MOT & Reconstruction W6

- Benchmarking metrics
- Linemod Test
- Kinect Works!
- Other

Benchmarking metrics for BSDF

- 6DF pose estimation
  - AUC (area under curve) percentage of ADD and ADD-S metrics?
- 3D shape reconstruction
  - Chamfer distance (CD) between reconstruction & ground truth

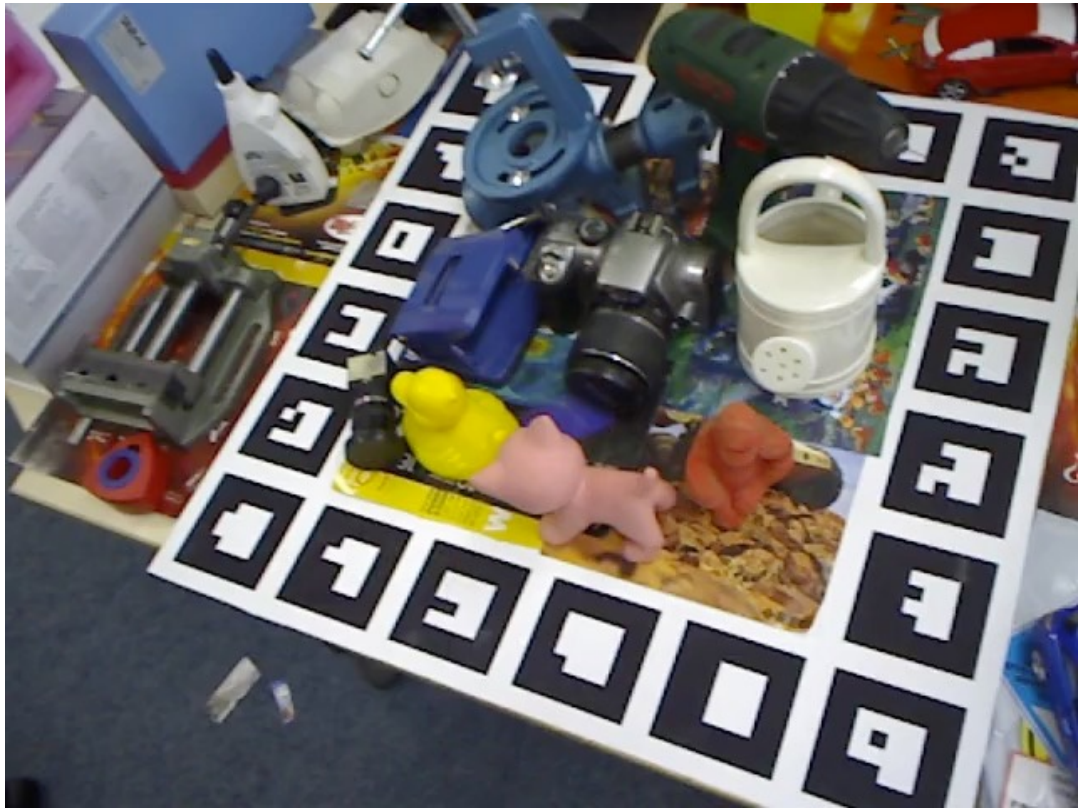
Benchmarking metrics

- 6DF pose estimation
  - HOTA, IDF1, AssA, DetA, MOTA

