

Automatic PCB driller

Inter-University Avishkar Research Convention

Category: 05

Slot No:

Level: UG

ABSTRACT

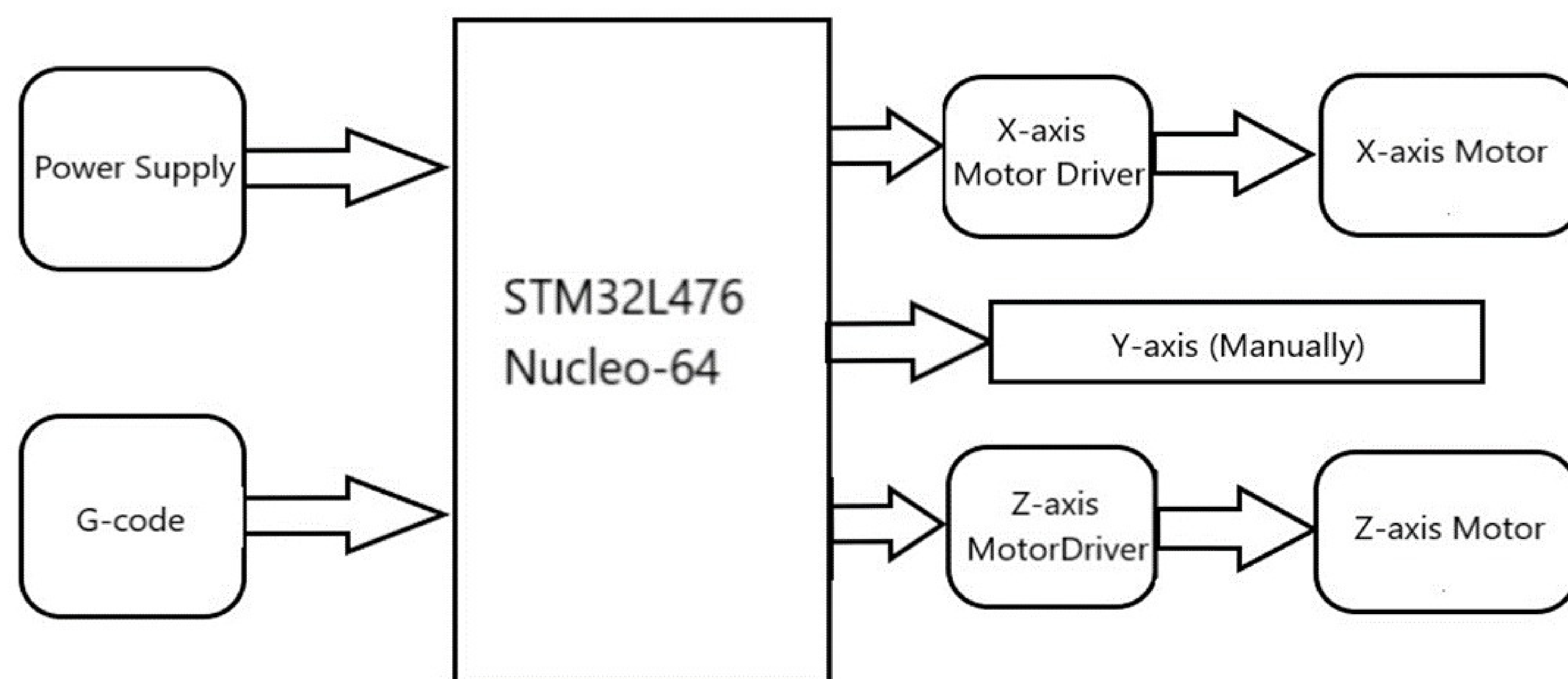
A CNC router and open source software are used to build a 3 axis PCB drilling machine based on an STM-32 Nucleo F411RE board.

The primary goal of this project is to reduce the amount of time spent, the amount of hard work required, and the amount of manpower required. The PCB Drilling Machine can take the place of expensive CNC and NC machines.

