

Sherlocked and Loaded

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Bullet Forensics

Goals

- **3D Printed Tool (dubbed the Bullet Rotato)**

- Repeatable, reliable set up for photos
 - Attaches to smart phone (No need for extra battery powered devices)

- **3D Reconstruction Server**

- Upload a video or set of photos
 - Creates 3D point cloud
 - Meshlab to create mesh from points

- **Analytics**

- Neural network for bullet recognition
 - Classifier for unique firing pin features

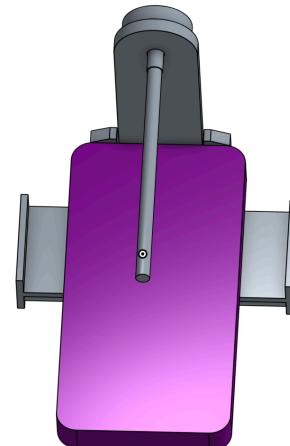
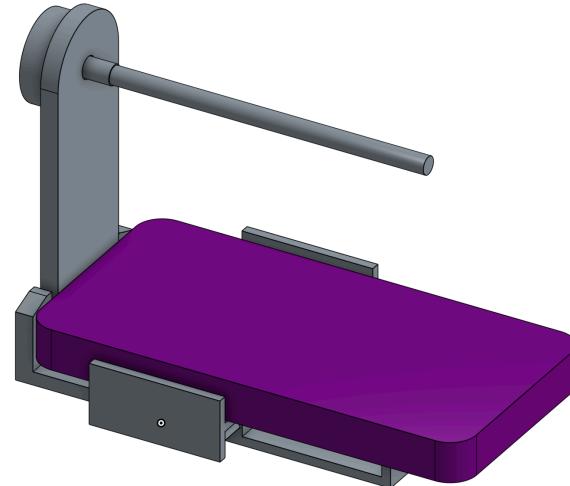
Onshape

Features

- 4 distinct, replaceable 3D parts
- Several iterations
- Adjustable to different phones
- 100% mechanical

Problems/Hurdles

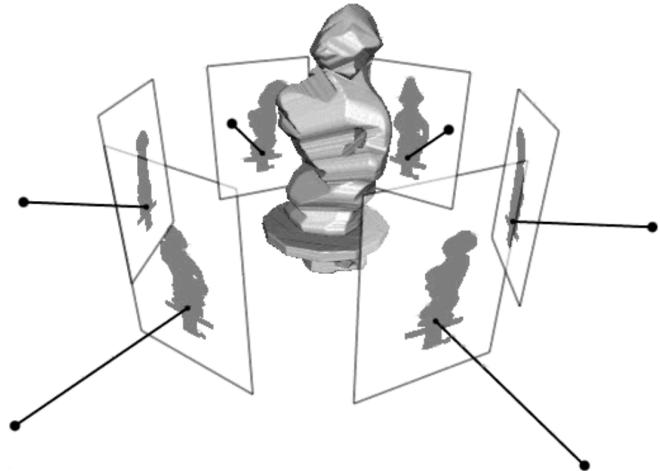
- Printer size limited Rotato size
- STL object size changed between software



Photogrammetry

Software

- Python Photogrammetry Toolkit
- Meshlab (meshes from points)
- OpenMVG



Issues

- Reflections
- Small object on large background



Bullet-Rotate in Action!

