University of Peradeniya

Dual Mode Multispectral Imaging System for Food and Agricultural Product Quality Estimation

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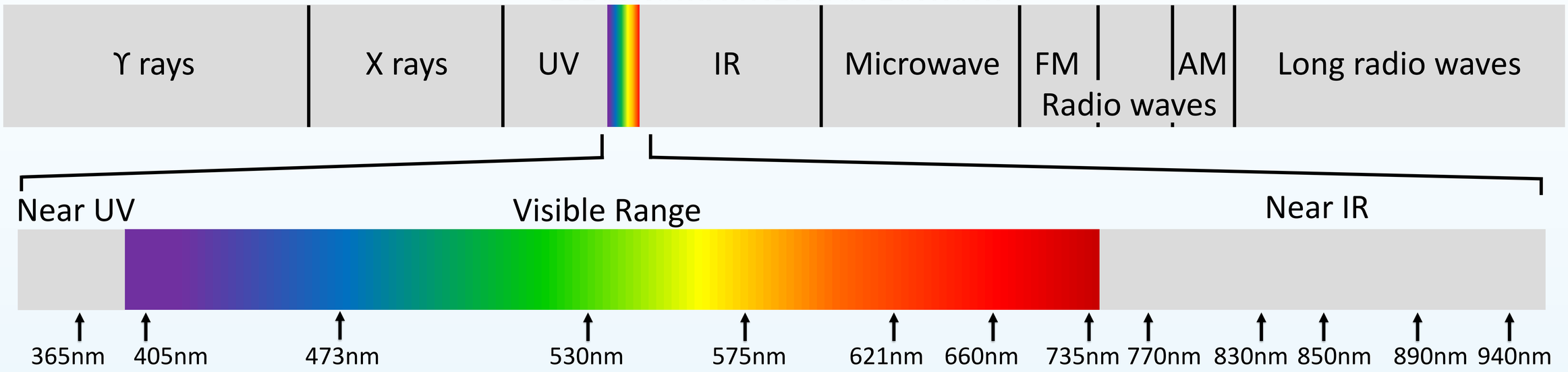
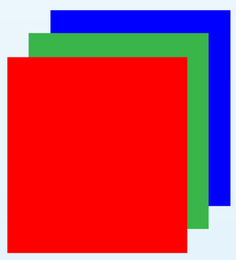
Abstract- Multispectral imaging is a technique that captures and processes images at multiple wavelengths. The captured multispectral images will be processed using signal processing, and machine learning techniques to obtain classifier models and functional mappings. This specific device combines both reflectance and transmittance capabilities providing information for a wide range of specimen types

ELECTROMAGNETIC SPECTRUM

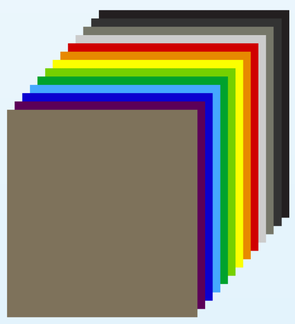


RGB Imaging



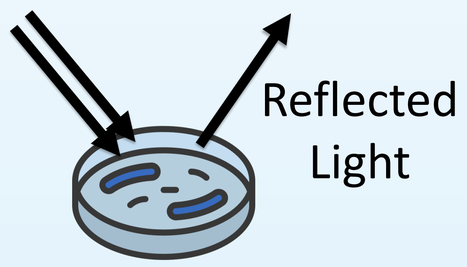
Captures only 3 (red, green, and blue) spectral bands

