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Paper title: **Discrimination of ADHD children based on Deep Bayesian Network**

**Abstract:** Attention deficit hyperactivity disorder (ADHD) is a threat for the public health all the time, so the effective discrimination of it is significant and meaningful. In current research, Functional Magnetic Resonance Imaging (fMRI) data has become a popular tool for the analysis of ADHD. In this paper, we introduce the Deep Bayesian Network, a combination of Deep Belief Network and Bayesian Network, to classify the ADHD children from the normal. In Deep Bayesian Network, The Deep Belief Network is applied to normalize and reduce dimension of the fMRI data in every brodmann area. And the Bayesian Network is used to extract the feature of relationships between several well-performed brain areas by structure learning. According to the information of structure and probability in Bayesian Network, we predicted the subjects as control, combined, inattentive or hyperactive using SVM classifier. The final results perform better than using single Deep Belief Network and the best results in ADHD-200 competition.

EDICS: 5.4.1. MRI reconstruction **Second choice** : 3.4.3. Networking

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