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3D Printing Technologies

An Abstract

3D printing has taken off in the past ten years. Originally developed in the 1980's; it took years for 3D printers to be commercially viable and time efficient. 3D printers work on the basis of laying layers of material on top of each other to create a 3D object. In essence it is a traditional printer with the addition of a third access so it can continue to print on top of the old print. When put that way 3D printers sound like a quick means of manufacturing, and in a way they are a fast way to prototype a new design, but they are still tremendously slow. The most popular design of 3dp are four stepper motors: one for the x-axis, another for the y-axis, and two for the z-axis. The z-axis needs two motors because it must move evenly, or the print may fail.

The basic steps that a 3dp takes is a model must be designed or found, the model must be turned into g-code, and then the g-code must be sent to the printer. Most models are designed with 3D-CAD, computer aided design, software or other 3d modeling software. The distinction between the two types of programs is one is based on more scientific and measured approaches and the other is more artistic in its implementation. Next is turning the model into g-code, or the language of telling the stepper motors when, where, and how long to move. Turning the the model into g-code is done by the slicer, which turns the model into toolpath layers. Finally it is then sent to the printer for printing.

3D printing has many uses beyond hobbyist proects, and quick prototyping. It can also be used in many other fields, such as the medical field. 3D printing is a great way to test new prosthetics or even implants. With the advancement of materials and print quality, surgeons have printed braces and other implants for complicated surgeries.

Works Cited

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