

**EEC 492/592 KINECT APPLICATION DEVELOPMENT**  
**New course offered in Spring 2014**

**Microsoft Kinect** is a transformative device for human/computer interaction, computer vision, virtual reality, and robotics. In this new course, you will learn how to develop tremendously useful applications facilitated by Kinect. Kinect enables us to interact with computer systems (or a robotic system) naturally via gestures and speech-based commands (referred to as **Natural User Interface**). Many patents have been filed for Kinect's use in healthcare, sports training, and robotic controls; and a number of startup companies have been funded by venture capitals trying to commercialize various Kinect-based technologies. Perhaps the next killer app is yours!

**What you will learn in this course:**

- Understand the Kinect sensor and how they work
- Reading the Kinect device information, monitoring and controlling the sensor
- Learn how to capture data streams from the Kinect sensor
- Learn the uses of color, depth and IR data and how to leverage them in your applications
- Use skeleton-tracking for interactive applications
- Learn basic gesture recognition methods and develop gesture-enabled applications
- Application of gesture recognition in healthcare
- Build speech-enabled applications with Speech API, and text to speech as well
- Learn 3D game development with Unity3D for Kinect (virtual reality!)
- Gain under-the-hood insight to human motion tracking with OpenCV

**How the course will be taught:**

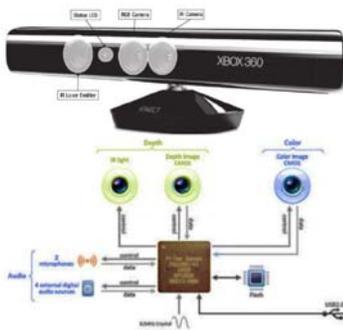
- Tutorial style. Hands on. Learn by examples. Project-oriented.

**Textbook:** Kinect for Windows SDK Programming Guide, by Abhijit Jana, PACKT publishing, 2012.

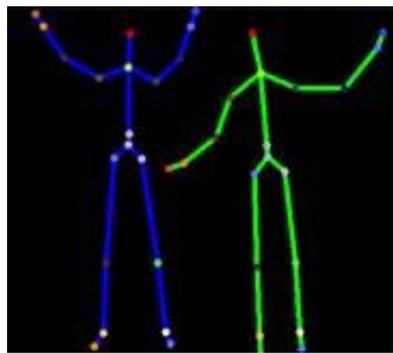
**References:** Kinect Hacks, by Jared St. Jean, O'Reilly, 2013  
Hacking the Kinect, by Jeff Kramer et al., Apress, 2012.

**Coordinator:** Dr. Wenbing Zhao, Associate Professor of Electrical and Computer Engineering. Any questions? Contact me: [wenbing@ieee.org](mailto:wenbing@ieee.org)

**Prerequisites:** Basic computer programming skills, ideally in C# (very similar to Java)



Microsoft Kinect Sensor



Skeleton Tracking



Unity3D games with Kinect