Approximating the Weight of Sweet Corn Kernels from Digital Images Using Washer Integration

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Most of canned food and frozen food manufacturers use only high quality sweet corns for their products, thus sweet corns are needed to be inspected and weighed before processing. The inspecting and weighing processes are performed manually which take long time to complete. The objective of this project is to reduce the process, labor, and time by using image processing techniques for approximating the weight of sweet corns. This project proposes the algorithm for approximating the weight of sweet corns from its image. The first approximation is from the diameter of an ear of sweet corn since we have found the relationship between the diameter and the weight of corn kernels. Another method is to use the Washer integration. A video of sweet corns on a conveyor belt is recorded and an image is extracted from the video. Thresholding is used to separate sweet corns from the background. The length and the diameter of an ear of sweet corn were measured and the weight of sweet corn kernels was approximated by the proposed methods. The approximated weights obtained from the proposed methods were compared to the actual weight and the experimental results showed that the error of the approximation from the diameter is 8.99%; whereas the error of the Washer integration method was only 3.19%. Thus, the Washer integration can efficiently approximate the weight of sweet corn.

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