Challenge 02: Depth

Check Deliverables
[txt files with challenge]

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26.04.2021. 23:59 CET

In one Archive [tar, zip]
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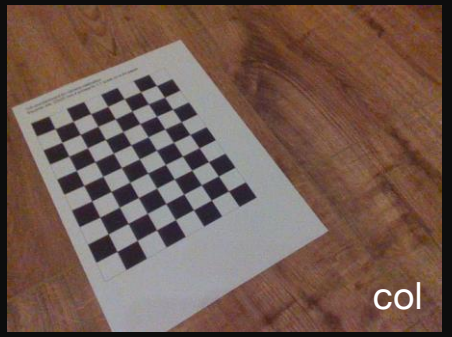
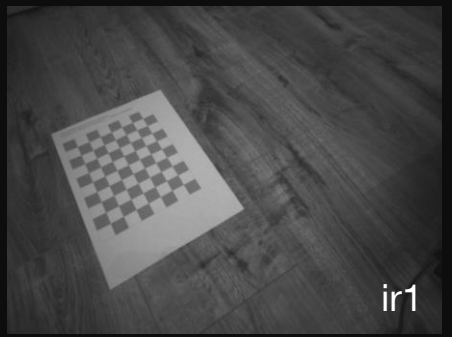
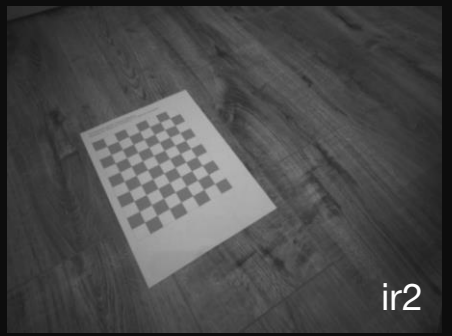
Task 1. Sensor Calibration [10 pts]

You are given 3 x 78 images from a RealSense D435 (ir1, ir2, col)

1. Calibrate each sensor [intrinsics: K, d]
2. Stereo calibration of
   i. ir1-ir2
   ii. col-ir1 [optional]







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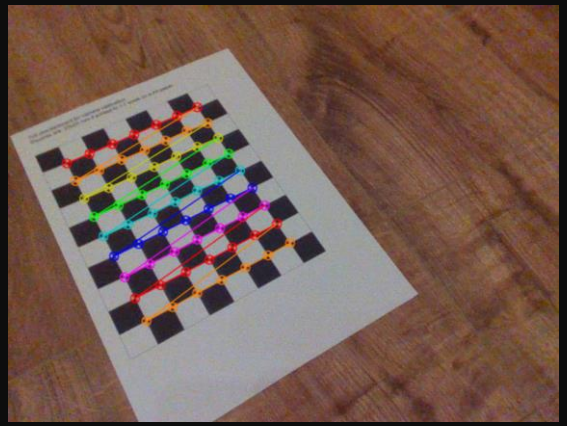
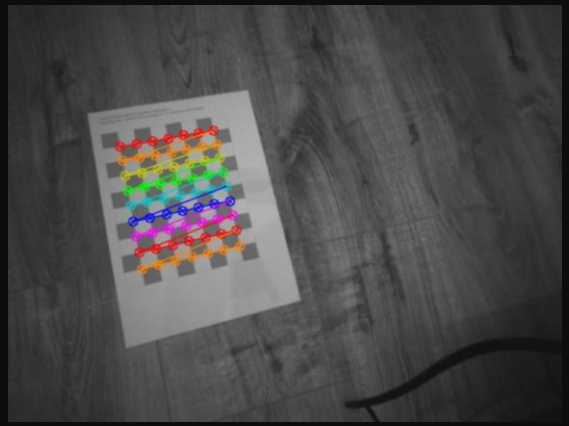
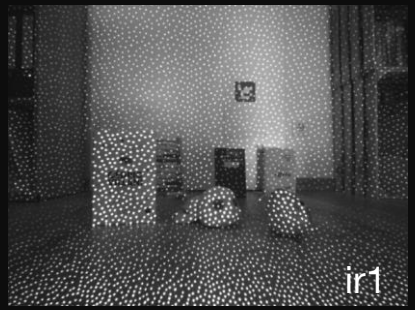


