# RAIN SENSOR USING OPTICAL BEAM

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# ABSTRACT

In this project report the design of a rain sensor using optical beam is discussed. This report describes the investigation of appropriate optical sensor and development of suitable circuit to detect visibility on vehicle windscreen. In order to build up automatic wipers, the concept of visibility is chosen for the rain sensor of the vehicles because the raindrop on windscreen gives different levels of visibility. The visibility detection can be made using infrared sensor since its ability to transmit and receive light effectively. The presence of water on the windscreen surface reduces reflected radiation while the presence of substrate increases reflected radiation. The sensor circuit designed produces different level of voltages depending on the visibility, that is the amount of liquid on the surface. The voltages are categorized into three different levels that will be sent to a microprocessor to control and activate wipers for intermittent, slow and fast movement.

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# CHAPTER 1

# INTRODUCTION

## 1.1 General

The conventional vehicle wiper used switching method to activate wipers movement. The conventional method needs the driver to control the speed of wiper movement manually depending on the visibility on the windscreen. So the driver cannot give full attention on the road and sometimes this might be the cause of an accident. Besides that human being has slow response when the rain coming. Sometimes the driver turn ON the wrong switch because there are other switches placed on the steering. The switch location for wiper system is also not uniform because some cars have the switch at the right and some have it at the left side of the steering.

The conventional method can be changed with an automatic vehicle wiper system that will give more comfortable to the driver. The automatic vehicle wipers are available in most of exclusive cars such as Mercedes, Peugeot and etc. This technology is still developing and changing depending on system design to reduce cost. Malaysia could involve in this new technology so that the national cars can be equipped with the automatic vehicle wipers system.

An automatic vehicle wiper used a sensor as input, microprocessor as analyzer and wiper motor as output. The basic block diagram for an automatic vehicle wiper is shown in Figure 1.1. Sensor is used to detect rainfall or raindrop on the windscreen of vehicle, microprocessor is used to analyze the signal from sensor before sending the signal to the wiper motor and wiper motor is used to activate the wiper blades.