Proposal

Project title : Predicting the word from brain activity

Problem Description :
        Trying out different predictive models that will predict words corresponding to the fMRI scan observed when a person reads a noun from given set of words .
We are going to use data from an experiment where 300 different subjects were given a word from a set of 60 words along with a corresponding line diagram. Each word is associated with 218 human defined attributes. fMRI scan which was recorded of all 300 subjects will be used as training data . We are going to learn models which will predict a word (among two candidate words) given fMRI scan of entirely new subject.Our test data consists of 60 cases.

Prior work and References :
- *For fMRI analysis classification such as Gaussian Naive Bayes (GNB) classifier, k-nearest neighbor (kNN), and linear Support Vector Machines (SVM) has been used. **Link***
- *Mitchell, T., Hutchinson, R., Just, M., Niculescu, R.S., Pereira, F., and Wang, X. (2003). Classifying Instantaneous Cognitive States from fMRI Data. American Medical Informatics Association Symposium, 2003.*
- *Mason, R., Just, M., Keller, T., & Carpenter, P., Ambiguity in the brain: What brain imaging reveals about the processing of syntactically ambiguous sentences, in press, 2003.*

Brief description of data set :
The data contains:
- X_train: It contains training feature matrix of size 300 x 21764 that contains the fMRI measurements of the 300 subjects
- Y_train: It contains label vector of size 300 x 1 where each entry is the id of the word being shown to the corresponding subject
- X_test: Test feature matrix of size 60 x 21764 (60 test subjects)
- Y_test: It contains 60 x 2 matrix with first column being the correct word and the second column being a random incorrect word. Your prediction is correct if you can predict the correct one to have a higher score than the incorrect one. DataSet_Link

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