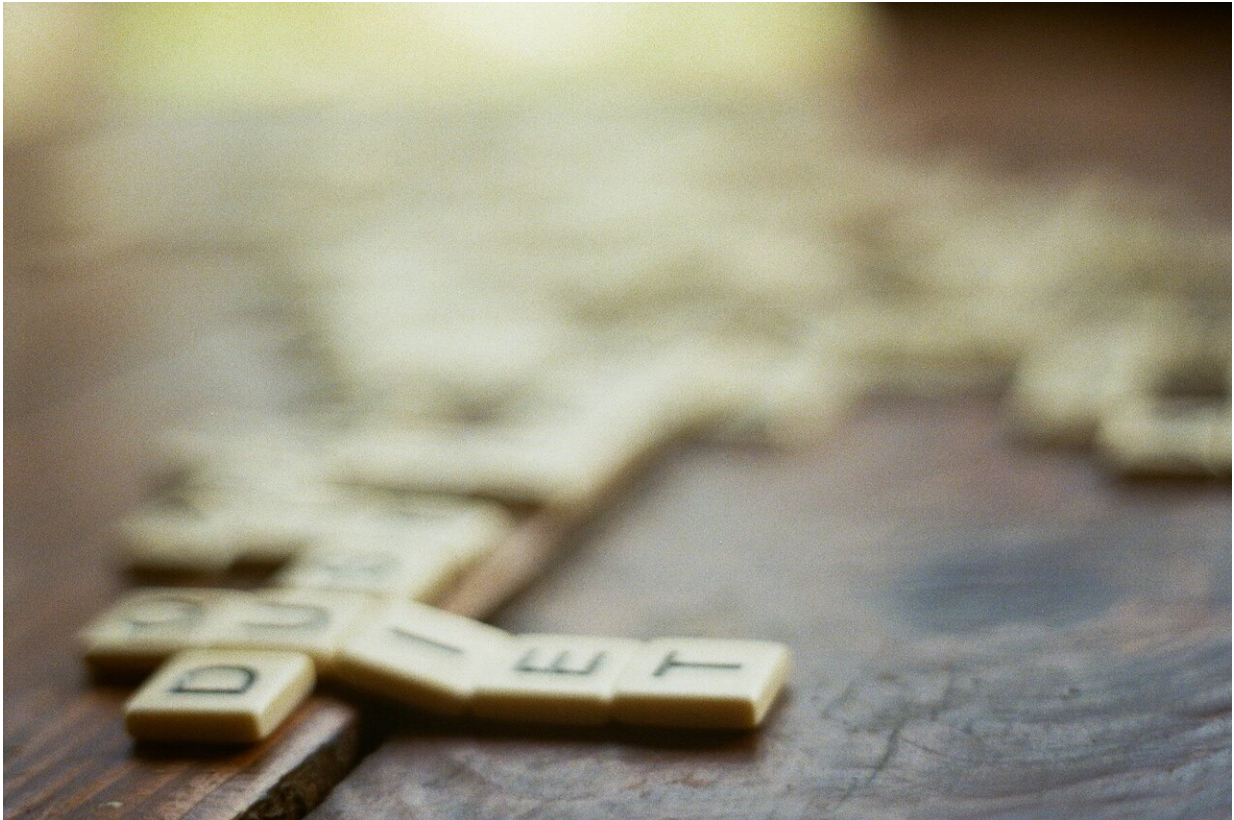


Bag of words test for Alzheimer's disease

October 31 2019, by David Bradley



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A positive diagnosis of Alzheimer's disease (AD) can only be made definitively postmortem. However, there are many symptoms that become apparent as the disease progresses and specialists can usually be quite certain of a diagnosis. However, as with many diseases, the later the diagnosis, the less successful medical interventions will generally be.

New research published in the International Journal of Computer Applications in Technology, offers an approach to earlier diagnosis of AD.

Gang Lyu of the Changshu Institute of Technology, in Suzhou, Jiangsu, and Aimei Dong of Qilu University of Technology, in Jinan, Shandong, China, explain that neuropsychological testing of patients suspected of having AD has many advantages, primarily in that it is a non-invasive and low-cost approach. However, there is a need for the manual selection of features and this makes the approach unpopular. An automated approach to extracting and selecting features from text would be more conducive to an acceptable way to provide evidence of the condition to the expert clinician.

The team has now developed an algorithm that utilizes the "bag-of-words model" of natural language processing technology. This can extract all the vocabulary features from text and then a genetic algorithm selects the lexical [features](#) automatically. They have now tested their approach on the DementiaBank database and obtained almost 80 percent diagnostic accuracy, which compares favorably to manual feature-based methods.

"The new approach also has the ability to process data quickly and automatically, which can greatly help clinicians improve their work," the team concludes.

More information: Gang Lyu et al. Automatic selection of lexical features for detecting Alzheimer's disease using bag-of-words model and genetic algorithm, *International Journal of Computer Applications in Technology* (2019). [DOI: 10.1504/IJCAT.2019.103290](https://doi.org/10.1504/IJCAT.2019.103290)

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