



Using AI models for the prediction of mild cognitive impairment; A systematic review

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Introduction

Mild cognitive impairment (MCI) is an early stage of memory loss or other cognitive abilities like language or vision. In some cases, it might progress to Alzheimer’s Disease. Early and accurate detection leads to earlier intervention. Our aim was to identify artificial intelligence (AI) algorithms and predictors which would be helpful in the detection and provide better healthcare to the patients.

Method

This review was done by searching four large databases including Web of Science (WoS), MEDLINE (via Ovid), EMBASE (via Ovid), and Cumulative Index of Nursing and Allied Health Literature (CINAHL). We used the keywords “AI”, “MCI”, “predict”, “healthy” and its synonyms to search for the titles. We included only the peer-reviewed articles written in English that developed AI models to predict MCI in healthy individuals.

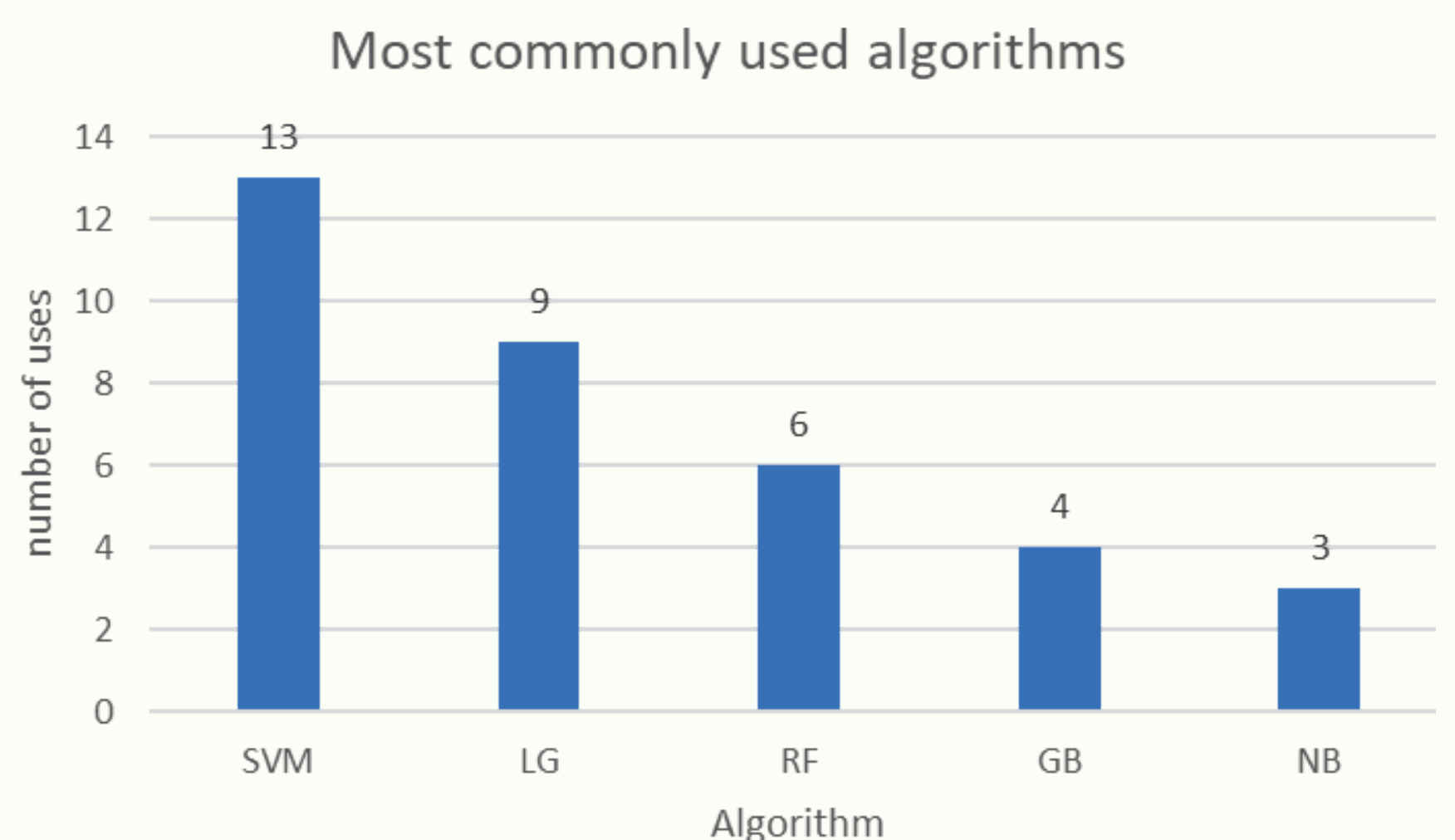


Predictors

We identified nine predictors which has been used to construct machine learning. All the included predictors were non-invasive. Combining different predictors might increase accuracy of the detection.

Algorithms

Multiple machine learning algorithms were used throughout 22 included studies. The most common one was support vector (SVM) used 13 times, Logistic regression (LG) used 9 times, random forest (RF) 6 times, gradient boosting classifier (GB) 4 times, Naïve Bayes (NB) 3 times. The average sensitivity of algorithms was 74.22% ± 35, the average specificity was 80.99% ± 18 and the average accuracy was 78.69 ± 30.34.



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