



Séminaires ISIR

Mercredi 7 Mai 2014 à 11h00

Tony J Prescott

Campus Jussieu, 4 place Jussieu, Paris
Salle de réunion H20

Title: Active touch sensing in animals and robots

Abstract: How do animals understand the physical world they live in? One answer, due to Gibson, is that their sensory systems are tuned to pick up relevant affordances for behaviour, but how is it that the brain and the sensory apparatus become suitably adapted to perform this feat? To cast light on this question we have been investigating active touch sensing in small mammals. A specific focus has been on the vibrissal (whisker) system, and its emergence through evolution and development, which we are investigating through a combination of (i) ethological studies of behaving animals, (ii) computational neuroscience models of the neural circuits involved in vibrissal processing, and (iii) biomimetic robots embodying many of the characteristics of whiskered animals in their design and control. This talk will present converging lines of evidence, from these different research strands, for the importance of active control in tactile sensing, and some preliminary ideas as to nature of the understanding of the physical world that animals obtain through this sensing system. Our results will be used to illustrate how experimental and robotic approaches can operate together to advance our understanding of sensorimotor cognition in behaving systems.

Short Bio: Tony Prescott is a Professor of Cognitive Neuroscience at the University of Sheffield in South Yorkshire, UK, a Fellow of the British Psychological Society, and Director of the Sheffield Centre for Robotics (SCentRo). His research focuses on ethological, neurobiological, computational modeling and robotic studies of active touch sensing in animals including humans, and on the design and development of useful biomimetic robot devices. With his collaborators he has developed a variety of biomimetic haptic sensing systems, including the whiskered robots *Scratchbot* and *Shrewbot*, haptic exploration strategies for the humanoid *iCub* robot, and wearable sensory substitution systems that exploit haptic interfaces.



Links: Active Touch Laboratory: <http://www.shef.ac.uk/psychology/research/groups/atlas>
Sheffield Centre for Robotics: <http://www.shef.ac.uk/psychology/research/groups/atlas>
Personal page: <http://www.shef.ac.uk/psychology/staff/academic/tony-prescott>