IE 690: Gestures & Bodial Interaction Systems

SPRING 2019 SEMESTER

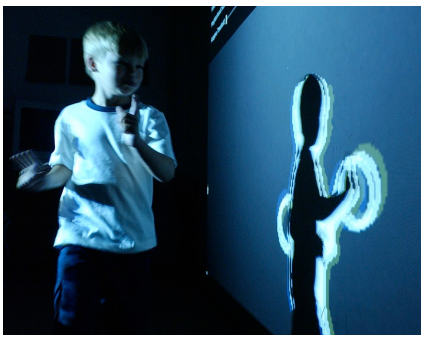
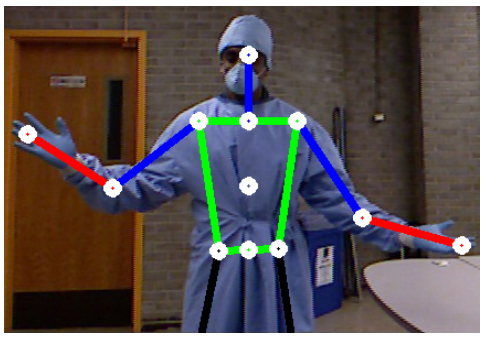
INSTRUCTOR: Dr. Juan P. Wachs 49-67380 jpwachs@purdue.edu
CLASSES: MWF 2:30pm – 3:20pm Gris Hall 168

PREREQUISITE:
Linear Algebra, Probability, Programming (Python)

OFFICE HOURS: Mondays 3:30-3:30 PM, GRIS 262A

READING:

- *Brave NUI World: Designing Natural User Interfaces for Touch and Gesture; by Daniel Wigdor and Dennis Wixon.*
- *Designing Gestural Interfaces: Touchscreens and Interactive Devices. By Dan Saffer. Ed. O'Reilly.*
- *Kinect for Windows Human Interface Guidelines. http://go.microsoft.com/fwlink/?LinkID=247735*

WHAT WILL YOU LEARN:
Principles for the optimal design of hand and body gesture interfaces; the main objective is to develop usable systems that can recognize gestural behavior for human-machine interaction. The final goal of the course is solve a challenge called Chalearn (http://gesture.chalearn.org/) through lectures, readings, hands-on-tools, discussions, and team projects.

In addition to the basic principles of gesture recognition and relevant literature, the course will explore some ways in which it has been applied to human-computer interaction, and the involved challenges and opportunities that this presents. The students will learn the practical details of how these methods can be used effectively in assistive technologies, gaming and communications.

PROGRAM OVERVIEW (in a nutshell):

1. Introduction to computer vision and how to tackle recognition problems.
2. Gesture semantics, vocabularies and meaning of gestures.
3. Machine Learning techniques for gesture recognition.
4. Gestures produced by robots and mutual grounding.
5. Chalearn Challenge – Beating the baselines
6. Gesture interaction in Gaming, Virtual Reality and Holograms

COURSE ASSIGNMENTS: Readings, homeworks (3), and a final project.