

## عنوان مقاله:

Effective Supervised Classification of fMRI Activation Maps Between Populations By Spatial Descriptors

## محل انتشار:

هفتمین کنفرانس ماشین بینایی و پردازش تصویر ایران (سال: ۱۳۹۰)

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## خلاصه مقاله:

The major obstacle in discrimination between different groups of subjects in a common cognitive state, by functional Magnetic Resonance Imaging (fMRI), has been the high intersubject functional and anatomical variability in the spatial patterns of brain activity. To overcome this, we have used two types of spatial descriptors that characterize the brain regions of interest (ROIs) involved in the cognitive tasks. They include, firstly three-dimensional invariant moment descriptors (3-DIMs), and secondly k-dimensional feature vectors based on concentric spheres. Both types of descriptors are applied to analyze the spatial patterns of cognitive activity of a challenging task and then to classify them across two different subject groups. SVM classifiers along with sequential floating forward feature selection technique are applied to the extracted descriptors of each ROI across the subjects. Our method is applied to experimental fMRI data with the aim of discriminating mental status of heroin IV (Intravenous) abusers and from those in control subjects in a visual cue task which can induce drug craving. Our results demonstrate that 3-D texture of activation maps provide a good discrimination (with high accuracy) between healthy and addict group.

## کلمات کلیدی:

functional magnetic resonance imaging (fMRI); group analysis; spatial pattern analysis; three-dimensional (3-D) invariant moment descriptors; concentric spherical-based region descriptors

## لینک ثابت مقاله در پایگاه سیویلیکا:

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