TECHNOLOGY

Methods and Device for Automated Walnut Shell Fragment and Meat Differentiation

OVERVIEW

Automated discrimination between walnut shell and the pulp has become an imperative task in the walnut post harvest processing industry. The black walnut shell is especially hard and hazardous to the consumer if it is mixed with the pulp in the walnut processing plant. Currently, the walnut cracking machines remove the majority shells by air lathe, and human intervention is still necessary to manually pick up the walnut shell fragments in order to reach the strict government regulations.

During the last several years, hyperspectral fluorescence imaging had been widely used for agricultural products to identify chemical components in the subjects. This technology blends this technology along with a Gaussian-kernel based support machine (SVM) approach to classify the walnut shell and pulp. After evaluating their performance and comparing it to the current Principal Component Analysis and Fisher's Discriminant Analysis methods, the result proved the SVM classifier and Gaussian kernel function was much more efficient and better than the two traditional methods classifying walnut shell and pulp using hyperspectral fluorescence imagery. An initial overall recognition rate of 90.3% was achieved using the SVM approach. The method is suitable for automated identification and separation of objects in similar colors and geometries, such as nut, pulp, and shell.

For more information, please contact the Office of Technology Commercialization, University of Maryland College Park, via phone 301-405-2924 or e-mail at otc@umd.edu.

CONTACT INFO

UM Ventures
0134 Lee Building
7809 Regents Drive
College Park, MD 20742
Email: umdtechtransfer@umd.edu
Phone: (301) 405-3947 | Fax: (301) 314-9502

Additional Information

INSTITUTION

University of Maryland, College Park

PATENT STATUS

Patent(s) pending

LICENSE STATUS

Contact OTC for licensing information

EXTERNAL RESOURCES

IS-2007-003