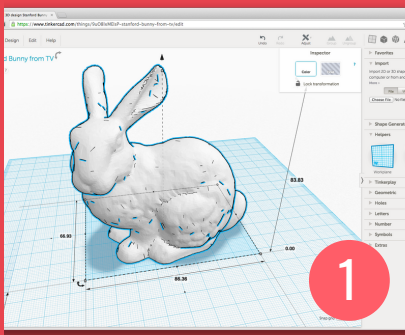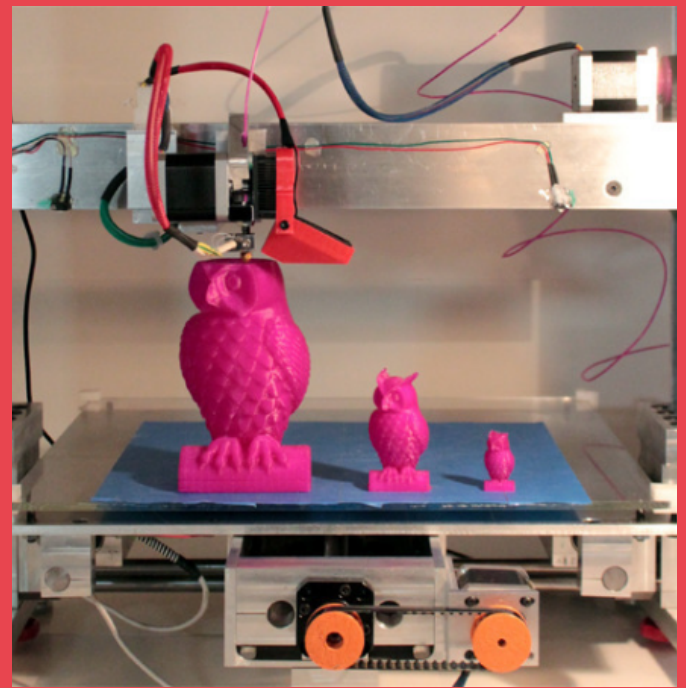# WHAT IS 3D PRINTING?

3D printing is very much like regular printing but instead of printing two-dimensional images, 3D Printers synthesize three-dimensional objects. It is also called **"additive manufacturing."**

3D printers use a variety of materials to create 3D objects but the most common are plastic, resin and powder. There are many companies that make 3D printers and they can range in size from small desktop printers for a home office to huge concrete printers that can print entire houses!

THE PRINTING PROCESS

1 First, a 3D model is created in **CAD (Computer-aided design) software** such as Blender or Tinkercad or downloaded from a website like Thingiverse.

2 Next, the 3D model is imported into **(Computer-aided manufacturing) software**, which generates instructions for the computer to follow while printing the object.

3 After receiving the file, the printer begins to print the object based on the instructions. It builds the object in layers until it is finished.

4 The object is removed from the printer, any support material is removed and the object is cleaned. That's it!

RESOURCES

- **Thingiverse**: Thingiverse is a website where people can upload 3D designs to share with other people. These designs can be downloaded and imported into CAM software so your printer can print them! Find it here: **www.thingiverse.com**

- **Tinkercad (Beginner):** Want to try 3D modelling? Tinkercad is an easy web software that will teach you the basics! Create a free account here: **www.tinkercad.com**

- **SketchUp (Intermediate):** Looking for more 3D modelling options? Check out SketchUp a 3D modeling software available in web-based and downloadable formats. **www.sketchup.com**

- **Blender (Advanced):** Ready for the next level? Blender is a popular, open source 3D modelling software. Download it for free here: **www.blender.org**

- **All3DP:** Easily the most popular 3D printing website. In addition to instructional articles, the site also includes reviews of printers, filaments, accessories and more! Find it here: **www.all3dp.com**

> 66 **"3D printing is already shaking our age-old notions of what can and can't be made."** - Hod Lipson 99

WHAT IS 3D PRINTING USED FOR?

💡 PROTOTYPING
Want to design a product? Do you need a mold for mass manufacturing? Just create your design and print it out!

✏ CREATION
3D printing can also be used to create finished projects! Design jewelry, personalized signs- whatever you can imagine!

⚙ REPAIR
Need to fix something? Instead of searching for the missing part, just print it out! Either find the model for the missing part online or design it!

♥ ORGAN PRINTING
In 2013, a company named Organovo printed a human liver. Though not suitable for transplant, the liver is a good example of how replacement organs can be made in the future - eliminating the need for long transplant lists!
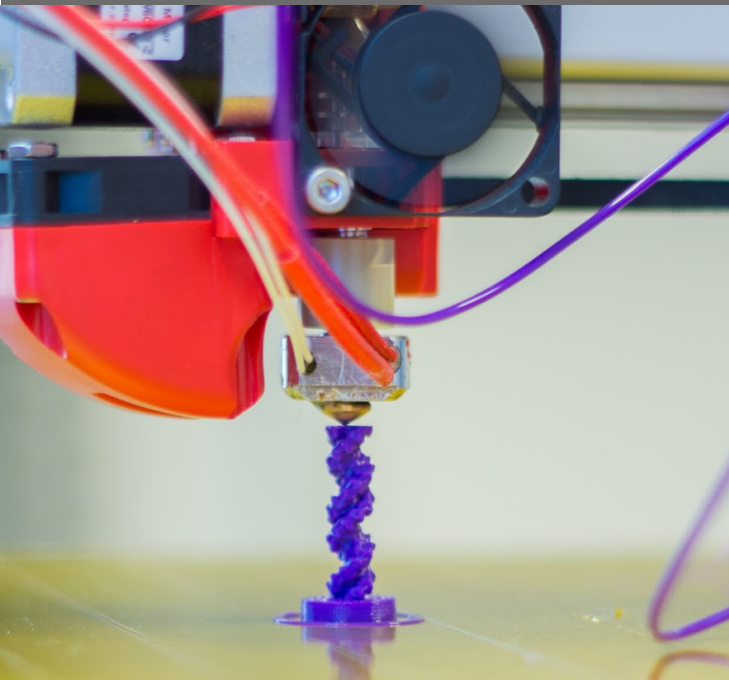
✋ PROSTHETICS
Prosthetic limbs are still very expensive. Fortunately, charities like e-NABLE are using 3D printing to bring prosthetics to families who normally couldn't afford them.

🏠 CONSTRUCTION
3D printing can be scaled up in big ways too! In 2021, the first 3D-printed house was built in Riverhead Long Island. The house was listed for sale at $299,999- 50% lower than similar homes in the area.

LPL 3D PRINTING SERVICE

Looking to 3D print an object? The library can help! Longwood Public Library patrons can submit files to be printed in the color of their choice on our Ultimaker printers. We will take custom designs as well as premade designs from websites such as Thingiverse, Yeggi, STLFinder and more.

Printing fees are $1.00 per hour or $0.50 per 30 minutes.

To get started, fill out a 3D Print Request Form by going to **www.longwoodlibrary.org/3DPrint** or by scanning the QR Code:

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