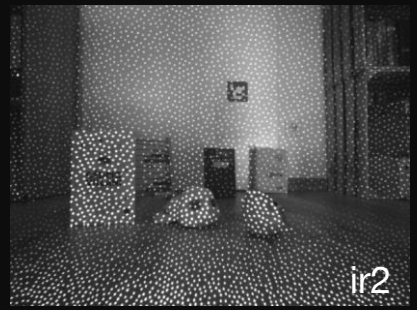


Task 2. Projector Check [10 pts]

You are given 3 x 2 images from a RealSense D435 (ir1, ir2, col)

1. Undistort the images
2. Draw epipolar lines for col-ir1 stereo setup [optional]
3. Disparity estimation with ir1-ir2
   i. Rectification
   ii. Disparity calculation





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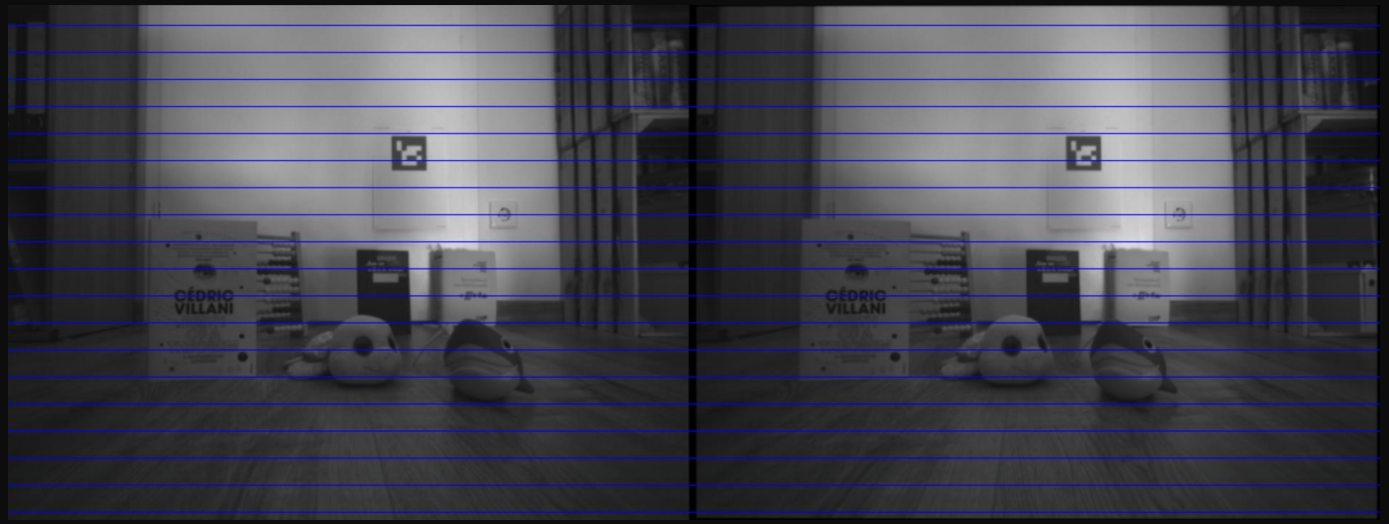

