Modeling of fMRI Data to Diagnose Patients with Autism Spectra Disorder

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Status quo methods of autism diagnosis are subjective and varied. This can result in misdiagnosis as well as leave patients with the disorder undiagnosed for long periods of time. The goal of this project is to find a solution in the form of a support vector machine model that describes patterns in brain region connectivity coefficients for patients with autism versus patients without the disorder. Data from ABIDE (Autism Brain Imaging Data Exchange) was pre-processed and utilized in the training of a machine learning algorithm coded in the statistical analysis computer language “R” in conjunction with MATLAB. Ultimately, the objective is to produce an efficient computer model that will be able to analyze given fMRI connectivity data in a .nii.gz format, convert the data to a .csv format, and classify the .csv data as having resulted from the scanning of a patient with or without autism. Current models developed by the support vector machine algorithm are able to classify a patient's data successfully 82% of the time.

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