

Task 1 – Presentation of Image Segmentation Algorithms

Group 1: k-means (Kai, Marc, Stefan)

Group 2: Region growing (Luis, Sasa, Swen)

Tasks (work in groups):

1. Read the documentation about your image segmentation algorithm (k-means or region growing). Search the Web, if you need additional information (many tutorials and code samples are available online).
2. Prepare a short presentation (~10 minutes) about your segmentation algorithm and present it in the next meeting (September 29).
3. Implement a test program: open the image “ball.jpg”, try to segment the red ball using your algorithm and show the results. Measure the computational effort of the algorithm.
4. Test the “red-region” detection with a Webcam.

Additional information: k-means

- test the algorithm with a different number of clusters
- each pixel defines one observation: use $(p_x, p_y, c_0, c_1, c_2)$ as 5-dimensional observation vector
 p_x, p_y : pixel position, c_0, c_1, c_2 : color values of this pixel
- select the cluster center that is most similar to red and mark all pixels of this cluster

Additional information: region growing

- use red pixels as seed points (red>252, green<60, blue<30)
- use as similarity threshold: red>180, green < 160, blue <160
- use a 8-connected neighborhood