Analysis of related risk factors for dementia

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Abstract

In this paper, we used machine learning to predict dementia onset time and to explore the relationships between genotype, education, age, sex, and Alzheimer's disease. Data used in this research were obtained in part from the Alzheimer's Disease Neuroimaging Initiative (ADNI) database. The research structure will be divided into three steps. First, we removed the wrong age in the ADNI database, and to connect the basic biological characteristics and genetic data, including age, gender, education level, ethnicity, etc., as well as screening measures (MMSE、CDRSB、ADAS11、ADAS13、FAQ). Secondly, several cross-sectional studies have found an association between Alzheimer's disease (AD) and those characteristics in first part. We also explored whether this risk and the literature that on sex, education, and genes are risk factors for incident dementia. Finally, we would test whether there are differences in the characteristics of different age groups, and use the KNN algorithm, Bayesian analysis, random forest to predict the disease status using features including screening measures.

Keywords: Alzheimer's Disease Neuroimaging Initiative, demetia, machine learning, risk factors