

ABSTRACT

Title: Automated PCB Drilling Machine for CEAT Electronics Laboratory

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In order to discover new knowledge about Electronics, the researchers have come up with the study entitled “Automated PCB Drilling Machine for CEAT Electronics Laboratory”. This study aims the following objectives: automate the method of drilling printed circuit boards, acquire knowledge about CNC Robotics, discover and apply the features of EAGLE software when it comes to PCB drilling, learn how to use Mach3 and most of all be able to understand and explain further the concepts of this research study.

This research study has three parts: the mechanical, software and the control circuitry. The mechanical part was outsourced but the design was given by the researchers. The software part was researched through internet and books available in the library. There are a lot of free CNC softwares but Mach3 is the easiest software to learn especially for the beginners. On the other hand, using Eagle software is much better than the other PCB Designing because it has a lot of functions and libraries that you need to explore. The control circuitry was developed through research and consultation from experts that have knowledge on CNC Robotics.

In order to verify the accuracy of this drilling machine several factors are considered; time it takes the machine to drill a PCB versus the conventional hand drill, size of the drilled holes, and exactness of drilling to the holes of the printed circuit board. To do this, the researchers tested different types of circuits and of different sizes. Through this, the researchers were able to know what factors affected the precision and accuracy of this machine and also its limitations.