



UNIVERSITY OF PERADENIYA

Multispectral Imaging for Detection of Adulterants in Turmeric Powder

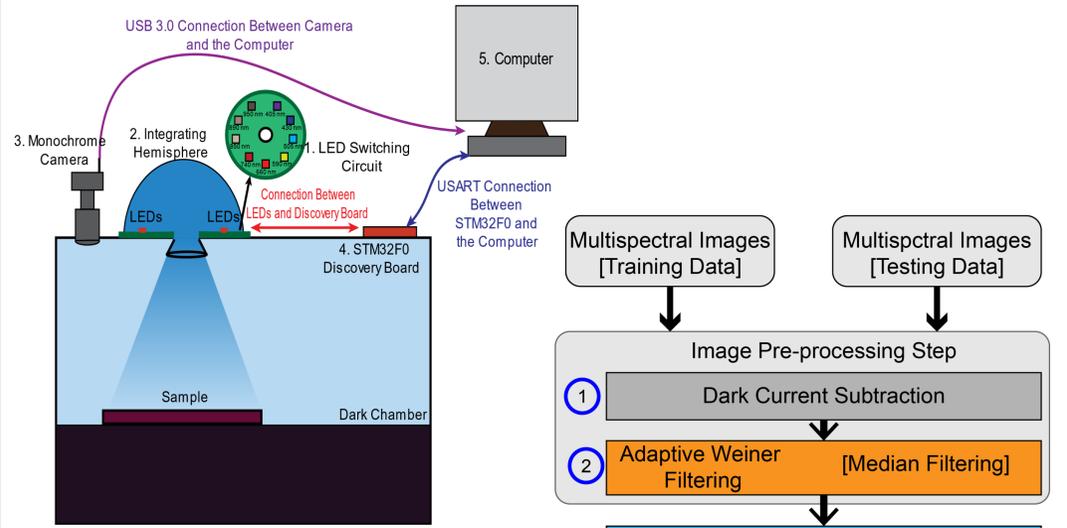
HMHK Weerasooriya¹, HMS Lakmal¹, DYL Ransinghe¹, WGC Bandara¹, GWK Prabath¹,
 Supervised by: Dr. H.M.V.R. Herath¹, Dr. G.M.R.I. Godaliyadda¹, Dr. M.P.B. Ekanayake¹, Prof. T. Madhujith²

¹Department of Electrical and Electronics Engineering, Faculty of Engineering University of Peradeniya, 20400. Sri Lanka.
²Department of Food Science, Faculty of Agriculture University of Peradeniya, 20400. Sri Lanka

INTRODUCTION

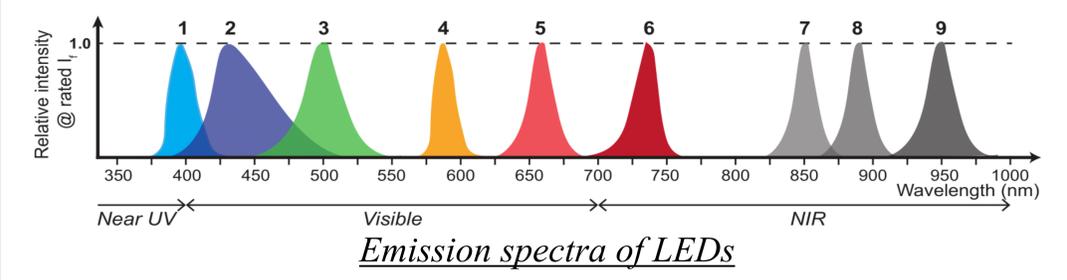
- Conventional quality evaluation methods are limited as a **field deployable technology** due to their operational complexity, destructive nature, extensive sample preparation, and difficulty in automating the detection process.
- Multispectral *imaging* used with the method outlined here can provide a **rapid screening technique** for detecting adulteration in turmeric.

METHOD

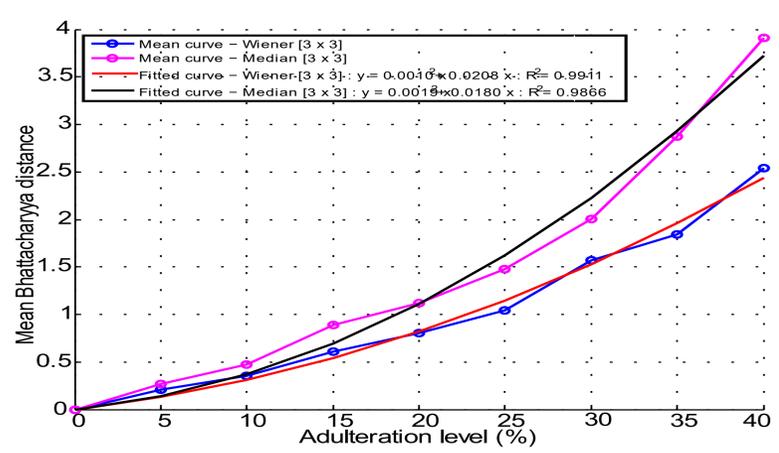


Five main components:

