

CHAPTER 3

RESEARCH METHODOLOGY

3.1 Literature Review

At the literature study stage, a theoretical study is carried out regarding methods that can support for problem solving in this research. Literature Review used can be obtained from books, journals, internet or previous research. The Literature Review provides basic knowledge for researchers to research objects research, in connection with which a literature study is carried out about:

1. Predict the remaining effective condition of a particular machine with input temperature, vibration, and engine displacement.
2. C45 algorithm to predict a data.

3.2 Data Retrieval

The data is taken from sensors: DHT 11, Piezoelectric Vibration Ceramic, HC-SR04 using Arduino Uno and the raw data has been processed by the library.

3.3 Data Transfer

The data that has been collected by Arduino Uno is sent to the NodeMCU by serial communication, then the data received by the NodeMCU is sent to the localhost database (mysql database).

3.4 Data Processing

The data that has been received by localhost will be stored in the mysql database, and displayed in real time on the website. Then the successfully saved data will be exported into a file with ".CSV" format and ready to be processed by the algorithm.

3.5 Algorithm Process

The algorithm process uses mysql as a programming language, the data used is 1000 data which is divided into 700 training data and 300 testing data.