- 3D shape reconstruction
  - CD, EMD, IoU

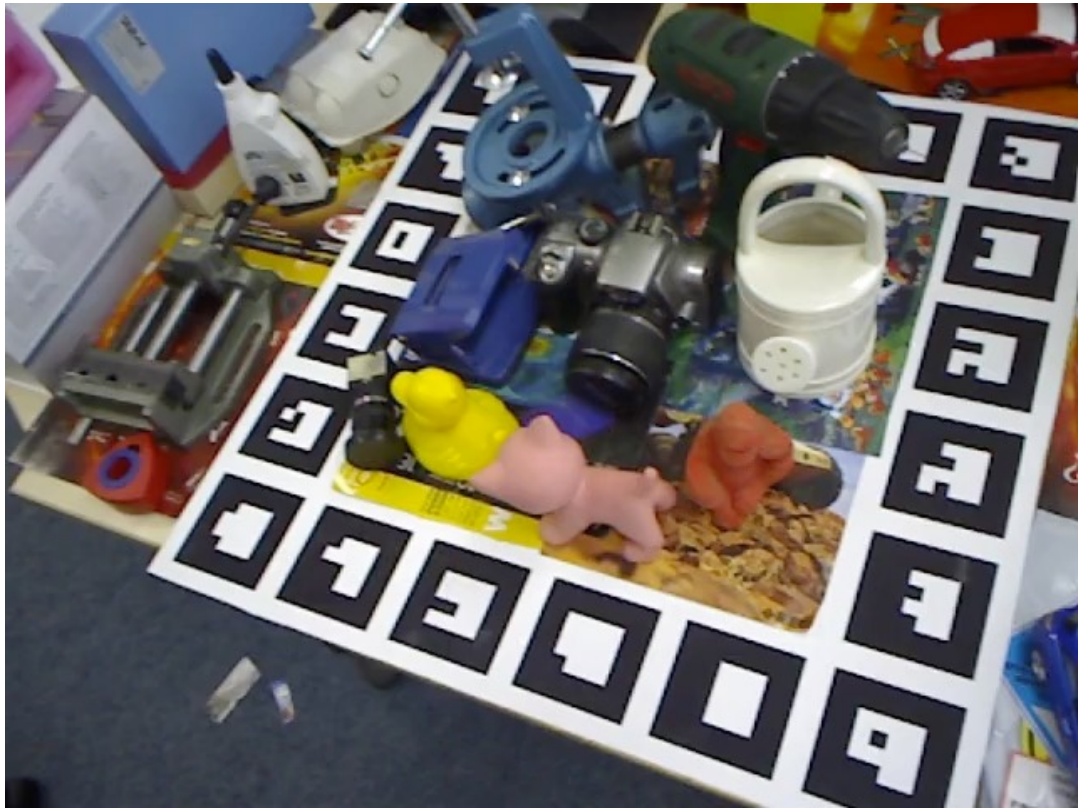
Linemod Test

- 6D Pose estimation dataset
- RGBD
- Occluded objects, subject is fixed in the middle of the table, rotate 90° every some frame

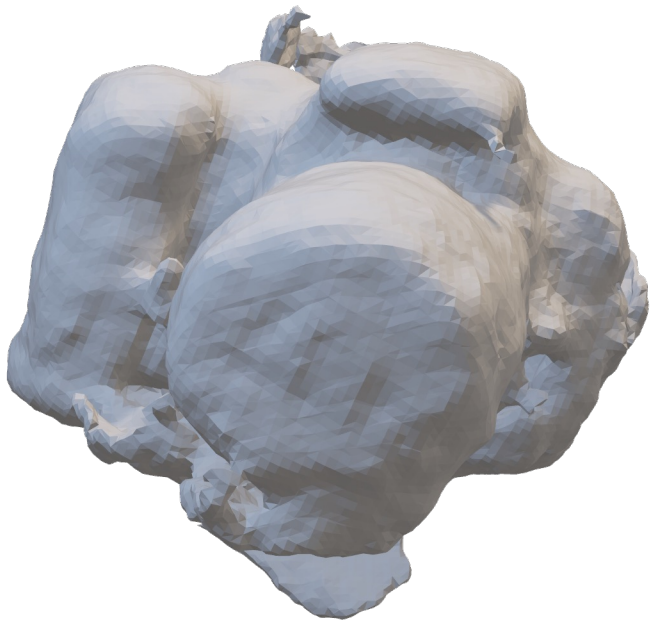


Linemod Test

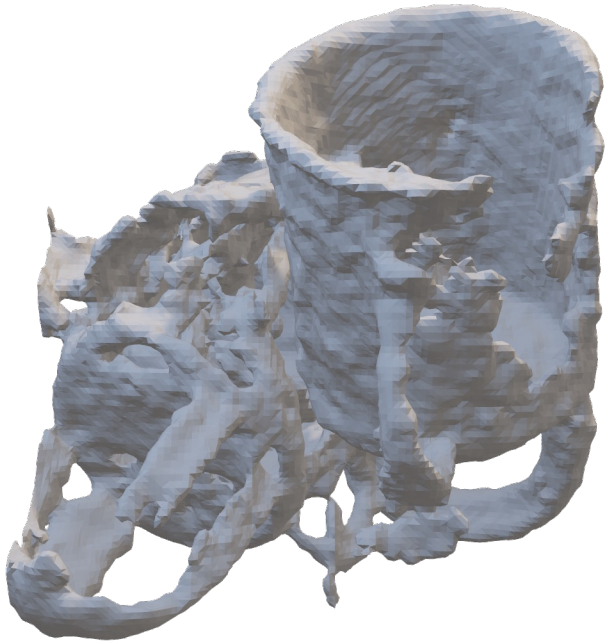
- Ran on 3 videos of the test folders in Linemod
  - Smaller videos, just to try



