

PID BASED GREEN COFFEE QUALITY SORTER

THESIS

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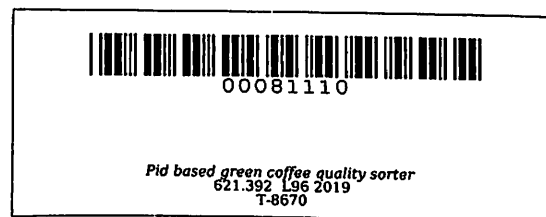
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ABSTRACT

LUALHATI, ABEL JAMES N. and MARIANO, JHAMIL B., PID Based Green Coffee Quality Sorter. Undergraduate Thesis. Bachelor of Science in Computer Engineering. Cavite State University, Indang, Cavite. June, 2019. Adviser: Ms. Sheryl D. Fenol.

The study was conducted to design a PID based green coffee quality sorter for the farmers and researchers. The project aimed to help the coffee farmers sort and increase the quality of their output in a more effective way. The general objective of the study was to design and develop a PID based green coffee quality sorter. The study specifically aimed to design and construct the algorithm for the controller circuit for the system; design and fabricate the PID based green coffee quality sorter; develop a neural network for the system; and test and evaluate the system through preliminary testing.

The materials used in the study were: microcontroller unit, stepper motor, servo motor, switching power supply, acrylic glass, aluminum framework, and USB webcams. The PID based green coffee quality sorter was able to separate defective coffee beans from the good green coffee bean arranged in a linear manner using neural network and image processing. Two (2) webcams were used to take images of both sides of the bean. The quality of the coffee bean was determined by the prediction test of both sides.

The device was found to be functional in terms of accuracy with a score of 85%. It can sort 1 kilogram of beans within 2 hours and 45 minutes.

The study met its objectives and in order to be used the device efficiently, the speed must be increased and the dataset of the neural network must be increased. The PID based green coffee quality sorter had a total cost of ₱26,290.00

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INTRODUCTION

Coffee is one of the main sectors of the agriculture industry in the Philippines. Coffee is normally served in a cup after the coffee beans are roasted and grinded to allow proper consumption. There are different type of coffee roasts and grind however, all coffee beans start from the green coffee. Green coffee is the initial stage of the coffee bean before it is roasted or processed. It also states the quality of the bean regardless of future processes.

Coffee processing is the method performed by farmers to make coffee berries into consumable coffee grinds and beverage. The process starts with the harvesting of coffee berries. The harvested berries will have their pulp removed and the parchment coffee will be fermented, washed then dried. This processing method is called the wet method. The coffee beans' parchment skin is left on. The coffee is then processed by a huller to remove the parchment skin to obtain the Green Coffee beans. The beans are then sun