Detection of Adulteration in Coconut Milk using Infrared Spectroscopy and Machine Learning

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Abstract:
In this paper, we propose a system for detecting adulteration in coconut milk, utilizing infrared spectroscopy. The machine learning-based proposed system comprises three... **View more**

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Abstract:
In this paper, we propose a system for detecting adulteration in coconut milk, utilizing infrared spectroscopy. The machine learning-based proposed system comprises three phases: preprocessing, feature extraction, and classification. The first phase involves removing irrelevant data from coconut milk spectral signals. In the second phase, we employ the Linear Discriminant Analysis (LDA) algorithm for extracting the most discriminating features. In the third phase, we use the K-Nearest Neighbor (KNN) model to classify coconut milk samples into authentic or adulterated. We evaluate the performance of the proposed system using a public dataset comprising Fourier Transform Infrared (FTIR) spectral information of pure and contaminated coconut milk samples. Findings show that the proposed method successfully detects adulteration with a cross-validation accuracy of 93.33%.

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Contents

I. Introduction

Financially motivated adulteration of liquid food has recently become a global problem. This deceptive and deliberate food tampering has resulted in hundreds of fatalities and disease outbreaks [1] . Because of a consumer's inability to recognize the authenticity of a product through visual inspection or smell, the contaminated product frequently goes undetected.

Authors

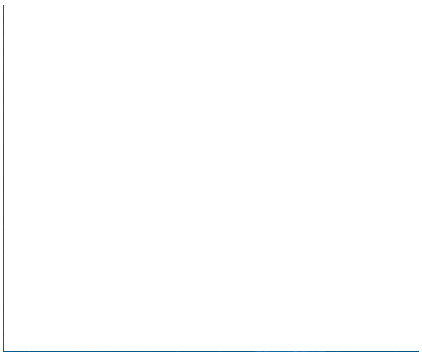
Figures

References

Citations

Keywords

Metrics



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