

Neuro-Connectivity Analysis Using Abide Data in Autism Study

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Abstract : Human brain is an amazingly complex network. Aberrant activities in this network can lead to various neurological disorders such as multiple sclerosis, Parkinson's disease, Alzheimer's disease and autism. fMRI has emerged as an important tool to delineate the neural networks affected by such diseases, particularly autism. In this paper, we propose mixed-effects models together with an appropriate procedure for controlling false discoveries to detect disrupted connectivities in whole brain studies. Results are illustrated with a large data set known as Autism Brain Imaging Data Exchange or ABIDE which includes 361 subjects from 8 medical centers. We believe that our findings have addressed adequately the small sample inference problem, and thus are more reliable for therapeutic target for intervention. In addition, our result can be used for early detection of subjects who are at high risk of developing neurological disorders.

Keywords : ABIDE, autism spectrum disorder, fMRI, mixed-effects model

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