NEW COURSE FALL 2010, IE 590: Robotics and Machine Vision
Dr. Juan P. Wachs (jpwachs@purdue.edu)

Introduction:

Computer vision is a powerful tool in robotics and in the human computer interaction areas. Recently, camera-based input is being used in a wide range of applications from mobile devices to games. "Robotics and Machine Vision" introduces students to computer vision and image processing from an interaction design standpoint. How human feedback can be used to improve the interaction and how this affects the user behavior?

Course Objectives:

The primary objectives of IE 590 are:

1.   To provide an overview of HCI and Robotics research as it relates to computer vision.
2.   To teach students how to apply computer vision techniques to interface machines with humans.
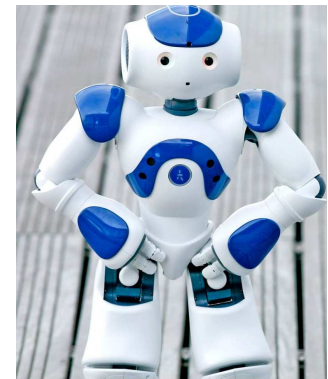
Topics covered in the class:

1 –Image Processing: Morphology, Filters, Color, Shape
2—Motion and Tracking: Optical Flow, Temporal Filtering, Color Trackers
3 – Object recognition: Features, Detectors and Classifiers
4 – 3D reconstruction and stereo vision for robot navigation

Course Assignments:
IE 590 has three types of coursework requirements.
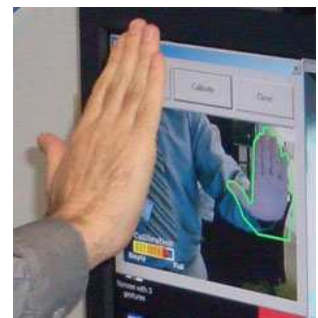
Readings: Readings are assigned to correspond to each lecture topic.
Individual Assignments: Three mini-projects (homework) will be assigned during the first half of the semester to become familiar computer vision techniques.
Project Assignments: Students will form small teams and build a working prototype of a computer vision-based interactive system.