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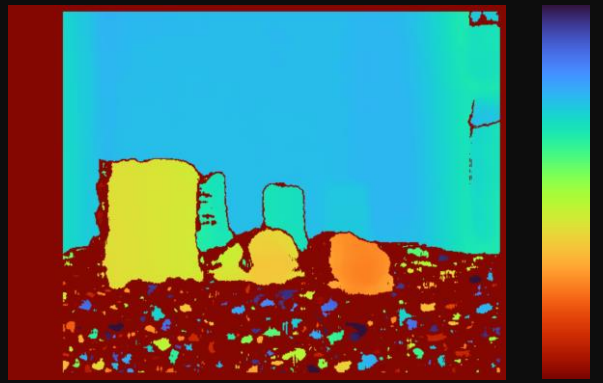
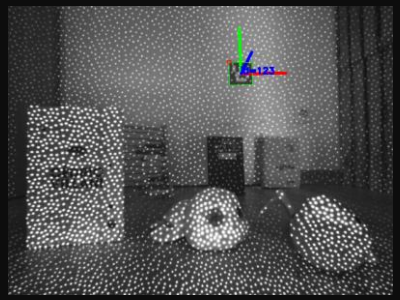
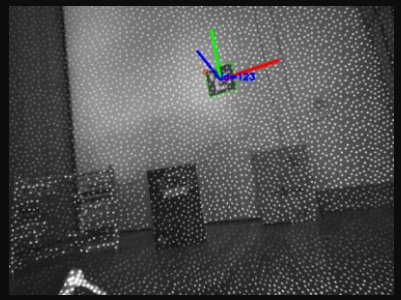
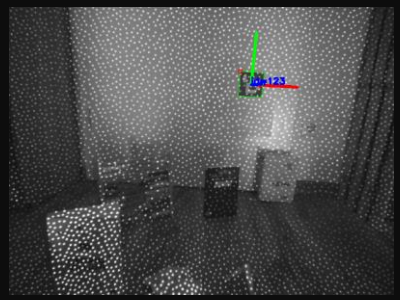
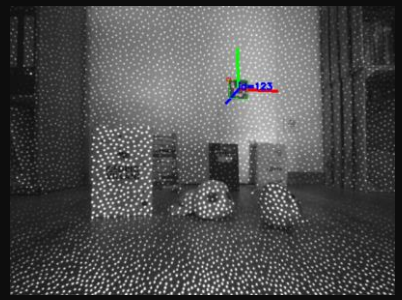


Task 3. Point Cloud Fusion [10 pts]

You are given 3 x 5 images from a RealSense D435 (ir1, ir2, col)

1. Estimate disparities
2. Fuse point clouds
    i. Calculate individual point cloud from disparity
    ii. Find world anchor (ArUco marker)
    iii. Bring all point clouds in same reference system
    iv. Use the more stable RGB world anchor [optional]

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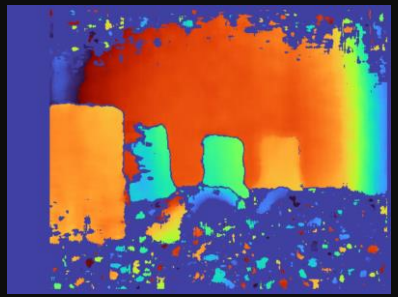
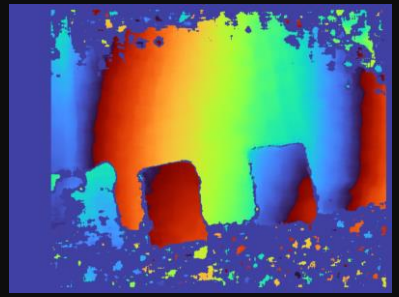
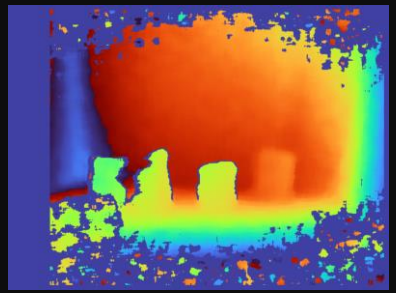
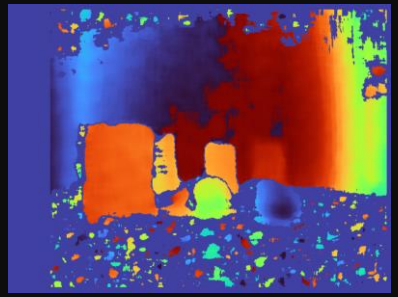

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