

Talk by Prof. Chien-Chung Chen (National Taiwan University)

Date & Time: Dec 8 (Thu), 2016 16:30-18:00

Place: Lecture Room 4 (Grad Sch Letters main building, level 2)

Title: Hierarchical processing in human spatial and object perception

Abstract:

The primary function of a biological vision system is to understand the surround environment. However, the early visual mechanisms, in particular the primary visual cortical neurons, given the localized receptive field of its neurons, only extract line segments from an image. Thus, to make sense of an image, the visual system needs to integrate the extracted line segments into a meaningful object. Such integration process is related to perceptual grouping at the behavior level. Perceptual grouping is not arbitrary. It is constrained by many factors. By observing how is perceptual grouping influenced by various factors, we can infer the properties of the neural mechanisms underlying the integration of visual features. Here, I am going to review a series of experiments, including psychophysics and neuroimaging ones, that explore perceptual grouping at the early and the middle level of visual processing. I will show that spatial configuration constraints of perceptual grouping conforms contour integration and surface completion. A computational model based on the divisive inhibition is proposed to account for current empirical results.