CHAPTER 3

METHODOLOGY

3.0 Introduction

The overall flowchart of the project will be discussed at the beginning of this chapter. The whole system of PCB drilling machine will be discussed next. Design and fabricate a PCB drilling machine with drilling bit that can be positioned to certain point is the goal of this project. This goal can be accomplish by designing and integrating the mechanical and electrical system and design. Those mechanical and electrical system and software design will be discussed more detail in this chapter.
The project was started with research on literature review in order to gather information for decide the most suitable design for developing a PCB drilling machine. The mechanical, electrical and programming of the PCB drilling machine are designed based on the information gathered earlier. At the same time, troubleshooting and modification of the mechanical, electrical and programming of the PCB drilling machine was carried

Figure 3.1 flowchart of overall project
simultaneously to make sure they are relevant and functioning. After that, mechanical, electrical and software of the project are integrated and make it into a system of a PCB drilling machine. At the same time, troubleshooting and modification of the system was carried simultaneously to make sure they are relevant and functioning. Last but not least, the PCB drilling machine is tested run and the result of the system was obtained and recorded.

3.1 Operation system of PCB Drilling Machine

The block diagram of the operation system of PCB drilling is shown as in figure below

![Figure 3.2 block diagram of whole system of PCB drilling machine](image)

When a personal computer gives a command, microcontroller will receive the command as input signal. Then it will send the input signal to indicator led and stepper motor in order to operate the PCB drilling machine. The stepper motor will take the role as an actuator to control the X-Y-Z drive system. The function of the limit switches is to sense the position and gives the feedback to the microcontroller. The microcontroller will send a signal after one cycle of process to the personal computer in order to tell the personal computer the process is done.