ECE SEMINAR

Speaker: Dr. Muhammad Shehzad Hanif

Assistant Professor,
Department of Electrical and Computer Engineering,
King Abdulaziz University, Jeddah, Saudi Arabia

Date: Tuesday, February 18, 2014
Time: 3:00 PM
**Venue:** Building 42A, Second floor, Room 333

Title

Visual Perception using Machine Learning

Abstract

Humans use their senses (hearing, sight, touch, taste and smell) to understand their surroundings. The primary objective of artificial visual perception is to build sense of sight in machines. Building such a sense would require detail investigations on how humans perceive the world i.e. how visual system is representing and eventually processing the perceived data. Our daily life experience tells us that a child can easily differentiate between a human face and a book. The ability to differentiate between these two different things (face and book in this example) is generally taken as granted as the task is performed by the child without any effort but the underlying algorithms of perception of a human face and a book and learning to discriminate between objects are unclear. In this talk, I will discuss some artificial visual perception problems and their solutions based on state of the art machine learning algorithms. Precisely, I consider the problems in the domains of object detection, localization, tracking and image segmentation.

Examples of Visual Perception Problems
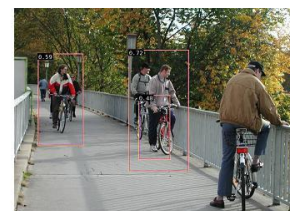
Object detection and localization: Determine if a certain object present in the image; if found, draw a rectangular box around it.

Object tracking: Given a video or a sequence of images, determine the location of an object in every frame/image.
Image segmentation: Annotate each object in the image.

The Autonomous Systems Research Group