

“3D Printing using Arduino”

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Abstract: Digital fabrication technology, also referred to as 3D printing or additive manufacturing, creates physical objects from a geometrical representation by successive addition of materials. 3D printing technology is a fast-emerging technology.

Keywords: 3-D Printer, Manufacturing, Rapid Prototyping, Application of 3D Printing

I. INTRODUCTION

A 3d printer is a cumulative manufacturing fashion where 3D objects and corridor are made by the addition of multiple layers of material. It can also be called as rapid-fire prototyping. The main reason to use 3d printer is for 90 of material application, increase product life, lighter and stronger. 3D printing majorly dealing with the process of Rapid Prototyping & Additive Manufacturing process plays vital part in it. But major handicap in to this is speed of rapid-fire prototyping machine.

II. LITERATURE SURVEY

In this paper, we substantially concentrate on designing a new smart 3D printer.

A) Existing Survey: One of the swift- growing technological developments has been that of 3D printing. It's the process of depositing consecutive layers of material similar as plastic, essence, or wax in a 3D printer to produce a physical object grounded on a digital model. 3D printing, also known as cumulative manufacturing, is formerly heavily espoused in diligence similar as aerospace, automotive, and artificial goods. Masterminds in these diligence use 3D printing for making corridor that cannot be manufactured through conventional machining or ray processing ways. According to thecheck of 3D Printing Market size worldwide from 2013-2020

B) Challenges Of 3D Printing: The global 3D publishing request is anticipated to reach\$ 21 billion by 2020 — quadrupling its size in just four times. While 3D printing, also appertained to as cumulative manufacturing, comes with numerous benefits, similar as freedom of design, easy prototyping, customization and streamlined logistics, it also poses numerous challenges. With all of these benefits you would suppose 3D printing would be as common as the internet by now, but that's not the case. Companies are still floundering to find ways to incorporate the technology into their product development and manufacturing operations. These include High manufacturing cost, High development cost, Cumulative manufacturing impacts the terrain, further time needed for publishing the object. The success of 3D Printer depends on the parcels of the material, more specifically, the fresh parcels of 3D printable accoutrements similar as plasticity, density, and green strength.

III. METHODOLOGY

3D printable models may be created with a computer backed design (CAD) package, via a 3D scanner, or by a plain digital camera software. CATIA interpretation of CAD designing can be used to design conventional 3D published models created with CAD result in lower crimes and advanced inflexibility that can be acclimated ahead publishing, allowing verification in the design of the object before it's published. The homemade modelling process of preparing geometric data for 3D computer plates is grounded of primary designing with respect to different axis. 3D scanning is a process of collecting digital data on the shape and appearance of a real object, creating a digital model grounded on it. CAD models can be saved in the stereolithography train format (STL), a de facto CAD train format for cumulative manufacturing that stores data grounded on triangulations of the face of CAD models. This STL train transferred to the slicer software for conformation of G canons. STL isn't acclimated for cumulative manufacturing because it generates large train sizes of geometric G Canons, optimized corridor and chassis structures due to the large number of axis and

face involved. A new CAD train format, the Additive Manufacturing Train format (AMF) was introduced in 2011 to break this problem of large size data capturing. It stores information using twisted designing of the CAD model designed. We'll be using Arduino Mega 2560 microcontroller as the central regulator which will be controlling all the conduct and it'll be the Brain of the system. It'll be connected series interface with Ramps and other factors similar as Stepper motor, Motor motorists, Hot bed etc. Stepper motors are used to move the title in the direction of the particular axis, Stepper motor are used for fine perfection. Printing head is the factual printing part having a heater. The printing head heats up and extrudes the material handed by confluent. Temperature detectors are used for PID regulator to control the temperature of bed and printing head.

