

The University of Hong Kong
Department of Psychology

Departmental Seminar

How Active is Visual Perception?

Date: June 11, 2014 (Wednesday)

Time: 11:30 a.m. – 12:30 p.m.

Venue: CPD-G.02, G/F, Central Podium Level, Centennial Campus,
HKU

Speaker: Prof. Michele Rucci

Psychological and Brain Sciences and Graduate Program in
Neuroscience Boston University

Michele Rucci is a Professor of Psychological and Brain Sciences at Boston University. He is a lead researcher in Vision Sciences and has published many important papers in top journals such as Nature, Journal of Neuroscience, and Current Biology. His research integrates experimental and theoretical approaches to elucidate the perceptual functions of motor behavior.

Our eyes are never at rest. We are normally not aware that, in the periods of fixation, microscopic eye movements continually shift the stimulus on the retina. In this talk, I will review recent experimental and theoretical findings suggesting that the incessant motion of the eye is a critical computational element of an active sensorimotor strategy by which the visual system processes spatial information in the temporal domain. I will address three main questions: (1) How is spatial information encoded in the modulations of luminance resulting from fixational eye movements and saccades? (2) How is this information extracted and interpreted? (3) Can the spatiotemporal redistribution of input energy be adjusted according to the task by controlling fixational eye movements? The proposal that the visual system actively represents space through time implies that eye movements are in part responsible for fundamental properties of spatial vision that are, at

present, solely attributed to neural mechanisms. It replaces the traditional notion of the early visual system as a passive encoding stage that optimizes overall information transmission with that of an active, tunable system for feature extraction, whose function can be fully understood only in conjunction with eye movements.

