

Computer Vision
and Geometry Lab

Computer Vision

Exercise Session 4 (Discussions)

SIFT feature extraction

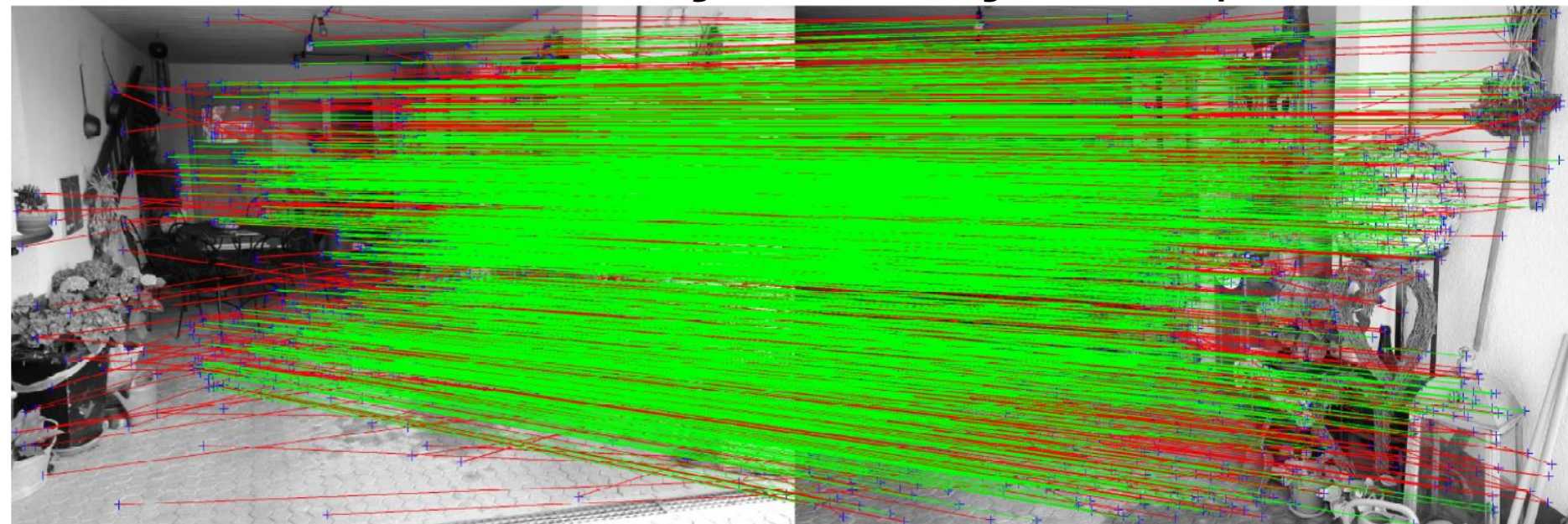
- You want lot of discriminative features to get matches.
- It is a bad idea to increase the threshold to be able to plot correspondences.
 - Just plot a subset of the putative matches.

SIFT feature extraction and scene choice

- This is a perfect scene :



- You get a lot of SIFT features, exactly where you expect them to be.



Good job
Stefan Brugger!

Inliers with threshold = 0.1 pix (Sampson)

RANSAC – the big picture

- It is meant to find small set of good inliers out of the noise: You better have lots of putative correspondences!
 - **lots** of iteration (e.g. 10 000) is fully normal! (it's quick in c++)
- The threshold has to be understood together with the distance.
 - 2 pixels for the sum of distances is equal to 1 pixel of average reprojection error but not for Sampson distance.
- We are filtering correspondences:
i.e. We do not mark points as outliers, but correspondences.

You always need to re-estimate F/E on all inliers !

