Visual-Based Navigation
Solution Exercise Sheet 4
Topic: SfM, Triangulation, PnP, Bundle Adjustment

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Part 3: Bundle Adjustment

Discuss in your answer PDF what a robust loss function such as Huber does and why we should use it here, but not in the calibration from sheet 2:

The main idea of a loss function is to be more robust against outliers and filter the wrong matches out. In our Calibration we did not have to do that since we knew all the feature corners.

Part 4: Outlier Filtering

The remove_outlier_landmarks method has the following errors: $OutlierReprojectionErrorHuge$, $OutlierReprojectionErrorNormal$, $OutlierCameraDistance$, $OutlierZCoordinate$. We now will have a closer look at each error:

1. $OutlierReprojectionErrorHughe$
   This error means the reprojection error is large, the outlier should be removed

2. $OutlierReprojectionErrorNormal$
   This error means the reprojection error is normal, it gets only removed it there are no other types.

3. $OutlierCameraDistance$
   This error means the distance to a camera is too small, the outlier should be removed.

4. $OutlierZCoordinate$
   This error means the z coordinate in some camera frame is too small, the outlier should be removed.