Abstract

The activity patterns in functional Magnetic Resonance Imaging (fMRI) data are unique and located in specific location in the brain. The main aim of analyzing these datasets is to localize the areas of the brain that have been activated by a predefined stimulus [1]. The basic analysis involves carrying out a statistical test for activation at thousands of locations in the brain. The analysis is based on fMRI brain activation maps generated using the Statistical Parametric Mapping (SPM) approach. The use of individually generated activation maps with SPM allows for better scalability to very large subject pools and it has the potential to integrate data at the activation map level that would be technically difficult to combine at the raw data level.

The fMRI data is huge, dimensionally dissimilar for different orientation data and also show a lot of variation in the data acquired for different subjects for similar activities. The variations are so obvious that there are variations in the data of same subject for different trails. In this context we have explored the possibility of different Pattern Recognition Technique on same data to choose the best option. The comparison of classification efficiency of two methods
implemented: The Back Propagation Neural Network Technique and The Naïve Bayesian Technique show that the two are efficient in classification of the fMRI Patterns under different contexts.

Reference


Index Terms

Computer Science
Pattern Recognition

Key words
fMRI
Pattern Classification
Pattern Classification and Analysis of Brain Maps through fMRI data with Multiple Methods

Back Propagation Neural Network

Naïve Bayesian Classification