Interacting with Personal Fabrication Devices

Goal

Personal fabrication tools, such as 3D printers, are increasingly entering the mass market. When combined with 3D scanning, 3D printing allows converting physical objects to a digital state and back. While in the form of digital data, objects are subject to all transformations that can be applied to other types of digital data: users can edit them for customization, and even more importantly replicate and share their designs with others. As a result, many envision a future in which any object will be available to anyone anywhere anytime. While the hardware for achieving this vision is becoming increasingly affordable, the software is still too complex to be used by ordinary people.

In this project, you will develop a system that allows users to (1) easily design objects directly on a personal fabrication tool and (2) to fabricate them quickly. Here are a few concepts and prototypes to get you started. Let’s build more (e.g. Speed up support material? Help users create curved objects using the laser cutter?) and then integrate everything into a system that people in fab-labs worldwide can use.
Let users edit directly on the work piece

substitute parts of your 3D print with Legos

Objectives

Develop new interfaces for personal fabrication tools:
(1) Define new interaction techniques or novel fabrication processes.
(2) Write software and modify fabrication hardware to implement your ideas.
(3) Evaluate your system by testing it with real users and use cases.

The project will involve 3D model processing, 3D printing and laser cutting, basic mechanics and electronics. Excellent grades in HCI2 and Computer Graphics matter.

4-8 students. Areas of responsibilities and specialization will be defined in the first week.

External Partner

FabLab Berlin and Potsdam. Expect help and mentoring from all of us, as well as your external partners Wolf Jeschonek and Mario Parade.

Questions?

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