REPORT: Printrboard Electronics- 3D printers

This system is a 3D printer by Printrbot which is simple to build, use and allows users to create prototypes of various systems after designing anything on CAD software. The Printrbot operates using an electronic set called a Printrboard.

SETUP OF ELECTRONIC BOARD: The Printrboard contains stepper motors which controls the X, Y, and Z axis. These motors work by converting electrical pulses into rotations on mechanical shafts. Mechanical micro-switches are connected to the X-STOP, Y-STOP and Z-STOP at the bottom of the board. These switches prevent the printer head to go beyond a certain range. In order to heat up the filament and allow it to extrude, it contains a resistance wire (Nichrome wire- nickel and chromium alloy) which implements electrical resistance. The Printrboard also contains thermistor, which is a type of resistor that varies by temperature.

We learned a lot as we conducted this build. The 3D printer went through many iterations and revisions, especially the electronics. We constantly had to change the way the wires were attached to the board and make sure the stepper motors and end-stops were connected. Texas Instruments has innovative electronic pieces that can improve the performance of 3D printers. In the TIDA-00405 (Texas Instruments 3D Printer controller) it contains a complete 3D printer controller with MCU, stepper drivers, heater outputs, sensor inputs, and a SD card slot. It is also powered from a single 12V supply. 3D printers in general contain similar electronics in order to perform.

Watch the following video that we created that features the 3D printers mentioned in the essay: https://www.youtube.com/watch?v=2-r9w1AF73s

BIBLIOGRAPHY:

TEXAS INSTRUMENTS Website

http://www.ti.com/tool/tida-00405?keyMatch=3d%20printers&tisearch=Search-EN-Everything#0

PRINTRBOARD Website

http://reprap.org/wiki/Printrboard

BUILD YOUR OWN CNC Website

https://buildyourcnc.com/Item/3D-Printer-Component-extruder

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