

FabLab Munich 3D Scanner (EN)

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Motivation

The goal of the project "3D Scanner" is the creation of a low-priced DIY (do it yourself) 3D scanner for 360 degree scans.

All parts of the 3D scanner (software, electronics, hardware) shall be put under an open source license.

Mounting the 3D scanner should be possible without deeper technical knowledge.

3D scanner handling should be easy and should lead to quick scan results:

1. Insert scan object
2. Press button
3. Save file with 3D scan data

Examples for potential areas of application for the 3D scanner:

- **Creation of replacement parts:** scan broken part, print/cut/mill replacement part
- **Creation of accurately fitting extensions to existing objects:** scan object, measure scanned object using PC and software, create and fit extension parts using PC and software, print/cut/mill extension part
- **Digitize modeled prototypes:** create prototype using modeling clay, scan prototype, finalize scanned object using PC and software, print/cut/mill object

Basic Idea

The basic idea for the 3D laserscanner technology is taken from a term paper of a computer science student.

The term paper describes a 3D laserscanner with a rotating plate. The main advantages of the solution described in the paper are:

- **Cheap hardware** (webcam, line laser)
- The scan result is a **360 degree scan**, therefore no post-processing (like merging of multiple point clouds) is required
- Support of different **scan object sizes**: positions of laser, webcam and rotating plate can be freely chosen

Especially the 360 degree scanning capability is the main difference when comparing with other DIY 3D scanner solutions.

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Project idea of FabLab Munich 3D scanner:

- **Software:** C# software for controlling the scanning process: [FLMScan](#)
- **Electronics:** electronics for controlling the rotating plate (Arduino, PCB via serial interface, ...)
- **Mechanics:** mechanics of the rotating plate, mounts for line laser and webcam, components required for laser scanner calibration, housing
- **Documentation:** descriptions of software, electronics, mechanics that allows to easily build the DIY 3D scanner

Project Phases:

- [Prototype 1](#): done
- [Prototype 2](#): work in progress