Hyperspectral imaging (800)



Features

- Low Cost
- Industrial Performance
- Low Maintenance
- Free software

Applications

- Agriculture
- Remote sensing
- Food quality control
- Medical

The introduced system is able to capture two-dimensional spectra (in emission, transmission and reflection modes) directly from the scene in the desired wavelengths. Imaging of the object is done directly by linear sweep (push broom method). Detector used in this hyper spectral camera is A 1280 x 720 pixel CCD. The spectral resolution of this system is about 2.5nm and its spatial resolution was about 200 micrometer for a 10 cm long object. The hardware solution is based on data acquisition working on the USB platform and controlled by a LabVIEW program. The free spectral range (FSR) of the system was 400 to 800 nm. The output data is a 3D matrix that is processed. All of spectral image is in 3D matrix that interest image can be seen by entering the interest landa in hyper spectral camera software. Three spectral image of apple has been shown in bellow frame. This camera can be used as benchtop (indoor) and field (outdoor) imaging system.

(a) 500nm   (b) 600nm   (c)700nm   (d)800nm
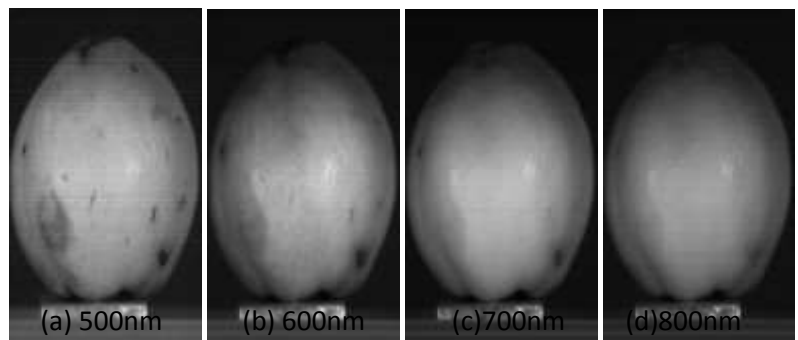
General Characteristics

Parameters	Value	Note
Free spectral range	400 – 800 nm	-
Spectral resolution	2.5 nm	-
Spectral channel	240 channel	-
Spatial resolution	200 micron	-
Spatial channel	Up to 440 channel	-
Detector type	2D charge couple device (CCD)	Pixel dimension is 4.65*4.65micron
Camera Connection type	USB	-
Dynamic range	12bit	-
Exposure time	10 – 1100 ms	-
Weight	3 Kg	-
F/#	2.4	-
SNR	59db >	-
Output image dimension	720 × 440(for maximum number of scan)	-
Dimension(cm)	11×20×28	-
FOV	10cm Height for object at 1 meter distance	-
Scanner power supply	12V - 0.1A	-
Scanner connection type	USB	-
Software	Labview (Free software)	Output software: Image for interest landa, Intensity- spectral curve for any point (area) of object