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AN FMRI STUDY OF NEURAL DECISION MAKING USING SUPPORT VECTOR MACHINE

Abstract:

There is an increasing trend of employing fMRI by the neuroimaging community for measuring the blood oxygenation levels towards quantifying brain activity. The experimental modality typically involves a rest and a task state during which brain activation in participants is registered during an fMRI scan. In this work, we have taken this approach and analyzed two Brodmann areas (BAs), which were our regions of interest (ROI) from the prefrontal lobe of human brain, for their role in decision making. These ROIs (BA10 and BA47) are reportedly activated during decision making. Support vector machine (SVM) was employed for classification of the activated voxels in the ROIs. Each dominant voxel was ranked on the basis of perceived pattern in the brain. Our experimental design and results can assist in decoding the decision-making neuron connectivity for applications in neuromarketing and neuroeconomics.

Keywords:

activated areas, decision making, fMRI, BAs, SPM

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