

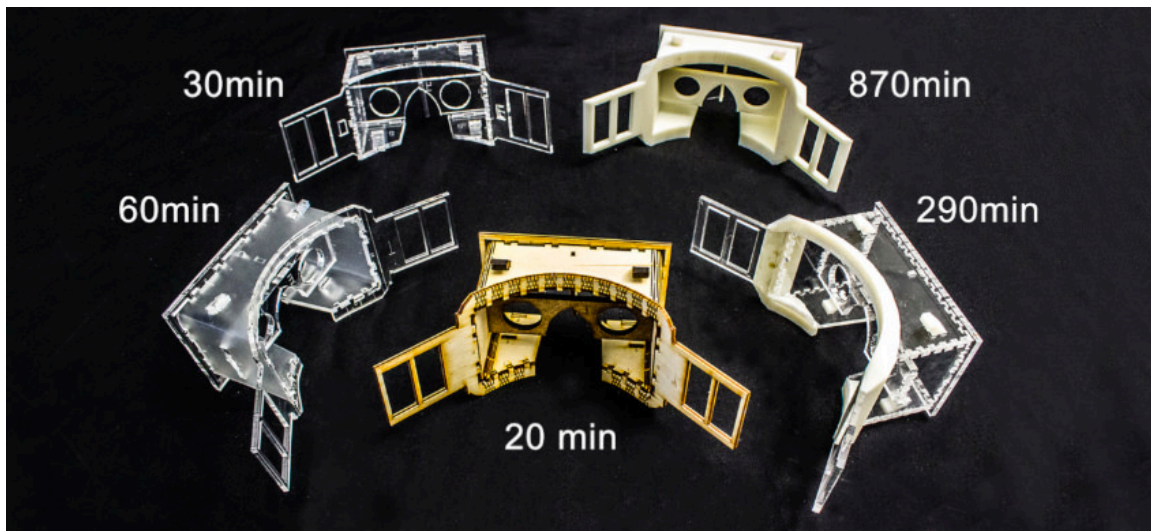
3D-to-Laser: Fabricating 3D Objects on 2D Laser-Cutters

Goal

In this project, you will develop a system that allows users to convert 3D models designed for 3D printing into 2D parts that can be laser cut. You will deploy the system as a web service that **people worldwide can use**.

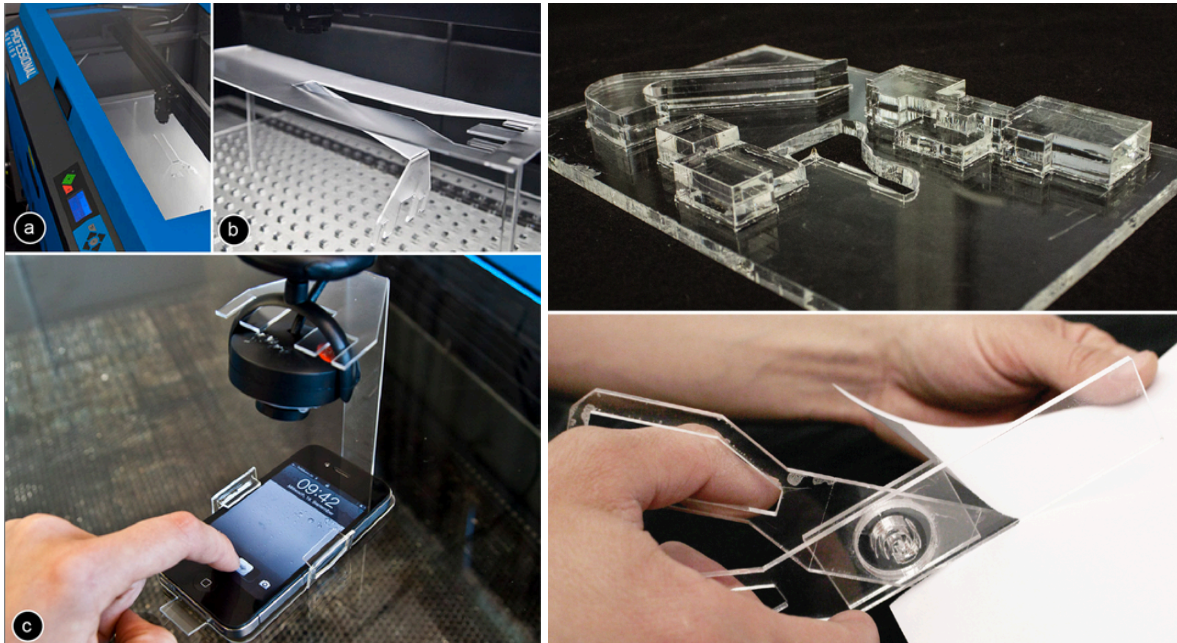
There will be two key use cases for your tool. **#1: fast fabrication:** As illustrated by the images below, your tool could speed up fabrication by factors of 10-50x (for reference, the off-white 3D printed version in the back right took 14 hours to print).

#2 allow owners of laser cutters to access 3D model libraries. Today, online repositories, such as thingiverse.com hold hundreds of thousand of models for 3D printers, but only very few models designed for laser cutting. Your tool will extend the utility of laser cutters by giving users more objects to download and make, ultimately equally empowering laser cutter owners, fab labs, and manufacturers of laser cutter systems.



Convert 3D models into flat (and curved) parts that can be laser cut. Your converter will help users fabricate this head-mounted display, for example, by a factor of up to 40x.

If you and your team should make fast progress, you could try to add functionality for **automatic assembly** invented here at HPI, i.e., either the automatic folding or welding of laser cut parts.



Add functionality to automatically fold laser cut parts...

...and/or add functionality to automatically weld laser cut parts.

External Partner

Universal Laser Systems, one of the leading manufacturers of laser cutters worldwide. Additional support from and collaboration with **fab lab Potsdam**

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Skills

Excellent grades in **HCI2** and **3D Computer Graphics** would be great. You will learn everything else during the project.

Group structure

4-7 students. Areas of responsibilities and specialization will be defined in the first week.

Questions?

Check out these videos on folding and stacking using the laser cutter:

<http://www.youtube.com/watch?v=arjRtCjI9AQ>

<https://www.dropbox.com/s/845yrbhqp61ubh/file4986-1%20LaserStacker.mp4?dl=0>

Then email us at patrick.baudisch@hpi.de or stefanie.mueller@hpi.de