Introduction to Augmented Reality

Tutorial 2: Marker Tracking Part 2
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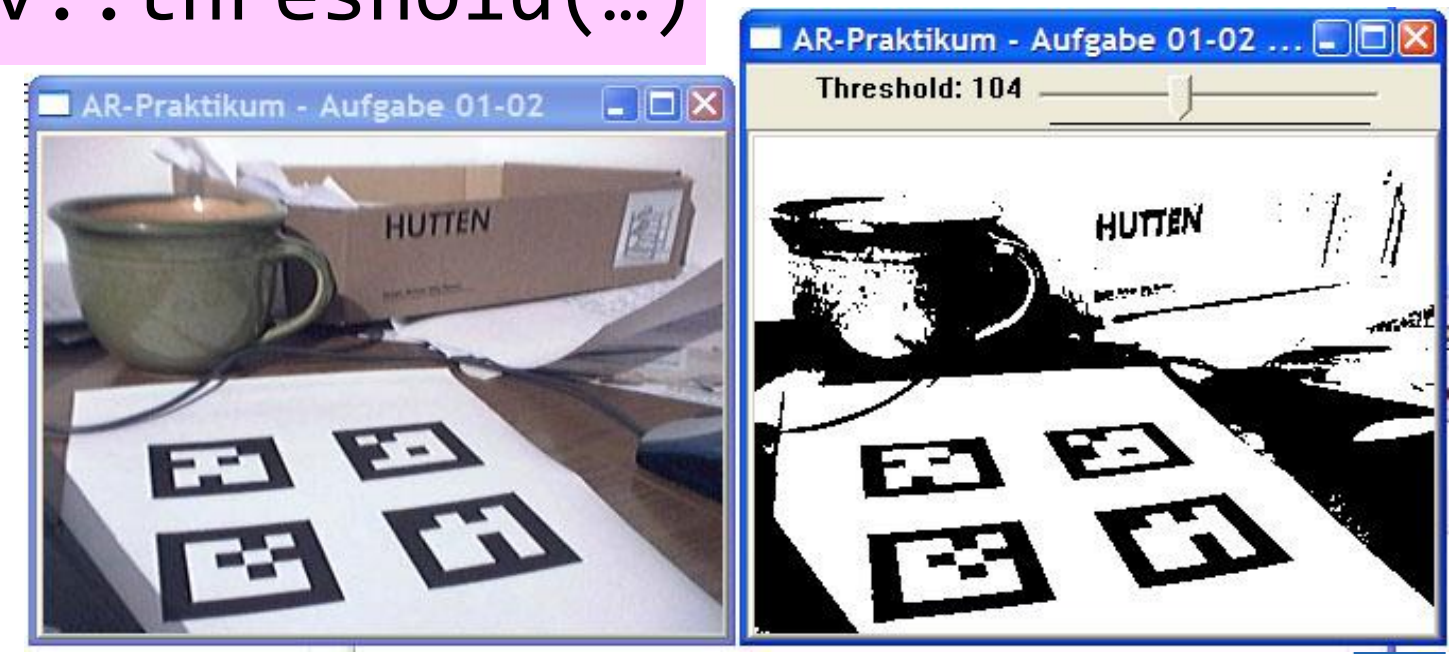
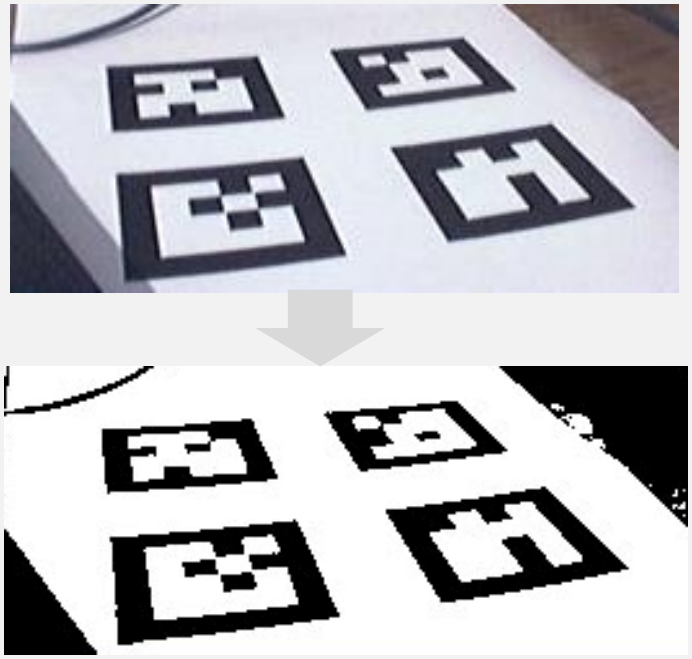
Thresholding

- Image → a matrix of pixel intensities
  - E.g. uchar[width*height][3] (**BGR** in OpenCV)
- Make it one value,
  either **black** or white
  - `cv::threshold(…)`



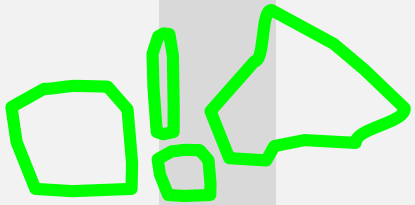
Thresholding

Preprocess image (thresholding)

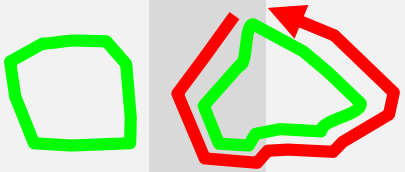


Detecting Connected Components

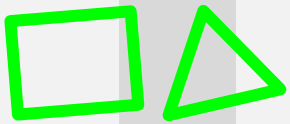
1. Find **contours**
   - `cv::findContours`



