

Measuring food freshness with HyperSpectral Imaging

Problem Statement

Consumers expect freshness, quality and consistency in their foods. Delivering on this



expectation is becoming increasingly difficult within the context of complicated supply chains and financial pressures to reduce processing costs. Food spoilage can occur at any point in the production process manifesting in reduced nutrient content and an overall loss of freshness. This significantly impacts the meat prices in market.

Sensory evaluation, chromatography and spectroscopy have all been used in the evaluation of food freshness. Unfortunately, each of these approaches has severe limitations from either a cost or speed perspective and none is capable of providing an economical inline measurement of freshness.

Solution

Hyperspectral Imaging is a next generation imaging technology that combines the power of conventional spectroscopy with digital imaging to provide high resolution spectral and spatial information. Hyperspectral imaging information can enable a comprehensive measurement of food freshness in real time. With hyperspectral imaging several food characteristics can be measured at once, including color, moisture levels, fat content and protein levels. Hyperspectral imaging can

help identify spoilage before it becomes visible to the eye, thereby allowing producers to maintain product uniformity and quality throughout the supply chain.



HinaLea 4200
HyperSpectral Imager

HinaLea value proposition

To date, hyperspectral imaging cameras have been costly and designed as tools aimed at research with output data only interpretable by experts. HinaLea Imaging offers intelligent, cost-effective hyperspectral solutions that can assist with inline measurement of food quality at the operator level.

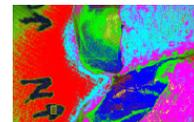
Illustrative imaging

This figure illustrates the aging and decay process in the skinned and unskinned parts of chicken legs. An image where each pixel contains the entire spectral profile of that point in the sample or data-cube is first captured, that information is processed through a machine learning algorithm to render a "classified" image. A combination of dehydration and spoilage cause

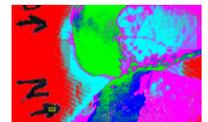
Day 1 - RGB Image



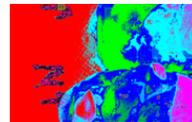
Day 2



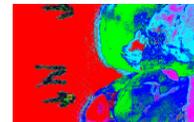
Day 3



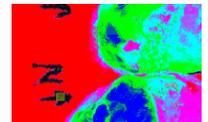
Day 4



Day 5



Day 6



shifts in the spectral profiles and changing in intensity which can be used to measure freshness.

Contact us

For information on how HinaLea can help ensure the freshness of your produce, please contact us at sales@hinaleaimaging.com