

The classification of meat odor-profile using k-nearest neighbors (KNN)

Nur Farina Hamidon Majid¹, Muhammad Sharfi Najib¹, Muhamad Faruqi Zahari¹, Suziyanti Zaib¹ and Tuan Sidek Tuan Muda²

¹ Faculty of Manufacturing and Mechatronic Engineering Technology, Universiti Malaysia Pahang, 26600 Pekan, Pahang, Malaysia

² Centre for Human Sciences, Universiti Malaysia Pahang, 26600 Pekan, Pahang, Malaysia
nurfarinahamidonmajid@gmail.com

ABSTRACT

Meat is a type of food that humans consume and it is an important part of their diet. In recent years, there are several cases involving meat product fraud have come to public attention. There have been numerous reports that meat labelled, certified or sold as halal may not be and that some butchers in the market mix beef and pork meat. This is causing problems for customers, particularly Muslim customers. Meat can be distinguished using human sensors such as vision and smell. The limitation is that meat alterations cannot be clearly distinguished by visual evaluation. In addition, unreliable reliance on the human nose to detect odor is highly risky and hazardous to human health. Electronic Nose (Enose) was proposed in this study in order to work as well as a human sensor that is made up of four Metal Oxide Sensor (MOS) gas sensors to collect the raw data from the beef and pork meat samples. The raw data were then pre-processed and the data was extracted using the mean feature to produce the odor-profile. Finally, the K-Nearest Neighbors (KNN) method was used to classify the data. KNN was then evaluated using a performance measure. As a result, the classification using KNN has 99.24 % highest accuracy at training and testing ratio 70:30 using weight K=1 at Euclidean distance and all rules.

KEYWORDS

Meat; Electronic Nose; Odor-profile; K-Nearest Neighbors

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