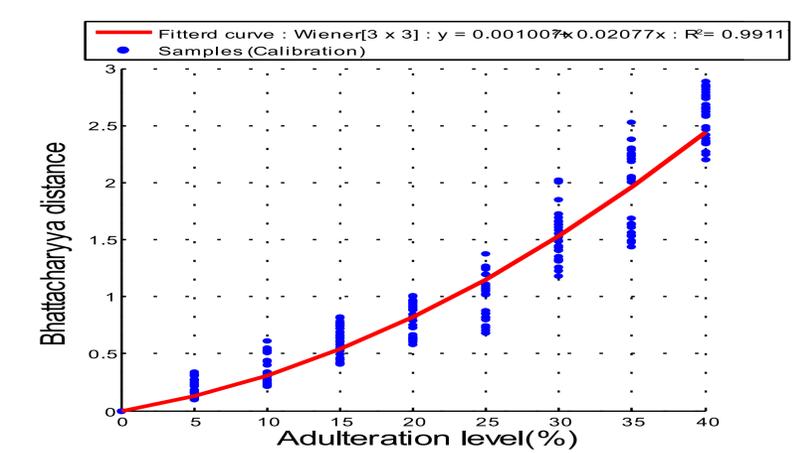
- LED switching circuit
- Integrating hemisphere
- Monochrome camera
- Discovery board
- Computer



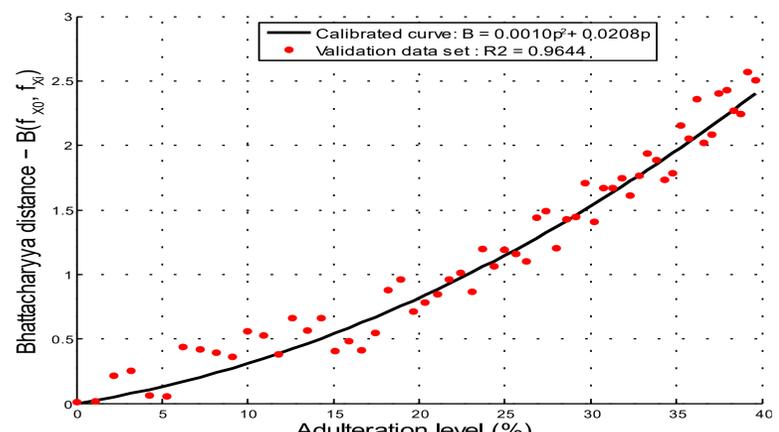
RESULTS



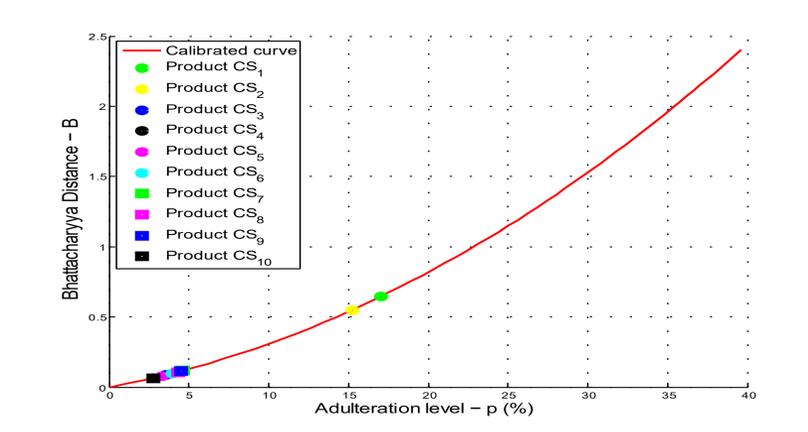
Curve fitted results for median filtering and wiener filtering



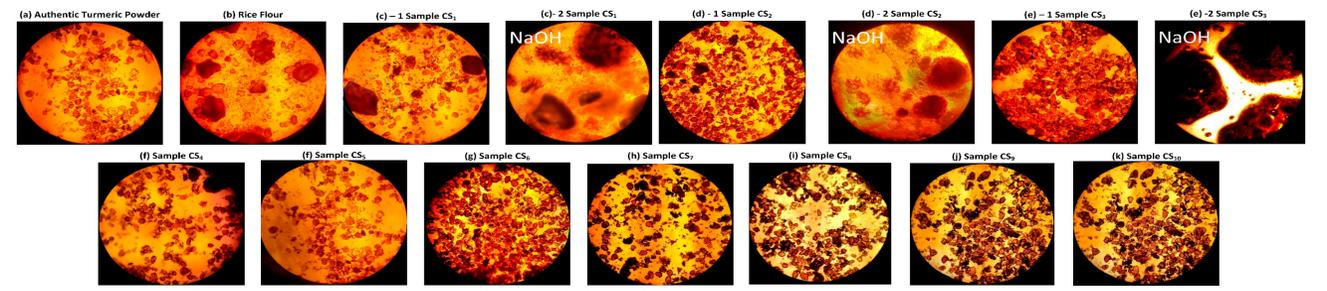
Curve fitted results for calibration data



Curve fitted results for validation data



Estimated adulteration level of commercially available samples



Microscopic views (10 × 10) of commercially available samples

CONCLUSIONS

The study reveals that the developed multispectral imaging system can be effectively used to determine the level of adulteration in turmeric powder. The level of adulteration shows a Strong Correlation ($R^2 = 0.9644$) with Bhattacharyya distance.