An electronic nose for wine

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Researchers in China have applied an array of sensors—an electronic nose—that can sniff bouquet of rice wine and offer an estimate of the vintage. Writing in the *International Journal of Computer Applications in Technology*, the scientists explain how their artificial olfactory system takes data from sensors sampling a rice wine and uses a computer to

carry out a statistical analysis of the signals to give an essentially 100 percent accurate age for the wine.

Wei Ding, Peiyi Zhu, and Ya Gu of the Changshu Institute of Technology in Jiangsu explain how they can quickly record a profile of the volatile substances present in a rice wine sample using a Taguchi Gas Sensor. The data from samples of known vintage can then be used to train an algorithm that applies a range of analytical statistical methods to find a correlation between the chemical profile of those volatile compounds and the age of the rice wine. When the system is then presented with a sample of an unknown wine the training process works in reverse to extract a profile and suggest a vintage.

The team reports that their early tests using Linear Discriminant Analysis as the statistical method could give them an accuracy a little short of 100 percent and at that level could not distinguish between wines that were made within a year or so of each other. They used a more sophisticated analysis based on a Back Propagation Neural Network and this improved the results so that they could give a vintage for any rice wine sample to the precise year it was produced, thus with 100 percent accuracy. Knowing the precise year in which a wine is produced is key to its value and to its consumption.

More information: Wei Ding et al. Age identification of Chinese rice wine using electronic nose, *International Journal of Computer Applications in Technology* (2020). DOI: 10.1504/IJCAT.2020.109345

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