ML Documentation

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1 Machine Learning Analysis

1.1 Machine Learning Methods

Analysis was performed in Python using the Keras library from TensorFlow, decoding libraries from MNE-Python, and the sklearn library. Data was split into training sets of 500 trials for each subject with 100 trials of test trials. Trials were time-binned from 0-0.4 seconds at 0.025 second intervals to account for the 40hz MEG data. Models were trained for each subject to account for individual Model accuracy was calculated with 5-fold cross-validation and evaluation accuracy on the test dataset. Model accuracy was then compared with the results of a permutation test, in which we shuffled around the training and test labels of the dataset to calculate a baseline accuracy for a naive model. This test essentially compares our models to a chance accuracy.

1.2 Sliding Models

1.2.1 Logistic Regression

1.2.2 Neural Network

1.3 Recurrent Models

1.4 Serial Dependence Model