

## Shutter Sound – Freeze the moment

There is this great YouTube channel called “The Slow Mo Guys” where they show videos in super slow motion. With this project, you can use your old external camera flash to create stunning pictures with bulb exposure. The basic idea is to have a completely dark environment and some objects you can destroy. In the exact same moment, the object makes a “sound”, the flash gets triggered and shoots a photo of the scene (Figure 1). This tutorial is more like a project demonstration with less step-by-step instructions – but feel always free to contact me.



*Fig. 1: A pot gets destroyed*

### What you need:

Machine:                   Lasercutter or 3D printer  
Software:                 Fusion360 or similar CAD software  
                                  Arduino IDE

An old or unused Flash with a flash shoe  
Arduino Nano  
Arduino Sound Sensor, e.g. KY-038  
Some objects you can destroy

==> Total cost: around 25€

## Step 1: Find a flash

The most difficult part is to find a suitable flash for the project. I tried several ones and just shortened the connectors until the flash triggers. Be careful as there is a chance to destroy the flash, so just make sure you use an old one with a simple control.

After you find the contacts you need to shorten, search only for a “flash shoe” which is compatible with your flash. Cheap ones are widely available on eBay.

## Step 2: Doing the assembly

I designed three different enclosures for each component:

The 3D printed case for the flash includes a flash shoe for the external flash and a ¼ inch nut for a tripod mount. I included a cinch adapter to later connect the flash case with the Arduino base.

The second 3D printed case is for the sound sensor board. It also features a ¼ inch nut and a connector to the base.

The larger yellow case includes an Arduino Nano, a display, two pushbuttons, a potentiometer, a LED and a switch. The push buttons are used to activate the flash and wait for a “sound”. With the potentiometer, I can add an extra delay to the flash trigger. The switch is used to turn off the backlight of the display, which just shows status information.



*Fig. 2: All necessary components for the Shutter Sound project. The external flash is mounted on a flash shoe and equipped with a ¼ inch nut for a tripod. The other grey box includes the sound sensor. The yellow box includes the Arduino Nano.*

For taking pictures you need a completely dark environment. Set your camera to bulb exposure and activate the Shutter Sound. Now you can "destroy" your object – the sound will trigger the flash and the camera takes a photo.





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