MVG/Transforms Assignment (RRC Summer School 2021)

Coding

Link to notebook

Make a copy of this notebook and follow the instructions. Happy coding!

Theory

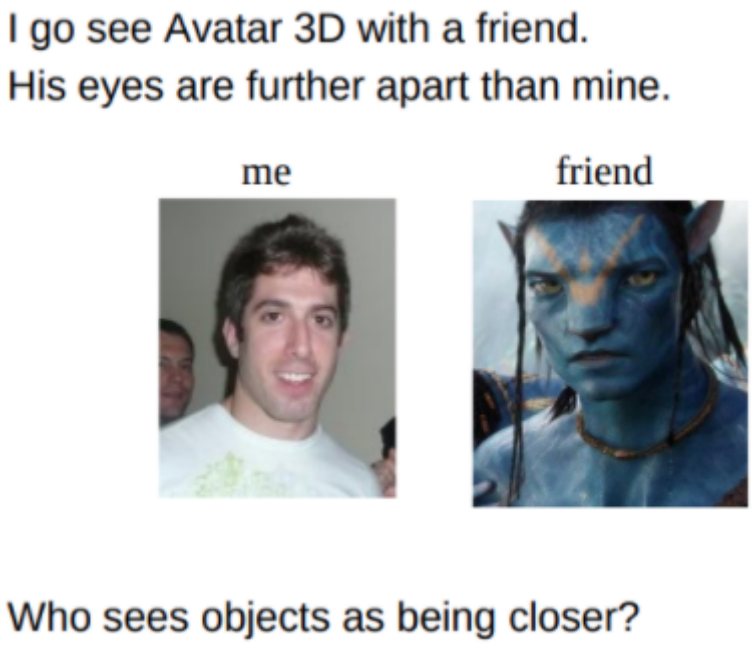
Type these answers in markdown - and add them to the notebook above.

Camera Calibration

1. Does the scale of the world points play any role in camera calibration (DLT) (as in measuring the points in metres vs cms vs kms)? If so, why or why not?

Stereo

1. Give a real world example of a situation where for a given point, the disparity between cameras belonging to a rectified stereo pair goes to zero. How are such cases handled by the homogenous coordinate system?
2. How does the baseline of a stereo pair affect the accuracy to which the disparity of objects further away can be perceived?



3. In a rectified stereo pair, why must the baseline be parallel to the image planes?
4. Explain some drawbacks of RGB stereo depth sensing and how they can be overcome.
5. State advantages of using stereo extracted depth to LiDAR/RADAR depth.

2-View

1. Explain what happens in the pure rotation case for computing the fundamental matrix and in the case of triangulation
2. Fill in the following table with Known/Unknown/Estimated. Also, give the type of measurements required for the method. If there is a minimum number of correspondences, specify that too.

Problem	Structure (Scene geometry)	Motion (Camera parameters)	Measurements
F-matrix estimation	**Unknown**	**Estimate**	**2D-2D Correspondences**
Camera calibration			
Triangulation			
Stereo rectification			