

Banana Ripeness Indicator - Machine Learning

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Abstract

Bananas are a staple food in most developing countries and are considered a ‘superfood’ due to their health benefits. However, they are also the most wasted fruit in the world, generally due to retail outlets throwing them away due to over ripeness. This paper highlights an alternative and more precise method to the conventional human visual tests which are conducted to precisely estimate the ripeness of a banana. The product is made specifically with the small-scale agriculture industry in mind. The device utilizes the internal physico-chemical changes caused by the banana ripening process to estimate its degree of ripeness. Utilizing data gathered from colour, pH and moisture sensors, a support vector machine-learning model is created to predict the ‘stage of ripeness’ based on these input parameters. These parameters have undergone significant changes in the ripening process where colour changes due to decreasing magnesium content, acidity changes due to ratio of acids changing and finally moisture increases as the banana becomes softer. By having a better estimation of the ‘stage of ripeness’, supply-chain efficiency can be increased by allowing bananas to reach retail outlets at the optimal time to reduce wastage.

Reference

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Biography

Sunav Nambiar is a grade 12 International Baccalaureate student at Aditya Birla World Academy, with an interest in pursuing engineering. He has previously co-written and published (at the International Conference on water treatment and desalination) papers on the optimization of phenol extraction. He has also completed internships at the Indian Institute of Technology – Delhi, focusing on data analytics on meteorological and pollutant changes due to the COVID-19 pandemic.