

A multimaterial, voxel-printing method turns imaging datasets into physical objects

May 31 2018, by Lindsay Brownell



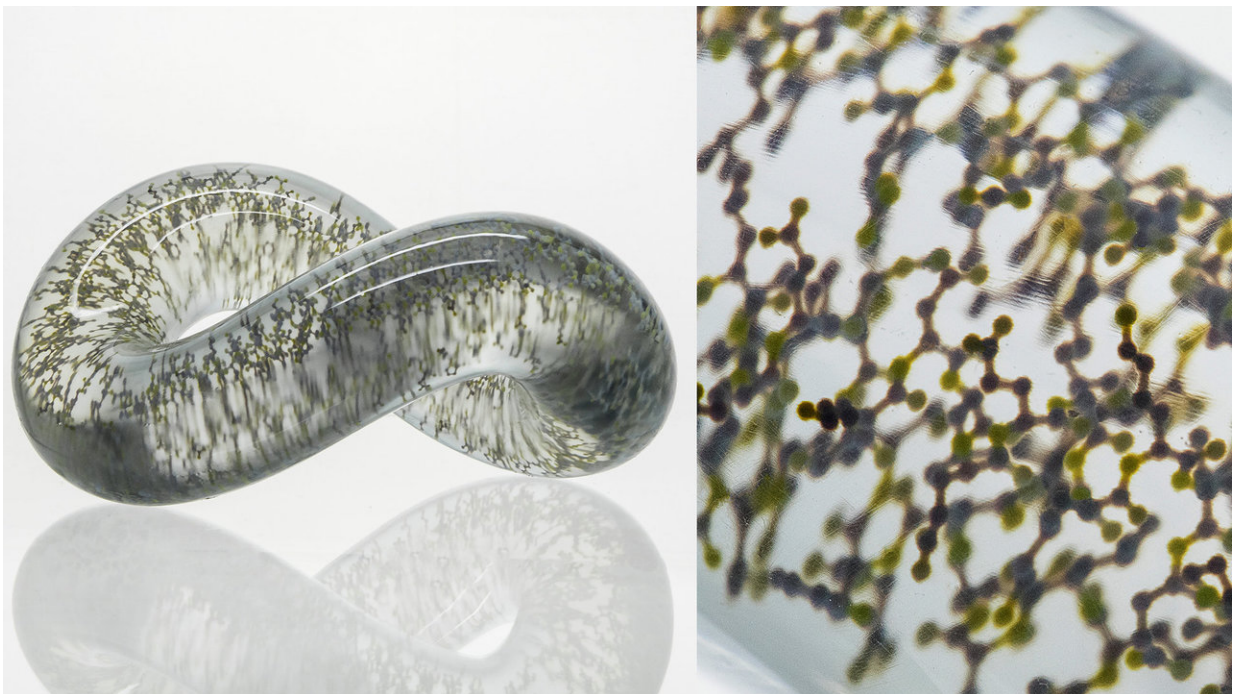
The 291,362 colored line segments in this 3D-printed model of a human brain represent bundles of axons that connect different regions of the brain, color-coded based on their orientation in 3-D space. Credit: Mediated Matter Group / MIT Media Lab

The world is awash in digital images, from photographs to x-rays to

computer models to 3-D scans. The advent of 3-D printing has made it possible to take imaging data and print it into physical representations, but the process of doing so has been prohibitively time-intensive and costly.

A new data processing method pioneered by the Wyss Institute in collaboration with the MIT Media Lab removes that roadblock by converting various different forms of imaging data into a file type called "dithered bitmaps," which preserves fine details and allows quick and easy distinction between different parts of an image. The researchers hope that this "bridging of the gap between digital information representation and physical material composition" will help democratize 3-D printing and allow anyone to print nearly anything.

Here is a selection of the physical objects their method created from various imaging datasets, featured in a second publication in *Science Advances*.



A 3D-printed model of the protein crystal structure of Apolipoprotein A-I, a dataset containing 6,588 points for each atom and 13,392 line segments for each interatomic bond. Credit: Mediated Matter Group / MIT Media Lab



This model of a statue from the Tampak Siring Temple in Bali, Indonesia was created using 3.6 million data points extracted from a two-dimensional photo using a photogrammetric processing service. Credit: Mediated Matter Group / MIT Media Lab



Vespers. Series 2 Mask 1. Front view. Designed by Neri Oxman and members of the Mediated Matter Group for The New Ancient Collection curated and 3-D printed by Stratasys, 2016. Credit: Yoram Reshef



Volumetric 3-D printed high-resolution data objects. Credit: The Mediated Matter Group

More information: Christoph Bader et al, Making data matter: Voxel printing for the digital fabrication of data across scales and domains, *Science Advances* (2018). [DOI: 10.1126/sciadv.aas8652](https://doi.org/10.1126/sciadv.aas8652)

Provided by Harvard University

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