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Progress report for week 2

Tasks:

- **1)** Further improvement of the corner detection by using largest contour areas
- **2)** Support for green tables
- **3)** Estimate pose and position of the table

Implementation:

1)
a) Reduction of noise now is done by appling the closing operation instead of gaussian blur.

b) The 2 largest areas enclosed by contours are determined. Their contours can than be drawn and filled in a black image. If one is much smaller than the other, it can be assumed that the table contours were not split by the net. Therefore only the contour for the bigger area will be used further.

c) The contours are then used to produce possible edge lines as before.

d) Intersection points that are guranteed not to be corners of the table are now sorted out by checking if they are in the bounding box of the contours. Furthermore, the code only keeps running if there is a point near every edge of the bounding box, as the corners should be near them. If that is not the case it will be indicated that the corners could not be found.

2)
The amount of blue and green points in the center area of the image now determines which color filter needs to be applied.

3) Pose estimation is done by using the OpenCV function solvePnPRansac, which computes a rotation vector and translation vector. The Ransac version of solvePnP is applied, as it should yield better results with possible wrong positions generated by the corner estimation. The results are demonstrated using a line in the picture which indicates the surface normal of the table. Two demonstration images can be seen on the second page.

Problems:
Images in which persons occlude the table are problematic, as parts of the actual contours get cut out. Still, solvePnPRansac seems to be relatively stable even with corner estimations far from their actual positions, as long as the other 3 points are well estimated.


Seekapong


CHALLENGER