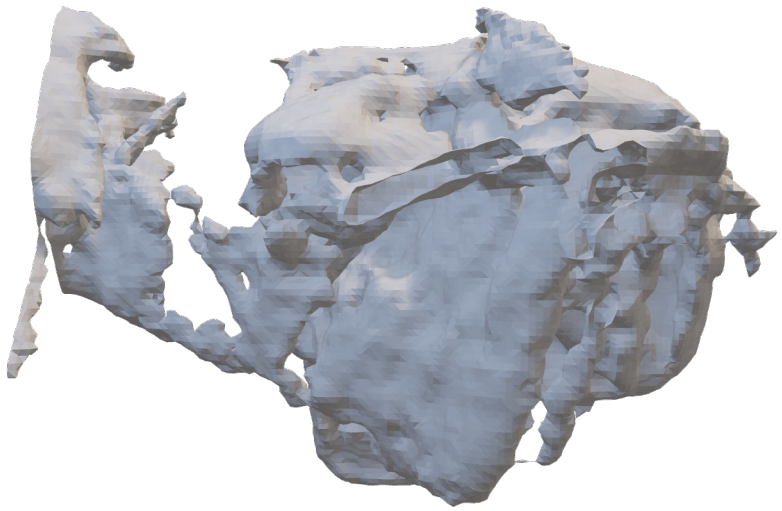
Linemod Test



Linemod Test



Linemod Test



Linemod Test

- Pose estimation fails
  - Error propagates to 3D shape reconstruction

Kinect Works!

- Managed to making it run through the SDK on Ubuntu 20.04
  - SDK supported only on Ubuntu 16
- Somehow k4aviwer and k4arecorder can’t work both at the same time?

Kinect Works!

- Camera calibration
  - /smidm/video2calibration

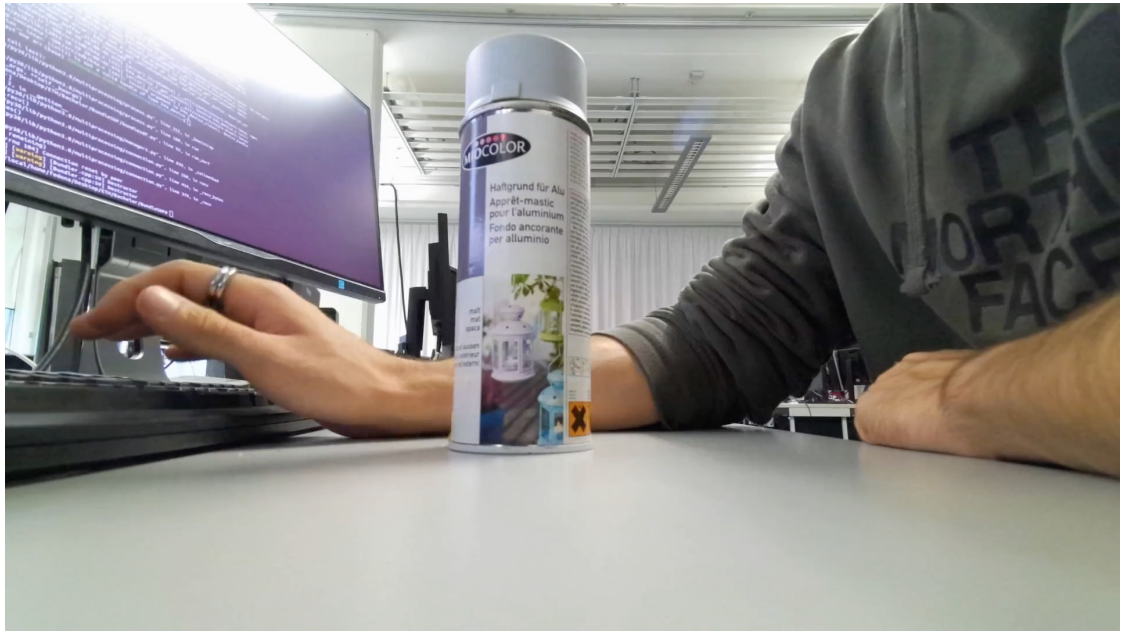
Kinect Works!

- RGB segmentation
  - BundleSDF uses XMem
    - GUI issues, does not run
  - MiVOS runs!
    - Cuda out of memory
      - Input images are 2 MB each
      - Ffmpeg has troubles converting Matroska files

Kinect Works!

- Created first dataset “spraypaintFEDONA”
  - Record RGBD with kinect
  - Select 1/10 of the frames to be able to use MiVOS
  - Ran MiVOS to get masks
  - Used cam_K file from camera calibration

Kinect Works!



Original video

Input video to BSDF

Kinect Works!

First reconstruction

Final reconstruction

Kinect Works!

- Just a first try
  - Cannot compare this run with other datasets
    - Very few input images
    - High resolution inputs
      - BundleSDF is trained on other resolutions
    - Bad object?
      - Smooth, feature extraction might be harder

Other

- Next 3 weeks I won’t be available
  - I will be working during weekends at the lab

- Matroska format, what converter could I be using instead of ffmpeg?