

ABSTRACT

Tea is one of the country's potential raw materials that need more attention from various stakeholders. Accurate detection of tea quality is essential to ensure the quality and authenticity of tea products. In this research, the method used for tea quality detection uses the K-Nearest Neighbor (K-NN) algorithm and electronic nose (e-nose) as a sensor. Sensory data is collected from the e-nose to detect the aroma and quality of different teas. The application development uses the prototyping method with the stages of collecting requirements, building prototyping, evaluating prototyping, coding the system, testing the system, evaluating the system, and using the system. The language used is Python as the construction of machine learning models and PHP as a display for the interface, testing is done using Black Box Testing to ensure functionality can be used properly. The K-NN algorithm is used to classify data and provide more accurate tea quality detection results. In experimental testing, the proposed method can detect tea quality with a high level of accuracy. The results of tea quality classification get an accuracy score of 0.9805, while regression gets an R2 of 0.9489 and RMSE of 0.5377. This method has the potential to be used in the tea industry to ensure the quality and authenticity of tea products more effectively.

Keywords: Tea, Machine Learning, Electronic Nose Dataset, K-Nearest Neighbor, Python