Position and Identity Information Available in fMRI Patterns of Activity in Human Visual Cortex.

By zroth
Created 9/9/2015
By zroth September 9, 2015

Roth, ZN, Zohary E. 2015.

Abstract:

Parietal cortex is often implicated in visual processing of actions. Action understanding is essentially abstract, specific to the type or goal of action, but greatly independent of variations in the perceived position of the action. If certain parietal regions are involved in action understanding, then we expect them to show these generalization and selectivity properties. However, additional functions of parietal cortex, such as self-action control, may impose other demands by requiring an accurate representation of the location of graspable objects. Therefore, the dimensions along which responses are modulated may indicate the functional role of specific parietal regions. Here, we studied the degree of position invariance and hand/object specificity during viewing of tool-grasping actions. To that end, we characterize the information available about location, hand, and tool identity in the patterns of fMRI activation in various cortical areas: early visual cortex, posterior intraparietal sulcus, anterior superior parietal lobule, and the ventral object-specific lateral occipital complex. Our results suggest a gradient within the human dorsal stream: along the posterior-anterior axis, position information is gradually lost, whereas hand and tool identity information is enhanced. This may reflect a gradual transformation of visual input from an initial retinotopic representation in early visual areas to an abstract, position-invariant representation of viewed action in anterior parietal cortex.

Journal:
The Journal of neuroscience : the official journal of the Society for Neuroscience

Volume:
35

Issue:
33

Pagination:
11559-71

Date Published:
2015 Aug 19

Custom 1:
UPCOMING EVENTS

Learn more about our exciting upcoming events!

read more

Studying at ELSC

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

read more

The Building

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.

read more

ELSC Media Channel

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

read more

Source URL: http://elsc.huji.ac.il/zohary/publications/position-and-identity-information-available-fmri-patterns-activity-human-visual-