

AUTOMATED MACHINE VISION INSPECTION OF DATE FRUITS

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An automated machine vision system has been developed for inspection and grading date fruits. The system consisted of five integrated units, namely, the feeder, lighting system, imaging system, and grading mechanism. The feeder was a belt conveyor, which carried dates through a specially designed illumination chamber. The imaging system consisted of a personal computer equipped with a frame grabber and a color camera. The system captured the images of the dates moving on the belt conveyor. The acquired digital images were sent to the computer for processing and the grade of the date was determined after analyzing a set of features extracted from the date images. Statistical analysis and multilayer feed forward neural network were used for classification of the dates. The sorting mechanism installed at one end of the belt conveyor was operated by a TTL signal from the computer to push the graded date into the corresponding grade box. The system successfully graded date samples at a rate of 2/s, approximately 108 kg/hour. This rate is reasonable and highly acceptable on the point of implementing in date industries. It would greatly enhance the competitiveness of date industries.