DEVELOPMENT OF COST EFFICIENT VISION SYSTEM FOR DEFECTS DETECTION

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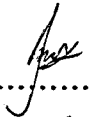### 2006130869

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

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ABSTRACT

Vision system is one of the most approached systems in industrial automation for replacing manual inspection procedure done by human inspector. A machine vision system is use in many applications such as parts sortation, defect detection, object recognition and parts counting. A vision system consists of image acquisition and image analysis procedure to obtain and manipulate the image into a decision. In order to develop a vision system, full understanding regarding how the system works is the most important aspect. Programming software is required in order to execute the image acquisition and image analysis algorithm. In this project, MATLAB platform is used to program the entire algorithm furthermore implementing Graphical User Interface to communicate between the vision system and the user. The system need to be intensively tested in order to obtain the desired inspection accuracy. A full programming documentation was done based on programming body modification and improvement. This need to be done due to the fact that further improvement of this project will need the coding history on how the algorithm being developed thus documentation is the common practice in programming stage. The vision system developed is at 90% accuracy. Enhancement on image processing algorithm can greatly contributes to improvements. The further improvements can be made through lighting design, adding image enhancement algorithm and decision algorithm. Hence, deep understanding of vision system work flow will be obtained thus enhancing advanced sensory application.

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