Results: Our machine learning model for diagnosing Alzheimer's disease and MCI based on genotype, tongue cleft, eye movement, age, and education analysis had an AUC value of 0.875, which was significantly better than the traditional machine learning model without tongue cracking analysis (AUC value of 0.708).

Conclusions: The machine learning tool we developed for the diagnosis of Alzheimer's disease and MCI has excellent performance in differentiating between Alzheimer's disease and MCI and possesses a greater potential value for assisting in clinical diagnosis in the future.

FC4: AI Implementation in Online SAGE Test

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Objectives: To evaluate the impact of AI-technology implementation into the algorithm for assessing completed tasks of the online SAGE test to identify primary cognitive changes.

In order to raise awareness among Russians about dementia and early diagnosis to reduce the risk of occurrence and development of the syndrome, the Nodementia.net project improved the online SAGE test as a convenient self-testing tool for cognitive changes. The visual- constructive and executive skills tasks in SAGE-testing required enhancement of the evaluation algorithm by the AI implementation. AI-technology is designed to highly accurately evaluate human drawings against given criteria and assign scores that correspond to the user's cognitive status.

Methods: In the process of improving the test, project experts explored and compared drawing evaluation services, but none satisfied the criteria. In order to create a fundamentally new AI model, experts analyzed 10,000 pictures and prepared algorithms to train the experimental AI model. As a result, the project specialists created AI model that evaluates pictures with 80% accuracy and implemented it into online test on the Nodementia.net website.

Results: To train the fundamentally new AI model, experts analyzed more than 10,000 different images, which helped to form the evaluation logic, taking into account the shape of the picture, color, line curvature, accuracy of image repetition and more than 100 other factors. Currently, the AI model correctly evaluates about 80% of images; the next step is 95%. We have improved the mechanism for assessing tasks, reduced biases and increased the amount of users.

Conclusions: To improve testing algorithms and increase the accuracy of online SAGE test results, we integrated pattern recognition technology based on a self-learning AI model. We used more than 10,000 different images for initial training, based on which the AI generated more than 100 evaluation criteria. Now the AI is expanding its library of "knowledge" and thereby honing its assessment skills, becoming an integral part of our unique online test.

Key words: AI implementation; online SAGE test; dementia; Alzheimer's disease

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