

CHAPTER 3

RESEARCH METHODOLOGY

3.1. Literatur Study

This research begins with a literature study, by looking for eight scientific journals that contain home security systems based on the MCU Node microcontroller and connecting the MCU Node with BOT FATHER from Telegram. Several scientific journals contain algorithms that function to find the closest route, one of which is the Haversine algorithm to determine the closest route or distance.

3.2. Collecting Data

The data used in this study is data on some distances from one location to another, which are measured manually or using google maps. The object used in this research is the coordinates of the location of the house and the security post.

3.3. Implementation Program

make a program using the ESP 8266 module and PIR sensor to detect motion. Just like using BOT FATHER Telegram to receive output, in this program the output received is in the form of a notification message in the form of a chat to notify if the sensor detects movement. Designing the Haversine algorithm program code to find the closest route. In this haversine algorithm uses the array method at each distance. All programs use the C/C++ programming language.

3.4. Testing

Test with all the data that has been measured. This study uses PIR sensor distance data with objects to detect movement. After that, the next test is to determine the distance measure of each location coordinate point that has been measured manually using google maps, the distance between the house and the security post to test the accuracy of the Haversine algorithm in determining the distance to the nearest location. When the PIR sensor detects movement, a notification or output will be sent via BOT Telegram with the closest route.