

Robotics

Problem Sheet 10

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Notes

The homework serves as preparation for the exams. It is strongly recommended that you solve them before the given deadline - but you do not need to hand them in. Feel free to work on the problems as a group - this is even recommended.

1 Problem

Given two point-sets $A = \{a_i\}$ and $B = \{b_i\}$ where each a_i corresponds to the spatially transformed, i.e., rotated and translated (with noise), point b_i :

i	A		B	
	x	y	x	y
1	0.00	0.00	2.10	2.71
2	1.00	0.00	3.01	3.72
3	0.00	1.00	1.24	3.79
4	1.00	1.00	1.79	4.56
5	2.00	0.50	3.04	4.63

Use Horn's algorithm to determine the underlying rotation R and translation t .

2 Problem

Suppose the correspondences between the points in A and B from the previous problem are not known. What do the nearest neighbor correspondences in a first step of the Iterative Closest Point (ICP) algorithm look like?