Online adaptation and over-trial learning in macaque visuomotor control.

By elsc_admin
Created 9/22/2011
By elsc_admin September 22, 2011


Abstract:

When faced with unpredictable environments, the human motor system has been shown to develop optimized adaptation strategies that allow for online adaptation during the control process. Such online adaptation is to be contrasted to slower over-trial learning that corresponds to a trial-by-trial update of the movement plan. Here we investigate the interplay of both processes, i.e., online adaptation and over-trial learning, in a visuomotor experiment performed by macaques. We show that simple non-adaptive control schemes fail to perform in this task, but that a previously suggested adaptive optimal feedback control model can explain the observed behavior. We also show that over-trial learning as seen in learning and aftereffect curves can be explained by learning in a radial basis function network. Our results suggest that both the process of over-trial learning and the process of online adaptation are crucial to understand visuomotor learning.

Journal:
Frontiers in computational neuroscience

Volume:
5

Pagination:
27

Date Published:
2011

Custom 1:
It is now widely accepted that deciphering the enigma of the brain is the most challenging intellectual endeavor of the 21st century, "The Century of the Brain" - Join our quest and become a friend of ELSC.

**ELSC Friends**

Our Int'l Ph.D. program provides outstanding students with top-notch courses in computational neuroscience.

**Studying at ELSC**

The Jerusalem Brain Sciences Building will provide a state-of-the-art research and teaching facility for the Edmond and Lily Safra Center for Brain Sciences.

**The Building**

Get into our media channel and investigate ELSC's latest videos: seminars, public lectures, courses and video articles.

**ELSC Media Channel**

**Source URL:** http://elsc.huji.ac.il/vaadia/publications/online-adaptation-and-over-trial-learning-macaque-visuomotor-control