The Identification and Filtering of Fertilized Eggs with a Thermal Imaging System

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Abstract

In this study, a thermal imaging system is presented for the identication and ltering of fertilized eggs. The system can detect the temperature of the target from the infrared image. The Sobel operator was employed to seek the outline of the eggs. Fuzzy theory is used to obtain the best threshold value for damaged eggs with the use of the grayscale co-occurrence matrix. Then the system can make a judgment as to whether each egg is good or bad. The accuracy of the system can reach 96%, and the detection speed is 2 - 3 sec. The system is easy to operate; even people without experience can use this system to identify bad eggs. With the use of machine vision in the testing process instead of personal judgments, time-saving can be achieved, and the quality can also be improved in the chicken farm operation.

Keyword：Thermal imaging system, Fuzzy theory, Grayscale co-occurrence matrix