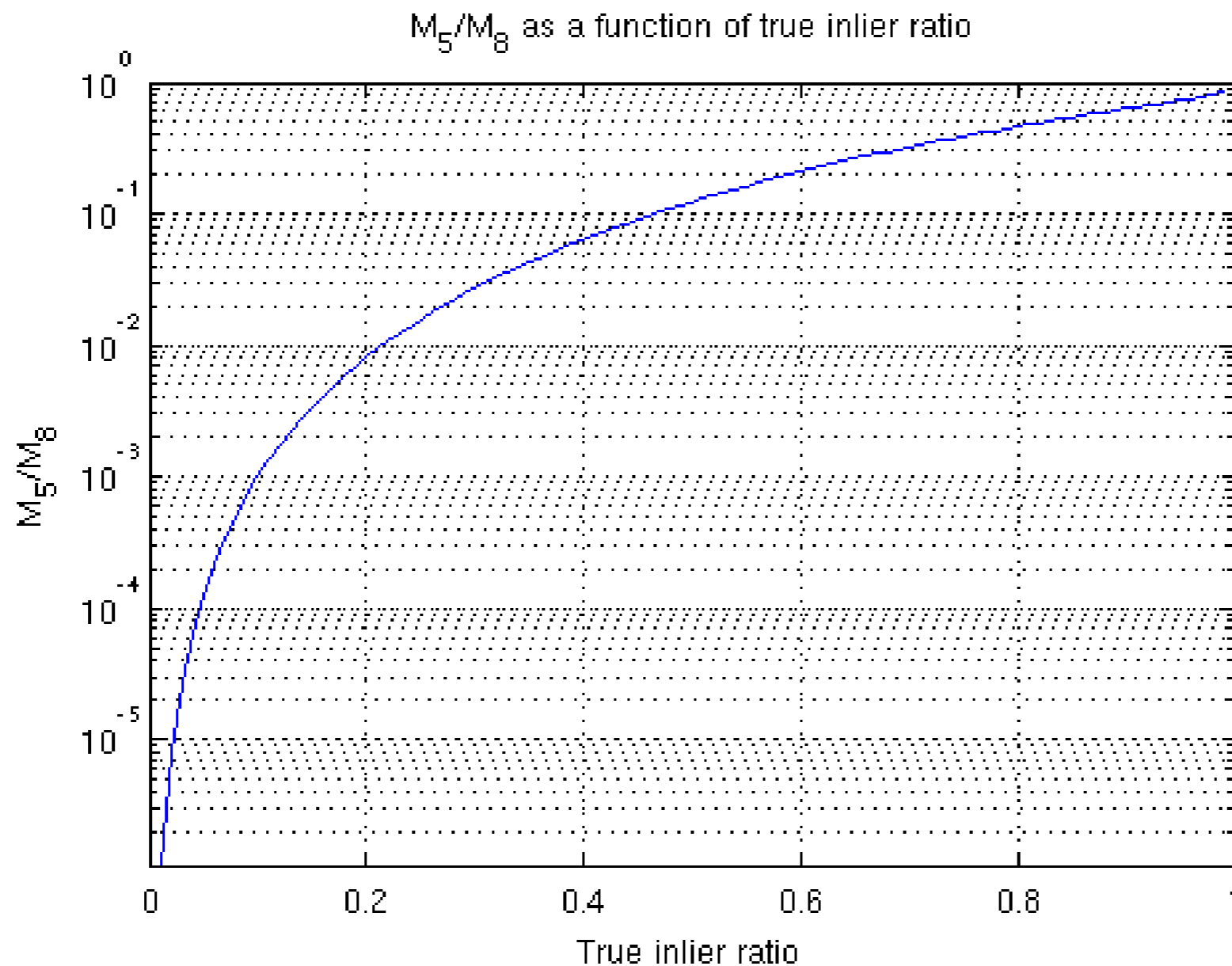
RANSAC – adaptative

- This **is** what we want to do, since we can not set the number of iteration other way,
 - (1000 is really too arbitrary and too low !)
- Do not stop at 1000 iteration(!!)

5pt-RANSAC

Advantage of taking less samples

- It helps a lot for small inlier ratios.



5pt-RANSAC

- Please make sure to compute the Sampson distance with F and un-normalized points
- Refine E on inliers using your essentialMatrix from Ex2 (calibrated_fivepoints does not work with more than 5 input, you can check the code of calibrated_fivepoint_helper.c)

Decompose E

- It could be that you still have wrong matches in your inlier set. Those could be behind the camera.
 - To select which of the 4 configurations is good, take the one with most matches in front.