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A study of using decision trees and artificial neural network technology on factors influencing Alzheimer's disease

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Alzheimer's Disease (AD) is a very common recent illness for the elders over age of 65 suffering from dementia. Its prevalence increases by 1% every year, with a total of 4.6% of the total population, and with exceeding 140 thousands of people were diagnosed with dementia now. AD is a form of dementia resulted from the continuing gradual loss of brain functions over time. The Mini Mental State Examination (MMSE) test scores are used to assess the extent of degradation in patients.

In this study, we conducted three experiments and data was designated into each experiment according to the MMSE scores and data mining classification results. The classification models were constructed using decision tree in accordance with back-propagation network (BPN) of artificial neural network (ANN). The results indicate that the decision tree model has the highest accuracy at 92.26% in classification, whereas the model employed both the decision tree and ANN has the lowest accuracy at 81.45%. The objective is in two steps: first, to find factors influencing intelligence degradation. Factors such as smoking habit, gender, carotid intima-media thickness, depression index, and etc. all appeared in the experiments. Then, the main factor that affects the scores will be located to provide reference for physicians when conducting diagnosis.

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