) slot that goes directly to the motherboard of the computer. The board will be incorporated with direct memory access (DMA) mode, which means that the board will be allowed to write information on the PC without the permission of the computer. This allows for a faster data transfer since the central processing unit (CPU) will remain free to do other processes. *Sponsor: ECE Advisor: Q. Zhu (ECE)*
4:40 – 5:00	Fully Automated Flow Bench Test Station *Kenneth Case (EE), Jennifer Hernandez (EE), Kathleen Mayer (EE)* This project is an internal product for the engineers of its company sponsor, Gems Sensors, who required a testing station for various flow-meters to replace their existing system. The original structure was connected to the company's water supply and controlled manually. This resulted in fluctuating and unmanageable flow rates as well as inefficient use of time and data recording. The replacement test station is a closed system that is electronically controlled by the user through a program written in LabVIEW™. This program allows the user to either create a test sequence that will run automatically or to control the system in real time. In either situation, a PID (Proportional-Integral-Derivative) controller monitors and maintains the flow rate while data is also taken and recorded to text file. *Sponsor: Gems Sensors Advisor: R. Bansal (ECE)*
5:00 – 5:20	Real-Time Underwater Acoustic Modem Sanjiv Dinakar (CMPE), Ajay Patel (EE), Jamal Roache (CMPE) In a continuation of previous work done in Dr. Zhou's Underwater Acoustic Lab, we have adapted and optimized the underwater acoustic Matlab implementation for DSP/FPGA board stand alone operation. Our goal is to create a real-time acoustic modem using two such boards, which communicate with one another via a video link. Video peripherals have been incorporated to facilitate the receiving, transmission and display of video. *Sponsor: ECE Advisor: S. Zhou (ECE)*

5:20 – 5:50	Sandwiches & Refreshments ITE 301
5:50 – 6:10	Biometric Identification *Steven Baird (CMPE), Lucas Marlow (EPHY), Corey Sickinger (CMPE)* The purpose of this design project is to create a secure user registration process using verified government identification documents as well as uniquely-identifying biometric data. Our task was to research Biometric Identification technology and compile a list of products to be used in a remote user registration system. Once the system was assembled, we also needed to test the system to verify that it met the preliminary specifications. We were also tasked with developing a small program that would capture data from a birth certificate using OCR technology. *Sponsor: ECE Advisor: J. Chandy (ECE)*
6:10 – 6:30	Wireless Sensor Network *David Butkiewicus (EE), Brenton Matte (EE), Thomas Athanasios (EE)* Our project consists of three wireless robotic nodes communicating with a base station computer to do various tasks. Each mobile node is equipped with a camera and temperature sensor and sends back this information to the base station. Through analyzing signal strength from the nodes, the base station will be able to tell the rough location of each node and display this on a map. *Sponsor: ECE Advisor: J. Chandy (ECE)*
6:30 – 6:50	Continued Wafer Track Modernization *Aaron Feldstein (EE), Paul Rago (EE)* Phonon Corporation has a specific need in upgrading automated wafer-handling systems used in the fabrication of surface acoustic wave (SAW) devices. The wafer-handling systems are used to clean, apply photoresist, and other development processes. The project is to upgrade the wafer-handling system. In particular, the goal is to interface the system with a computer in order to implement a graphical user interface (GUI), which will greatly increase the functionality. The system's sequence will then be user-selectable, and the system will programmed to log relevant data via a network connection. *Sponsor: Phonon Advisor: M. Tehranipoor (ECE)*
6:50 – 7:10	Qualtech Cad2XML *Poorak Mody (CMPE), Jonathan Schindler (CMPE), Jason Thibodeau (CMPE)* Qualtech Systems Inc. is a company that builds a program designed to help support and troubleshoot large specialized systems.Currently they have a team of engineers analyze the specifications and models from their clients,and build a decision model from the ground up. This takes about six to eight months from start to completion. We are to develop a computerized solution, which will will take as input, an output file from a high level design program. The input file will then be reverse engineered to create an output file that is in XML format, while providing the user with information filtering capabilities. *Sponsor: Qualtech Advisor: M. Tehranipoor (ECE)*
7:10 – 7:30	Electric Transport *Hisham Abouchacra (EE), Josh Cefaratti (EE), Mike Kosa (EE)* The project is to build a scale model of an electric vehicle which could be used for transporting goods, similar to a semi-trailer truck. Our model is large enough to accommodate 1 person driving the vehicle. We will demonstrate the transport aspect of the vehicle by constructing a truck bed in the rear of the vehicle and towing a small trailer which could be used to hold cargo. Our goal is to prove that electric vehicles could be a practical alternative to current diesel trucks used to transport goods. Such an alternative would help reduce pollution and would not rely on expensive fossil fuels. *Sponsor: ECE Advisor: M. Fox (ECE)*
7:30 – 7:50	Solar Wind Lab *Matthew Fogarty (EE), Michael Stroh (EE), Jeong Yoo (EE)* Alternate energy has become increasingly necessary and popular in recent years. In a world where the population is increasing and power demands have been growing, action must be taken to ensure that these demands are met. Petroleum is running out and its cost will skyrocket due to scarcity in only a short time. Not only will its cost increase, but it is extremely harmful to the environment. This project will focus on the potential usage of solar and wind energy in the New England area, specifically Connecticut. This can be obtained by setting up a “Solar Wind Lab” on the roof of ITE. This will allow the studying and analysis of these different types of renewable energy sources through a computer. *Sponsor: ECE Advisor: M. Fox (ECE)*

You're Invited

The Electrical and Computer Engineering Department would like to invite you to the Spring 2008 Senior Design day to be held at the University of Connecticut on Friday, May 2, 2008 from 2:00 PM to 7:50 PM.

You will have the opportunity to tour the Senior Design Lab, view presentations of projects completed by the graduating seniors, and view presentations by all Senior Design students.

Directions

Directions: Interstate 84 to Exit 68. Route 195 south. Descend hill into University of Connecticut and follow the signs to South Garage. *[Take the first right after mirror lake (Mansfield road). Take the second left (Gilbert Road). At the end of Gilbert Road turn right onto Hillside Road. Parking is available in South Garage, on your left.]* From South Garage, take a left onto Hillside Road and a right onto Fairfield Way. The Information Technologies Engineering (ITE) Building is the second building on the right of Fairfield Way, located between the School of Business and the Library. Please contact Prof. Rajeev Bansal at (860) 486-2878 if you have questions.

About ECE Senior Design

Computer and Electrical Engineering Design I and II is a two semester design sequence (ECE/CSE 290 and ECE/CSE 291) taken by all senior Computer Engineering and Electrical Engineering students at the University of Connecticut.

The course objective is to provide an opportunity for students to apply their engineering knowledge to solve open-ended design problems using a multidisciplinary team approach.

Students work in teams of three or more students. Each team is multidisciplinary in nature. This is normally accomplished by including students from different programs (EE, CMPE, and ME). In some cases, all participants on a particular team may be from the same program. In such a case, team members are chosen such that the members have different concentrations, expertise, or strengths.

Thanks to Our Sponsors

Gems Sensors, Phonon Corp., Qualtech Systems Inc.,

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