Max Wertheimer Minerva Center for Cognitive Processes and Human Performance
Head of Center: Prof'. Asher Koriat ראש המרכז : פרופ' אשר קוריאט

אנו שמחים לארח את

Prof. Marcel Just

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Identifying the content of simple thoughts from the underlying pattern of fMRI-measured brain activity

This talk will describe the discovery of a set of biologically-driven semantic dimensions underlying the neural representation of concrete nouns, and then demonstrate how a resulting theory of noun representation can be used to identify simple thoughts through their fMRI patterns. Factor analysis of fMRI brain imaging data reveals the biological representation of individual concrete nouns like hammer, in the absence of any pictorial stimuli. From this analysis emerge three main semantic factors underpinning the neural representation of nouns naming physical objects, which we label manipulation, shelter, and eating. Each factor is neurally represented in 3-4 different brain locations, corresponding to a cortical network that co-activates in other non-linguistic tasks. Several converging methods provide independent evidence of the centrality of these factors to the representation. The factors are then used with machine learning classifier techniques to show that the fMRI-measured brain representation of an individual concrete noun like hammer can be identified from among 60 candidate words, using only the fMRI activity in the 16 locations associated with these factors. This method provides a way to identify a person's thought from their fMRI activity. To further demonstrate the generativity of the proposed account, a theory-based model is developed to predict the brain activation patterns for words to which the algorithm has not been previously exposed. The approach is proving to be extensible to other types of concepts, such as numerical quantities, interpersonal interactions, and dimensions of personality.

ההרצאה תתקיים **ביום ב' ה- 15 ביוני 2009, בשעה 12:15**

במשכן לאומניות חדר 206, אוניברסיטת חיפה.

נשמח לראותכם בין אורחינו

המעוניינים באישור כניסה לרכב לאוניברסיטה - אנא שלחו מייל לאתי לברן:

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