

Brain Age Prediction Based on Brain Magnetic Resonance Imaging by 3D Convolutional Neural Network

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Abstract : Estimation of biological brain age from MR images is a topic that has been much addressed in recent years due to the importance it attaches to early diagnosis of diseases such as Alzheimer's. In this paper, we use a 3D Convolutional Neural Network (CNN) to provide a method for estimating the biological age of the brain. The 3D-CNN model is trained by MRI data that has been normalized. In addition, to reduce computation while saving overall performance, some effectual slices are selected for age estimation. By this method, the biological age of individuals using selected normalized data was estimated with Mean Absolute Error (MAE) of 4.82 years.

Keywords : brain age estimation, biological age, 3D-CNN, deep learning, T1-weighted image, SPM, preprocessing, MRI, canny, gray matter

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