OPTIMIZATION OF THE ENERGY CONSUMPTION FOR DATA COLLECTION AND TRANSMISSION IN A DIGITAL TWIN APPLICATION

By

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

OPTIMIZATION OF THE ENERGY CONSUMPTION FOR DATA COLLECTION AND TRANSMISSION IN A DIGITAL TWIN APPLICATION

By

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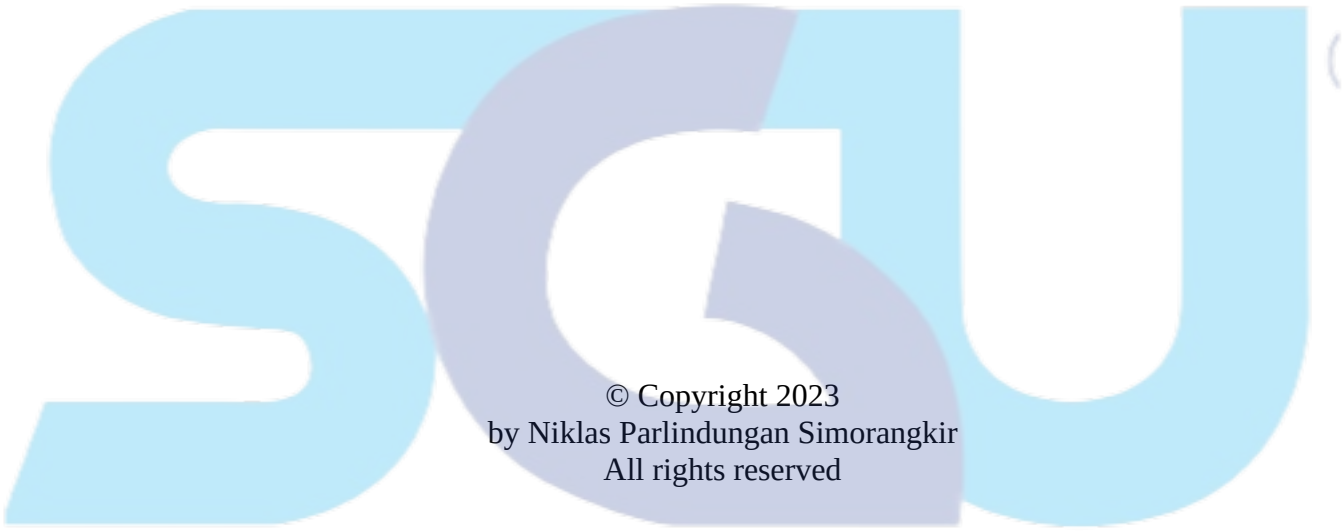
The Internet of Things (IoT) has become an important aspect of daily life. It offers various functions for people to utilize. IoT has become indispensable due to its numerous capabilities, one of which is its ability to upload data to the cloud through the IoT network, especially when there is a significant amount of data involved. However, it has become imperative that certain optimizations are needed to ensure that conducting such activities does not inflict a high cost. Optimizing energy consumption is one of these interests, and there are multiple ways to achieve this, one of which is to select the best IoT module. Determining certain adjustments of the parameters will also help in the optimization of energy consumption. This is also helped by the use of digital twin, in which a virtual system is developed in imitation of the physical system; a simulation is one such example. By choosing the module with the lowest energy consumption value (10 J) to conduct certain activities and adjusting the parameters involved, the energy consumption will be optimized and the utilization of IoT will be implemented significantly better.

Keywords: Digital Twin, Internet of Things, Energy Consumption Optimization, Deep Learning



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DEDICATION

I dedicate this work to God, my family, friends, lecturers, and colleagues, who have provided me with endless support.

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TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES