

# CHAPTER 1

## INTRODUCTION

### 1.1 Background

The number of vehicles on campus is growing rapidly from year to year. Therefore an up-to-date number of vehicles exiting from campus is required. Vehicles that pass through the campus exit include 2 parts namely the lane for cars and lanes for motorcycles. Vehicles are distinguished by measuring its height. The campus is also a place that contain lands used for parking vehicles. As students who have vehicles parked on campus, they will also spend time searching for vacant parking lots.

This data is used to anticipate parking area problem in campus. The data taken is data analysis of each vehicle that leaves the campus. With the type of car and motorcycle as the object of data retrieval. Thus the data that has been detected by Ultrasonic sensors and sent to the database.

In this project/research a system is made to count the number of vehicles exiting from the campus using arduino UNO and ultrasonic sensor. This system is using Ultrasonic sensor to calculate an object height passing through the exit gate and determine it as a vehicle or not. This system is used to anticipate the rapid growth of vehicle happening in a campus.

### 1.2 Problem Formulation

1. Can the system determine a vehicle through its height?
2. Can the system determine two vehicle passing through at the same time?
3. Can the system determine the same type vehicle but with different height?

### 1.3 Scope

The system only record the number of vehicles exiting from prototype gate of Soegijapranata Catholic University using arduino and ultrasonic sensor to calculate an object height and determine if it is a vehicle or not. The system record height data every second. The exit gate used in this project has a separate exit for motorcycle and car.

## 1.4 Objective

The purpose of this project is to analyze the average number of vehicles exiting from a prototype gate of Soegijapranata Catholic University daily or weekly and anticipate parking area problem when the number of vehicle increases.

