CHAPTER 1
INTRODUCTION

1.1 Background

The development of the academic community on the Telkom University campus is increasing and causing an increase in the number of riders on campus. The most important facility for a public area is a parking lot. One of the campus parking problems that visitors cannot ascertain is the limited parking space, especially on days when many visitors arrive. Most students, lecturers, academic staff, and other visitors visit for other purposes or attend lectures using private vehicles. No wonder the parking lot is generally always full, and not a few motorists have trouble finding a parking space.

Finding a parking space can be difficult for some drivers as time spent attending lectures is wasted, which can cause some drivers to drive around looking for affordable parking spaces. This of course can cause traffic jams and long queues in the parking area. And can make some drivers feel disadvantaged in terms of time. and make the parking lot look messy, otherwise, it can make pedestrians uncomfortable.

Previous research on smart parking with the title "DESIGN OF SMART PARKING PROTOTYPE BASED ON INFRARED AND PROXIMITY SENSORS" proposes Internet of Things (IoT) users in reducing parking difficulties. By designing a system for finding parking slots that suit the needs of parking users. Information about this vacant parking lot can overcome congestion caused by busy parking users who are looking for available parking slots to be occupied [17]. The research entitled "DESIGN AND BUILD A SMART PARKING SYSTEM USING ULTRASONIC SENSORS AND QR CODE" proposes a parking system design system using a QR Code that is scanned through a parking user's smartphone [18].

In this study, smart parking uses the Esp32 Cam integration camera which can detect cars and is investigated in the Telkom University area. Esp32 Cam sends data from sensors to firebase so that data can be viewed in real-time. Implementation on smart parking using Esp32 Cam will provide information as well as detect cars provided for parking users.

1.2 Problem Formulation

Based on the previous background, the formulation of the problem in this final project is

1. How the system method will be used in smart parking?
2. What is the detection system for car vehicle objects?
3. How do analyze the results of Quality of Service testing on the system?

1.3 Objectives

1. Designing a detection system for car vehicle objects
2. Analyze the results of video quality that detects car vehicles
3. Perform testing and analyze the results of performance testing of the system based on the resulting QoS

1.4 Scope of work

The problem limits in this final project are as follows:

1. Using a web-based application as a parking reservation system
2. The microcontroller used by Node MCU
3. The image classification used is Yolov3
4. Test parameters include hardware success rate in calculating QoS
5. Detection of car vehicle is for information only
6. Parking system testing is only carried out during the development of the final project

1.5 Research Methods

This final project research is limited by the following matters. The objectives of this final project are as follows:

1. Study of literature

    This literature study is to understand and study the concept of reservation system design in smart parking from written sources such as journals, books, articles, and documents that are relevant to the problems studied as a means of information on the success of this final project..

2. Design

    This design is made of the whole system from the microcontroller to the

database.

3. The test scenario

   This testing phase simulates and tests tools to determine the performance of the system is built

4. Consultation

   At this stage, it is carried out regularly with the supervisor, related to and considering the design of the device.

1.6 Bachelor Thesis Organization

The rest of this thesis is organized as follows:

- CHAPTER 1 BASIC CONCEPT

  This chapter contains the background, problem formulation, objectives, problem boundaries, research methods, and writing systematics

- CHAPTER 2 BASIC CONCEPT

  This chapter contains an explanation of the theory, tools, and equipment used.

- CHAPTER 3 SYSTEM DESIGN AND IMPLEMENTATION

  This chapter contains the workflow for designing smart parking in multi-story parking, how the application works and measuring the Quality of Service on the device.

- CHAPTER 4 RESULTS AND ANALYSIS

- CHAPTERE 5 CONCLUSION AND SUGGESTION