Printing Large 3D Structures

As the additive printing- 3D printing market is expanding, new possibilities open as to how 3D printing can be applied. At Worcester Polytechnic Institute, a new 3D printing technology has been developed that has the potential to revolution how large structures are built. First built for the NASA 3D Printed Habitat Centennial Challenge, this technology is intended to produce large-scale structures on Mars. Adapting this technology to work on earth, large-scale structures such as houses can be built in record time. Additionally, this technology eliminates the need to utilize a building to 3D print a structure. Instead, the new 3D printing technology can be placed anywhere to produce the intended structure in one piece. To produce structures in one piece, this technology uses a cable-driven parallel manipulator without frames in order to not constrict the construction process, unlike current 3D printing technologies. This use of additive manufacturing can produce a full-scale structure for a relatively low cost in a quick manner. The 3D printer is completely scalable, requires minimal set up time, and can be set up anywhere while providing a more efficient method of construction. With further research, it is possible this 3D printing technology can be used for quick and low cost disaster relief structures, for general construction, for infrastructure, and more.

Key Features

-First large-scale structure construction method in the United States
-Developed for the NASA 3D Printed Habitat Centennial Challenge to construct large-scale structures on Mars
-Additive manufacturing
-Flexible and moveable
-Scalable
-Low cost production

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