THE UNIVERSITY OF TEXAS AT AUSTIN
Department of Mechanical Engineering

ME 397 - Topics in Human-Centered Robotics – Spring 2010
TTh 12:30-2:00, Unique #18816

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Office Hours: TTh: 2:00-3:30  Class Web Site: http://course.utexas.edu/

Course Description: The goal of this course is to introduce graduate and advanced undergraduate students to robotic methods and technologies for the assistance, interaction, and augmentation of humans in their daily chores. Through paper readings and in class presentations and discussions, the students will learn the state of the art in the field of human-centered robotics. At the end of the course, the class will put together a report discussing the current trends and future research directions in the field of human centered robotics. In addition, the students will team up in groups of two to develop mini-projects. Examples of mini-projects include: (1) processing of wearable sensor systems, (2) planning dynamic locomotion trajectories for multilegged robots, and (3) simulating humanoid robots. The class will be complemented by talks from guest lecturers in the related areas.

Format: Article readings, presentations, discussions, mini-projects, and guest lecturers

Topics:

1. Designing robots based on human behavior
2. Personal robotics
3. Wearable sensor systems to measure human motion
4. Design and control of orthotic devices
5. Planning human gait function
6. Computer simulations of physics
7. Augmented reality
8. Telepresence and telemanipulation
9. Unmanned surveillance systems

Material: Selected articles from the following Journals and Proceedings:


Prerequisites: The students are required to have basic background on linear algebra, programming (Matlab, C++), and dynamics and control. Additional knowledge in mechanical design, mechatronics, or artificial intelligence, will be a plus.

Grading Policy: 30% Paper summary and critique, 30% Discussions, 40% Mini projects