

# 3D Printing-Introduction and Algorithm

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**Abstract**— The study is on add-on manufacturing, also known as 3-D printing. Additive manufacturing is different from traditional manufacturing that shape products through milling, grinding etc. Instead, with additive manufacturing, layers are added to a product. This permits for three dimensional manufacturing and limited scrap. Supplement manufacturing has been seen as a disruptive innovation for society because it allows consumers to manufacture their own products. In this paper, an overview will be shown on the status of additive manufacturing. This includes the consumer point of view as well as the manufacturing point of view. For example, the consumer perspective has intellectual property protection is major is problem. The running status of 3Dprinters will be provided together with an analysis of the main producers like Makerbot and Ultimaker (consumer markets) and Stratasys and 3D Systems (industrial markets), their models and their current capabilities and overall adoption. It is finalized that additive manufacturing is experiencing high growth but that, in specific for industrial applications. It is not yet competitive with traditional manufacturing systems.

**Key words:** Li-Fi Technology, LED, Wi-Fi

## I. INTRODUCTION

The technology used for printing physical 3d objects from digital out is called 3d printing. It was first manufactured by Charls Haul in 1984.It is also called Rapid prototypes. In 1993, Massachusetts Institute of Technology (MIT) patented another technology, called as "3 Dimensional Printing techniques", which is similar to the inkjet technology used in 2D Printers. Subtractive manufacturing technologies are well established and they are characterized by the removal of undesired materials to obtain prescribed product shapes.3D printing is a form of additive manufacturing technology where a three dimensional object is developed by laying down successive layers of material. It is also known as rapid prototyping, is a mechanized technique whereby 3D objects are quickly made on a reasonably sized machine connected to a computer comprises of blueprints for the object. The 3D printing concept of custom manufacturing is exciting approximately to everyone. This revolutionary technique for creating 3D models with the use of inkjet technology saves time and cost by neglecting the need to design; print and glue together separate model parts. Now, you can create a complete model in a single process utilizing 3D printing. The basic principles include materials cartridges, flexibility of output and translation of code.

## II. THE ALGORITHM

The algorithm used in the Inkjet 3-D Printing is depicted in the figure given below.

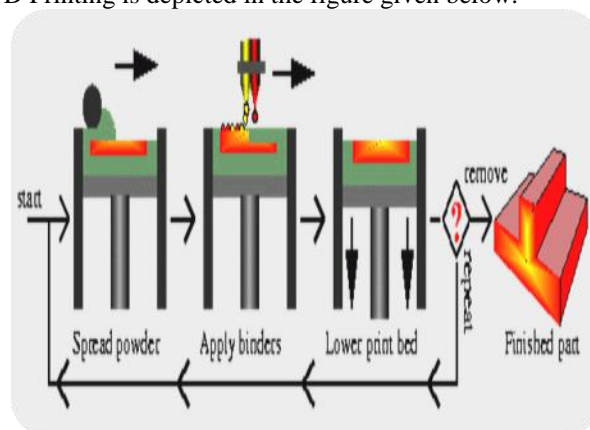


Fig. 1:

The workflow can be easily understood with the help of the flowchart given below. A 3-D prototype of a required object is created in three basic steps and these steps are:

- Pre-Process
- 3-D Printing
- Post-Process

The 3D printer works automatically, depositing materials at layers~.003mm thick. This is roughly the thickness of a human hair or paper sheet. The time it takes to print a given object depends primarily on the height of the design, but maximum designs take a minimum of several hours. The average cost for printing a full color prototype is near about between 50 - 100 \$.

3D printing has a bright future, not least in rapid prototyping (where its impact is already highly significant) but also in medicine, and outer space. Desktop 3D printers for the home are already a reality if you are ready to pay for one and/or build one yourself.

3D printers capable of outputting in color and multiple materials also exist and will remain to improve to a point where functional products will be able to be output. As devices that will give a solid bridge between cyberspace and the physical world, and as an important manifestation of the 2<sup>ND</sup> Digital Revolution, 3D printing is therefore likely to play some part in all of our future

### III. GENERAL PRINCIPLES

- Modelling
- Printing
- Finishing

#### A. Modeling:

Additive manufacturing takes virtual blue prints from computer guided design (CAD) and animation modeling software and “slices” them into digital cross sections for the machines to successively use as a guideline for printing.

#### B. Printing:

To do a print, the machine reads the design and lays down successive layers of liquid, powder, or sheet material to construct the model from a series of cross sections. These layers, which correspond to the virtual cross area from the CAD model, are joined together or automatically fused to create the final shape. The main advantage of this technique is to create almost any shape or geometric feature.

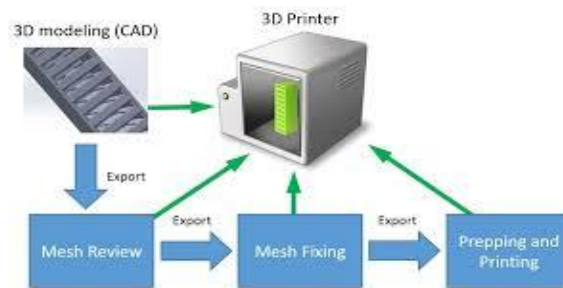


Fig. 2: Printing

#### C. Finishing

Though the printer-produced resolution is enough for many applications, printing a slightly oversized version of the required object in standard resolution and then removing materials with higher-resolution subtractive processes can achieve a higher-resolution

### REFERENCES

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