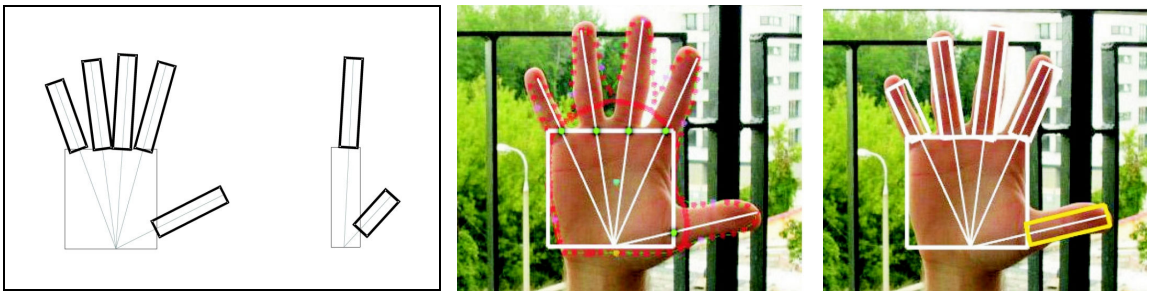
Project no. 5 (2 persons)

Object recognition by the MAP estimation with a 2-D generic object model

To design and implement a MAP estimation for 2-D object recognition, based on a simple (wireframe-like) 2-D generic model of a 3-D object's view. Assume a cycle of following steps: hypothesis prediction, projection to the image plane, matching with image segments, hypothesis update.



Two models: front view, side view. Instance detection: palm and fingers. Model line matching.

Particular steps are required

1. (P1) Provide image input and output functions from / to image files. Perform the edge image detection and line segment detection steps. Show the results in a graphic window (with the original image in the background).
2. (P2) Provide the model observation function – the best match between model edges and a set of edges in the image, with respect to colour image regions. Draw the projected and matched edges in a graphic window (with the original image in the background).
3. (P2) Design and implement the model projection function and the iterative gradient minimisation process required for the MAP estimate.
4. (P1) Make a 2-D wire-frame model design – consider a simple shape and location parameters.
5. (P1,P2) Make test runs. Prepare a final report.