一、第一种：根据作业要求写的

points\_pairs\_AB initializion

def ransacMatching(A,B):

threshold initializion

inliers = 4 randomly picked matching points pairs from points\_pairs\_AB

outliers = points\_pairs\_AB - inliers

iteration initializion

k=0

while k<iteration:

newinliers = empty set

homography = get the homography from 4 randomly picked matching points pairs in inliers

for AB in outliers:

if homography (AB) < threshold:

Add AB to newinliers

Delete AB from outliers

if newinliers = empty set:

break

else:

inliers = inliers + newinliers

k=k+1

return homography

二、Follow up 1: How to test all the other outliers.

for AB in outliers:

if homography (AB) < threshold:

Add AB to newinliers

Delete AB from outliers

三、第二种，根据维基内容改编

Given:

data – a set of observed data points

model – a model that can be fitted to data points

n – the minimum number of data values required to fit the model

k – the maximum number of iterations allowed in the algorithm

t – a threshold value for determining when a data point fits a model

d – the number of close data values required to assert that a model fits well to data

Return:

bestfit – model parameters which best fit the data (or nul if no good model is found)

n=4

iterations = 0

bestfit = nul

besterr = something really large

while iterations < k {

maybeinliers = n randomly selected values from data

maybemodel = model parameters fitted to maybeinliers

alsoinliers = empty set

for every point in data not in maybeinliers {

if point fits maybemodel with an error smaller than t

add point to alsoinliers

}

if the number of elements in alsoinliers is > d {

% this implies that we may have found a good model

% now test how good it is

bettermodel = model parameters fitted to all points in maybeinliers and alsoinliers

thiserr = a measure of how well model fits these points

if thiserr < besterr {

bestfit = bettermodel

besterr = thiserr

}

}

increment iterations

}

return bestfit

四、Follow up 2

参数k（迭代次数）的理论推断。

用p表示一些迭代过程中从数据集内随机选取出的点均为局内点的概率；

用w表示每次从数据集中选取一个局内点的概率，如下式所示：

w = 局内点的数目 / 数据集的数目 ，w的值未知。

假设估计模型需要选定n个点，wn是所有n个点均为局内点的概率；

1−wn是n个点中至少有一个点为局外点的概率，此时表明我们从数据集中估计出了一个不好的模型。

(1−wn)k表示算法永远都不会选择到n个点均为局内点的概率，它和1-p相同。因此，

1−p=(1−wn)k

我们对上式的两边取对数，得出:

k=log(1−p)/log(1−wn)