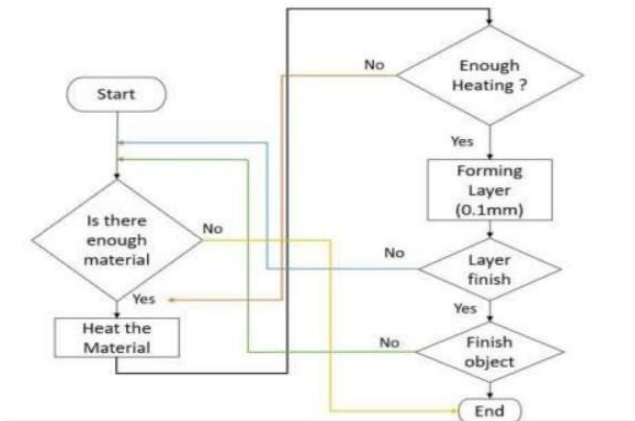
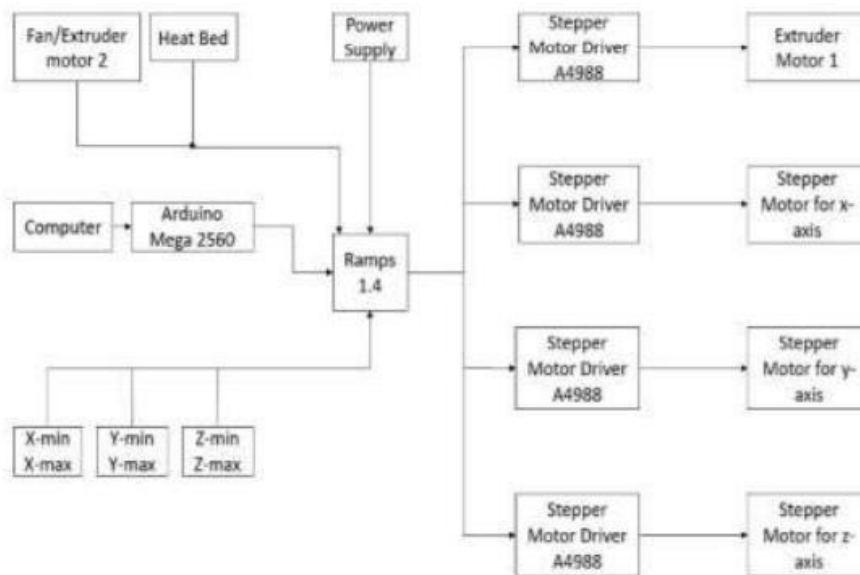


Fig. 1 Flowchart

Tackle unit also correspond of motorists needed to drive the motors and heaters. Tackle part also have a 12V 30A DC power force for powering up the heaters and motors. Power force is SMPS and insulated type. The motor motorists are used for driving the high- power motors with veritably low power control signals.



Block diagram of 3D Printer

Fig. 2 Block Diagram

IV. CONCLUSION

The trending advance technology in the current world of wisdom is 3D printing. 3D printing is veritably important useful in the field of wisdom and medical. It's also used for saving lives by publishing mortal organs using towel like material. Though it has these numerous advantages, the biggest debit of 3D printer is that anyone can publish whatever they want using 3D printer indeed dangerous munitions can be made when it's used by wrong hands. But it's veritably essential for



scholars in seminaries and sodalities for their design works. This will reduce the cost of erecting hence improves active participation of scholars in doing colorful systems.

Still, there will be a massive product in the artificial world and the important thing is that no one needs to visit the manufacturing units for the prototyping objects, one can produce his/ her own objects by just importing the model into the 3D printer and get the asked object, if every individual uses this 3D technology. In the coming decades, there will be a chance of pall 3D printing which will allow you to produce objects for yourself and for your cherished formerly by sitting down from them. This Rapid prototyping technology will allow creating a massive product with lower time and lower capital. Still, 3D isn't a dream, it's formerly in the current request, many diligences are using them for massive product, and that are erecting veritably complex models.

V. REFERENCES

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