PROJECT REPORT

IMPLEMENTATION INTERNET OF THINGS FOR THE CLASSIFICATION OF METAL AND NON-METAL WASTE

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2020

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ACKNOWLEDGEMENTS

All praise to Almighty God who never stops pouring out His mercy and compassion on the universe. With God's ease and help, finally the writer can finish the thesis entitled "Implementation of Template Matching Methods for Traffic Signs". In the preparation of this thesis, the author is aware of the limitations, abilities, and knowledge of the author in its preparation. However, these difficulties can be helped by several parties. Therefore, the authors say many thanks to various parties who have provided assistance in the form of energy and thought. Acknowledgments, the author goes to:

1. Jesus Christ for his opportunity and grace so that this thesis can be completed well.

2. Mr. Y.b. Dwi Setianto as supervisor at lecturer at Unika Soegijapranata majoring in informatics engineering.

3. Lectures in Unika Soegijapranata majoring in informatics engineering for valuable knowledge, guidance, and advices during the years of my study.

4. My big family that could not be mentioned one by one, thanks for all of your support and unconditionally love.

5. My entire best friends, especially for everyone that included in the banana family group, thanks for your support, kindness, and the great and wonderful friendship. Thank you for always being there.

The author is fully aware, that in the preparation of this thesis there are still many shortcomings, even though the writer has tried his best. Therefore, constructive criticism and suggestions, the authors expect to improve the preparation and writing of this thesis. The author hopes that this thesis is useful and can expand and increase knowledge for all of us.

Semarang, July, 10, 2020

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ABSTRACT

The types of waste that are developing in society today are increasingly diverse, especially for metal and non-metal waste. Poor waste management greatly impacts environmental problems. To be able to overcome these problems, it is necessary to have an automatic metal sorting and non-metal waste bin which aims to provide convenience for everyone who will dispose of waste by separating waste types automatically, especially for metal and non-metal waste. In addition, the purpose of this study is to analyze whether the Inductive proximity sensor is able to work optimally to detect metal waste with a metal composition of less than 100%.

This automatic trash can is controlled by the Arduino Uno R3 Microcontroller to regulate the overall performance of the trash. This trash can uses an Inductive Proximity sensor as a metal-containing garbage detector, an Ultrasonic Sensor as a proximity sensor that is used to detect objects approaching the trash can and as a detector if the trash can is full, and the servo motor as a driving motor to open and close the place door rubbish. The prototype of the automatic trash bin has one entrance to detect rubbish as well as a stopbox mechanism that aims as a garbage checkpoint before the trash enters the trash. If the garbage is detected to contain metal, the servo will move to open the metal trash door in the stopbox, if the garbage is detected to not contain metal, the servo will move to open the non-metal waste door. If the trash is full and detected by an ultrasonic sensor, it will send an email notification to the user.

Based on the results of tests that have been done, it is obtained that the Internet of Things-based Trash Separation System functions as expected, namely Inductive Proximity sensors have the optimum distance to read metal waste at a distance of 0.3 Cm. Inductive Proximity Sensor has a reading accuracy of 100% in the type of metal waste with a metal composition of 50% and above. The HC-SR04 Ultrasonic Sensor can detect humans at distances of less than 30 cm and detect the full volume of waste. Sending e-mails to users has a 100% success rate.

Keyword: Arduino Uno, Inductive Proximity Sensor, Ultrasonic Sensor, Stopbox

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