New Method for Identification of Cotton Contaminants with X-ray Analysis

Technology #d-0339

As a natural fiber, cotton is subject to contamination from a variety of sources, including surrounding vegetation, insects, and materials involved in cotton harvesting and handling. The contaminants, which survive the ginning process, have a direct impact on the grade and, hence, the value of the cotton and its derivatives. It is at this stage in the manufacturing process that a precise measurement and identification of the cotton contaminants can improve the accuracy and repeatability of the grading operation. Furthermore, such measurements can provide the necessary feedback for optimizing both the production and the ginning processes—the latter is known to directly impact cotton's market value. This invention is a novel approach to the automatic recognition of cotton contaminants.

Market Applications:

• Cotton production/ginning

• Cotton grading

Features, Benefits, & Advantages:

This invention utilizes an x-ray microtomography system that employs computer vision algorithms to detect and to classify the cotton contaminants with high resolution. X-ray tomographic imaging is unprecedented in its ability to provide high-resolution imaging of the internal features of an object in a non-invasive fashion. A sample chosen for x-ray imaging requires no prior preparation and minimal handling. Due to its ability to produce three-dimensional representations of objects, accurate shape and size information may be extracted. X-ray images also provide density information that may be used in distinguishing objects from each other. It is these features of x-ray tomography that motivated the application of this technology to the detection and classification of contaminants in cotton. Once the cotton contaminants in the cotton sample are detected and classified, the cotton sample may be graded based on the type and amount of cotton contaminants present.

Development Stage:
This invention has been produced and tested.

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