

**IOT-BASED PARKING SYSTEM DESIGN USING ULTRASONIC  
SENSORS AT MUHAMMADIYAH UNIVERSITY OF  
EAST KALIMANTAN**

**THESIS**

Submitted in partial fulfillment of the requirements for achieving a Bachelor of  
Computer Science

**SUBMITTED BY :**

**TANWIRUL**

**1911102441159**



**INFORMATICS ENGINEERING STUDY PROGRAM  
FACULTY OF SCIENCE AND TECHNOLOGY  
MUHAMMADIYAH UNIVERSITY OF EAST KALIMANTAN**

**2023**

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# VALIDITY SHEET

## IOT-BASED PARKING SYSTEM DESIGN USING ULTRASONIC SENSORS AT MUHAMMADIYAH UNIVERSITY OF EAST KALIMANTAN

SKRIPSI

DISUSUN OLEH :

TANWIRUL

1911102441159

Telah melaksanakan ujian dan dinyatakan lulus.

Samarinda, 13 Juli 2023

Dosen Pembimbing

Arbansyah, S.Kom., M.TI  
NIDN. 1118019203

Penguji

M. Taufiq Sumedi, S.Tr.Kom., M.Tr.Kom  
NIDN. 1111089501

Dekan

Prof. Ir. Sarjito, M.T., Ph.D.  
NIDN. 0610116204

Ketua Program Studi

Assifa Johar Latipah, S.Kom., M.Cs  
NIDN. 1124098902

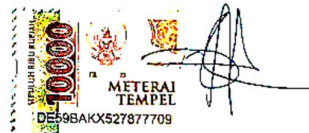
## AUTHENTICITY OF WRITING DECLARATION PAGE

The undersigned below:

Name : Tanwirul  
NIM : 1911102441159  
Level : S1  
Faculty : Science and Technology  
Study Program : Informatics Engineering

Genuinely declare that this thesis is truly my own work, not a takeover of the writings or thoughts of other people which I acknowledge as my own writings or thoughts. If in the future it is proven to be a duplicate, imitation, plagiarism, or made by someone else in whole or in large part, then this thesis and the title obtained are therefore null and void.

Samarinda June 25, 2023



Tanwirul

NIM. 1911102441159

## **THESIS PRESENTATION PAGE**

"I dedicate this thesis to those who often ask: When is the final trial?"

**Samarinda July 17 2023**

**Tanwirul**

## **LIFE MOTTO**

"And only to your Lord should you hope." – **QS Al-Insyirah:8**

There is a small family that is waiting for a successful child in a city of  
people- **Family**

"Good or bad supervisor, it's not something to think about, just  
accept it as it is because every human being is unique."

**-My Self**

## FOREWORD

### *Assalamu'alaikum Warahmatullahi Wabarakatuh.*

Praise and gratitude the author goes to God Almighty, who has bestowed His grace, taufik, and guidance.

The thesis entitled "Designing an IoT-Based Parking System Using Ultrasonic Sensors at Muhammadiyah University, East Kalimantan, Samarinda City" was submitted as one of the requirements for students to be able to complete the relevant final project at Muhammadiyah University, East Kalimantan.

I realize that in completing this thesis, I have received assistance from various parties, both directly and indirectly, although there are still many shortcomings. Therefore, on this occasion the author would like to thank:

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***Wassalamu'alaikum Warahmatullahi Wabarakatuh.***

**Samarinda, June 25 2023**

**Tanwirul**



## **ABSTRACT**

Parking space is one of the important needs for students today, but problems arise when it is difficult to get a parking space. This problem occurs when students or lecturers do not know information about the state of a parking lot. With the Internet of Things technology, these problems can be reduced. This microcontroller sensorbased parking system is a system that functions as a guide during the process 4-wheeled vehicle. The type of sensor to be used is the sensor system and the output of the detection uses a speaker. then this system can be applied not only at the Muhammadiyah University of East Kalimantan, but for the whole.

In this research, this thesis discusses the design and building of a sensor-based sensor system in the Muhammadiyah University parking lot, East Kalimantan. From the results of this study, this sensor- and microcontroller-based parking system can make it easier for parking attendants to park their vehicles and it can be concluded that the sensor has an error distance or average distance that is obtained after testing as 18 times it produces 10 CM.

***Keywords: Parkir, Arduino, Light, Sound, IoT***

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