**Assignment 1**

**Iterative Closest Point Algorithm**

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**Theory:**

Let P and Q be a point cloud. And let pi’s and qi’s be the points in P and Q respectively.

where is mean of pi’s and is mean of qi’s

X is a matrix with the columns as ’s and Y is a matrix with the columns as ’s.

Let the singular value decomposition of be as follows

Then,

**Procedure:**

1. Find the correspondences between pi’s and qj’s in P and Q, respectively.
2. Apply the formula and for the correspondences found in the previous step.
3. Repeat steps 1 and 2 until and

**Note:**

The method used for finding correspondences in the assignment is least distance method, i.e., pi’s and qj’s are aligned such that qj corresponding to pi has the least distance for all j=0,1,2,…,N.