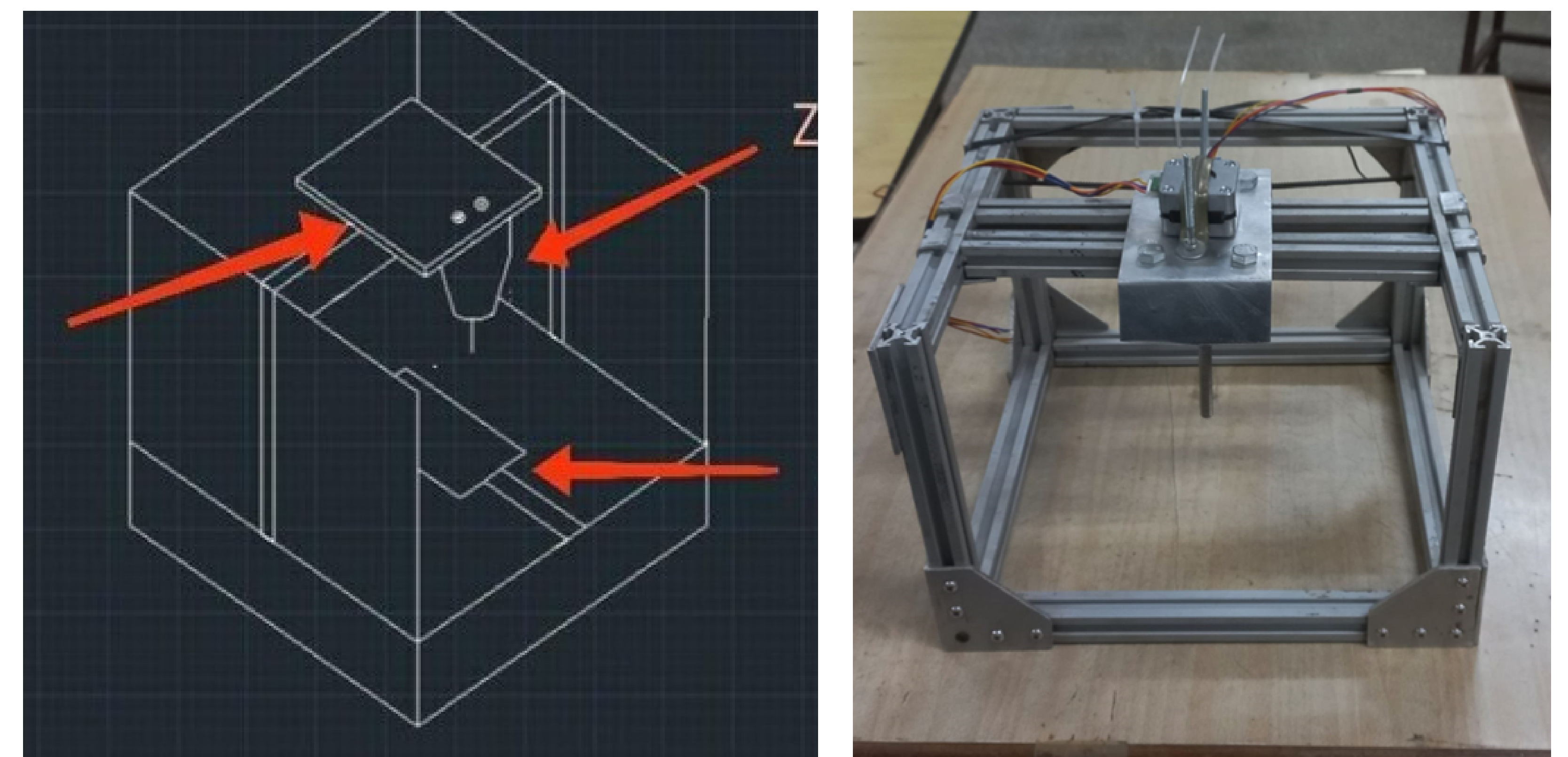
OBJECTIVE

To design and implement an STM32 controlled Automatic Printed Circuit Board (PCB) drilling machine. To enable beginners in the any field to use an automated PCB drilling machine with path planning capability to complete the job efficiently.

BLOCK DIAGRAM



ARCHITECTURE



METHODOLOGY

- We created a code that simulated the movement of the motors that represent our X and Y axes. In the code for the unipolar motor, we connected pins 9, 10, 11, and 12 of the STM board and used them as input to the motor via driver ULN2003 via pins IN1, IN2, IN3, and IN4.
- The driver received a 5V input voltage via the board. The X-axis is represented by a unipolar motor. The bipolar motor is the next component, and the driver we used for it is A4988. The motor connector is wired to pins 1A, 1B, 2A, and 2B.
- The pins VMOT and Gnd on the driver are connected to a 12V external power supply provided by adapter.

CONCLUSION

- In order to reduce the cost of mass production, the PCB Drilling Machine can replace high-cost CNC and NC machines. As a result of using path planning, the machine drills in a more systematic manner.
- As a result, future development can be made to achieve greater accuracy. The current system can be improved in the future to achieve higher axis speeds.
- The system can easily accommodate a variable spindle speed control mechanism. The developed system can be used to mill PCBs.