AUTOMATED GRADING OF OIL PALM FRUIT

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"I declared that this thesis is the result of my own work except this ideas and summaries which I have clarified their sources. The thesis has not been accepted for any degree and is not concurrently submitted in candidature of any degree."

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ABSTRACT

Automation not only optimizes quality assurance but more importantly, it helps remove human subjectivity and inconsistency. As it is defined as the process of following a predetermined sequence of operations with little or no human intervention by using specialized equipment and devices that control and perform the manufacturing process, it also increase the productivity and changes the character of factory or farm workers, making it less arduous and more attractive. Considering the fact that the productivity of man working in mechanized and automated environments is approximately ten times more than of manual workers, this have stimulated progress in the development of many novel sensors and instruments for the food and agricultural industry, often by technology transfer from other industrial sectors, including medical and non-clinical sectors (Kress-Rogers, 1986). This thesis will discuss about the new method for automated grading system of oil palm fruits that will be used at palm oil mills. The purpose of this project is to create a new automated grading system as a replacement for the current manual grading system, which is still being used at the mills. At present, they are using human as a grader in order to perform the grading job. The new grading system will implement a laser sensor (LS) as a measuring device to measure the degree of ripeness of the fruit. The most critical process is to categorize the fruit into ripe, under ripe, and unripe. To achieve that result, new experiments need to be develop. Then, result from that experiment will be analyzed. The experiment will be done on three species of oil palm fruits, which are Dura, Psifera and Tenera. Finally, by introducing the new grading system, hopefully it will increase the productivity and quality of our palm oil industry and at the same time to keep away from dispute between the graders and the sellers.

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With the Selawat and Salarn to Prophet Muhammad SAW.

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