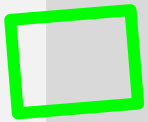
2. Filter tiny ones (noise)



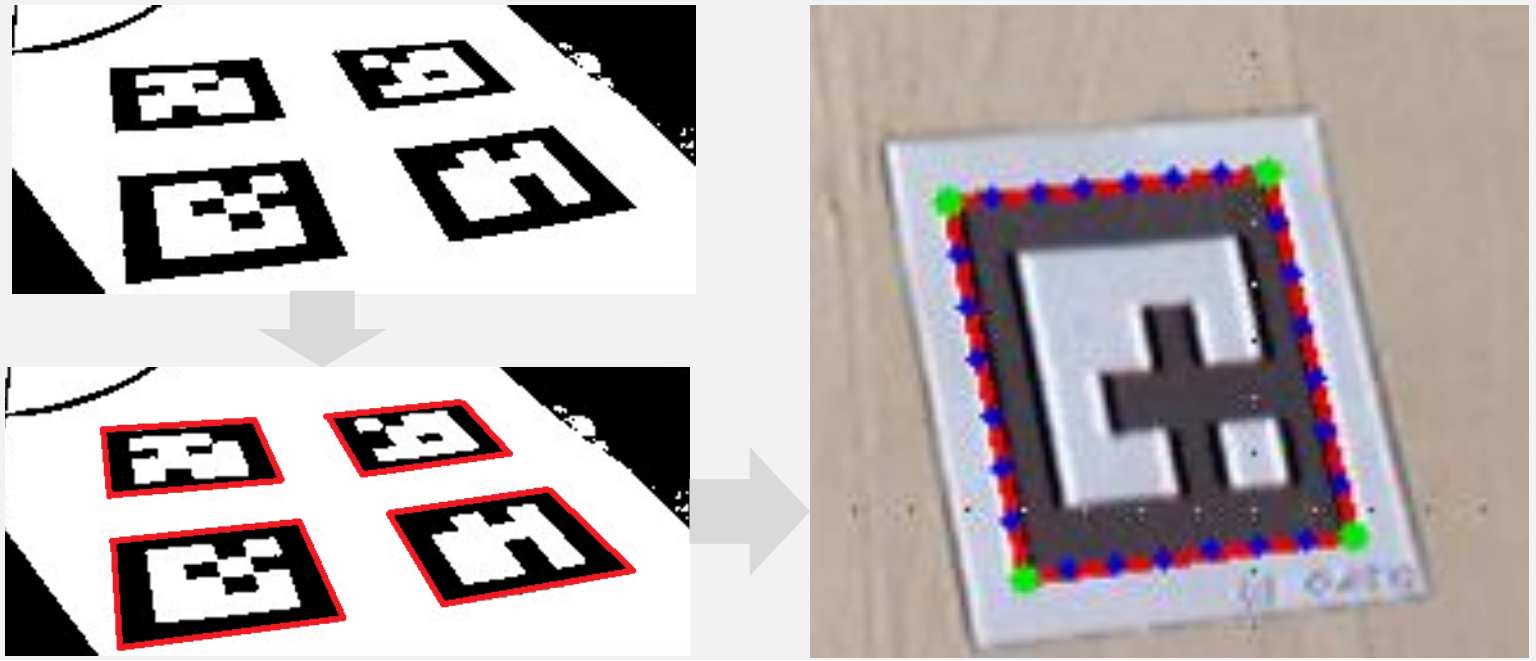
3. Polygonal approximation
   - `cv::approxPoly`



4. Selecting only those with four corners

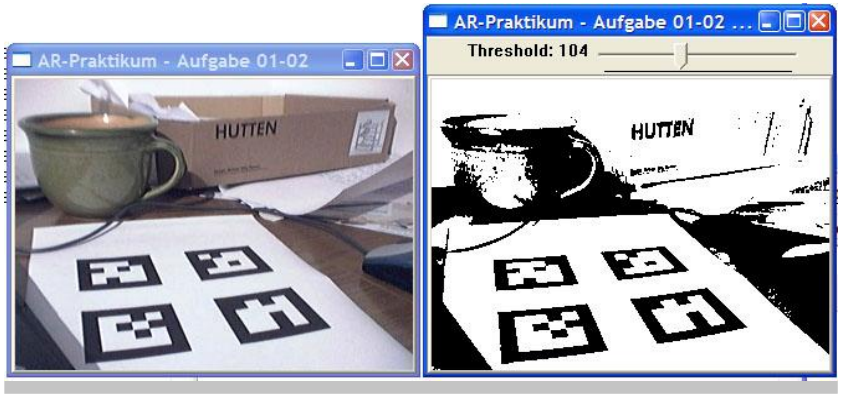


Find marker in 2D



Homework

- Topic
  - Thresholding
    - w/ trackbar
  - Find Contours



Moodle
SoSe 2019->Informatik->Erweiterte Real 950402358 (S19)
https://www.moodle.tum.de/course/view.php?id=46079

Further Reading:

- Siltanen, Sanni. 2012. ***Theory and applications of marker-based augmented reality***. Espoo, VTT. 199 p. + app. 43 p. VTT Science 3. http://www.vtt.fi/inf/pdf/science/2012/S3.pdf
- Owen, Charles B., Fan Xiao, and Paul Middlin. "What is the best fiducial?."*Augmented Reality Toolkit, The First IEEE International Workshop*. IEEE, 2002.
- Fiala, Mark. "Designing highly reliable fiducial markers." *Pattern Analysis and Machine Intelligence, IEEE Transactions on* 32.7 (2010): 1317-1324.

That’s it

Questions?