Multispectral Imaging

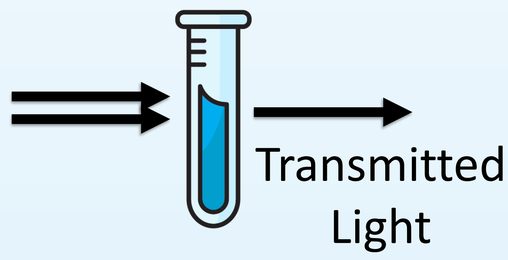


Captures a wide range of spectral bands ranging from near UV to near IR

Reflectance Imaging



Transmittance Imaging



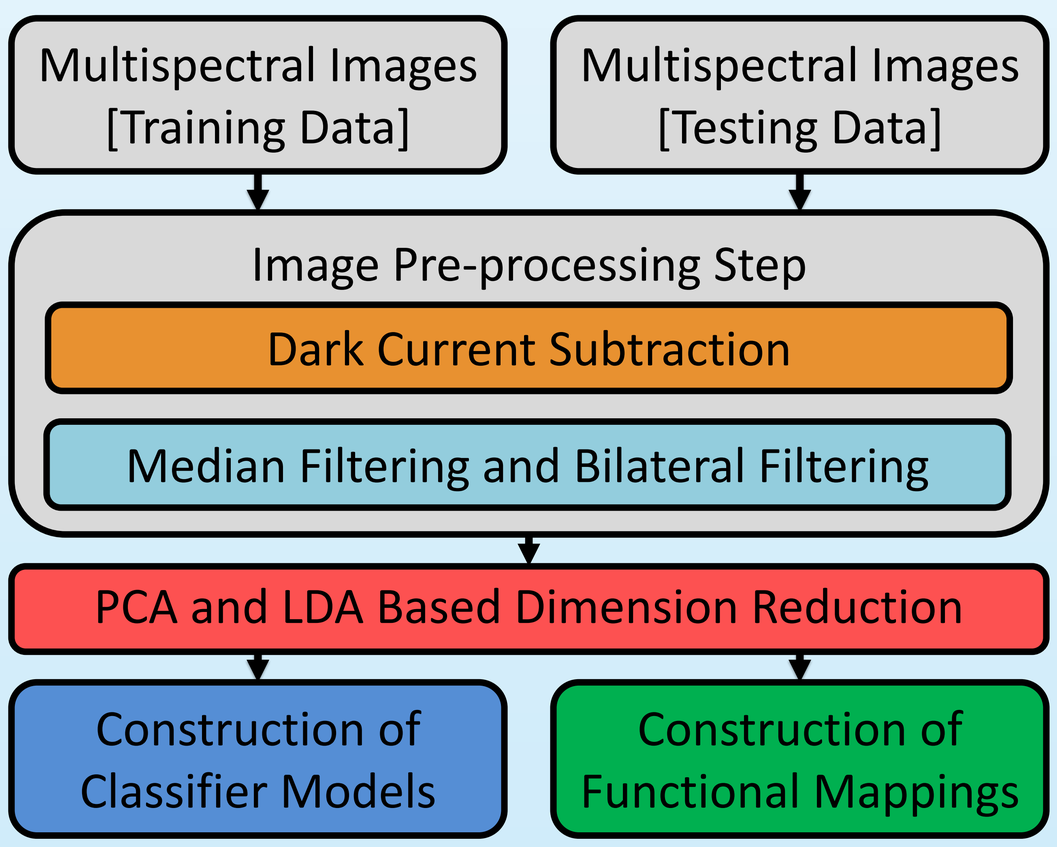
ADVANTAGES OF MSI

- Alternative to expensive chemical tests
- Cost and Time effective
- Specimen can be tested without physically altering or harming the object being imaged
- The availability of spectral data allows for advanced data analysis techniques

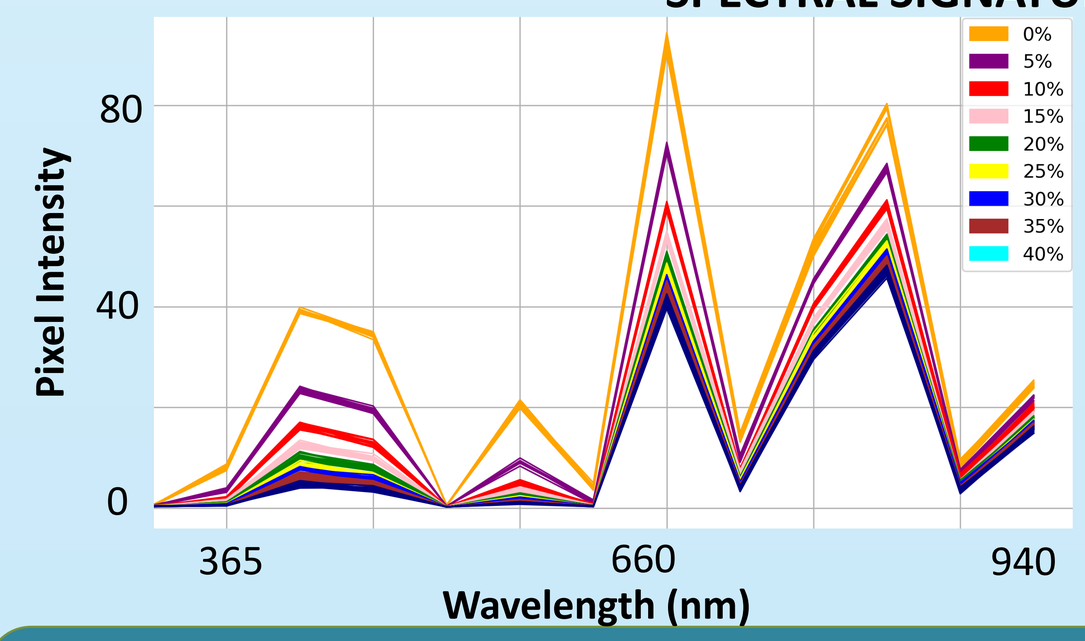
APPLICATIONS OF MSI

- In agriculture to assess crop health, soil condition, crop yield, and quality
- To assess food quality
- In health care to identify diseases
- To monitor defects in fabric, packaging, etc.

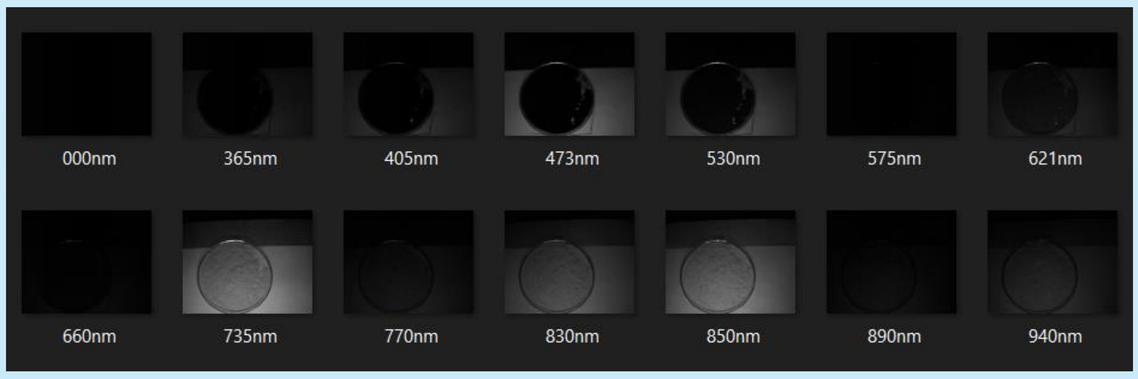
METHODOLOGY



SPECTRAL SIGNATURE



SET OF MULTISPECTRAL IMAGES



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