

Team13 Exercise 02

Q1 in Camera model's Testing method:

An: First we pick randomly some 3D-Points like: $[x, y, 5]$, the range of x & y is from -10 to 10. And then do projection and unprojection for different camera models many times, and then check if the coordinates of unprojected points approximate the original ones.

Q2:

An: The difference is that in Robust curve fitting introduce we some kinds of robust loss function to reduce the bad influence on curve fitting from some outliers, instead of just calculate residual between true value and estimated value.

Q3:

1)

--show-gui: specify whether the GUI should be shown or not

--dataset-path: specify the path to the dataset

--cam-model: specify the camera model.

2)

I choose the following benchmarks for my quantitative measure:

1. final cost after optimization
2. the changed cost after optimization

| CAM MODEL | CHANGED COST | FINAL COST |
|-----------|--------------|--------------|
| PINHOLE | 7.226007e+03 | 4.970796e+03 |
| DS | 8.254825e+03 | 1.421428e+02 |
| EUCM | 8.254811e+03 | 1.421568e+02 |
| KB4 | 1.002155e+04 | 1.415366e+02 |

Based on this Tabelle, the more cost is reduced, the better camera model fits.

And the less the final cost is, the better calibration is.

So we can draw conclusion from this: Pinhole model is the worst, and EUCM model follows it, as the second worst one. DS and KB4 are almost the same. KB4 is the top one.