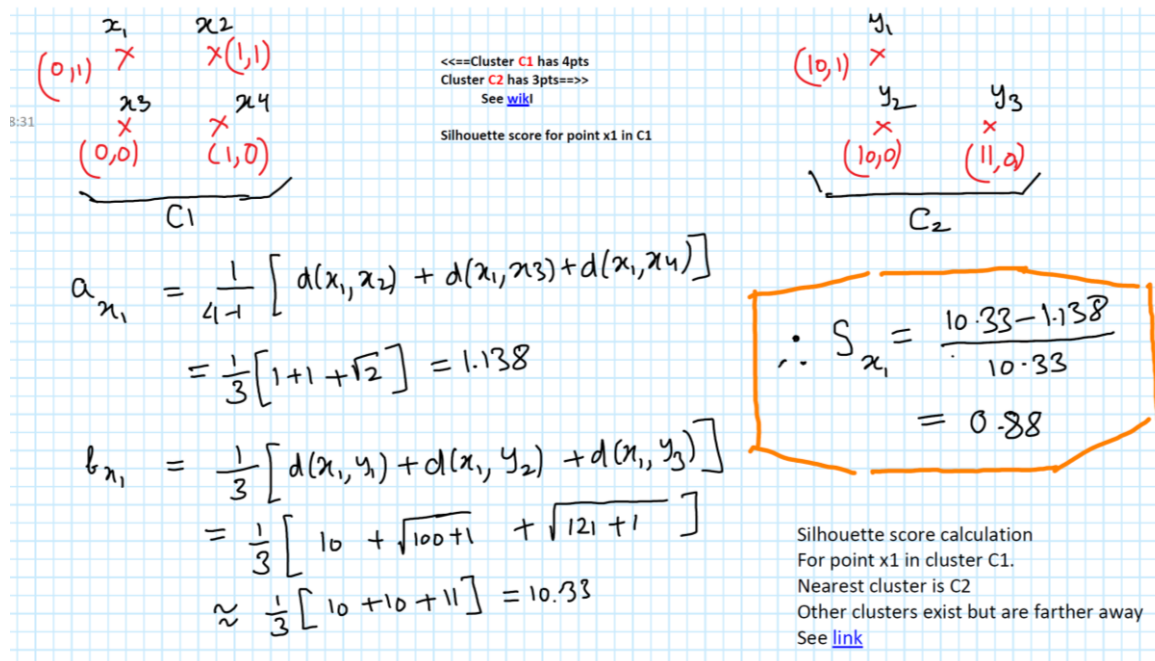


## Silhouette Score Calculations

Last amended: 01/06/2020

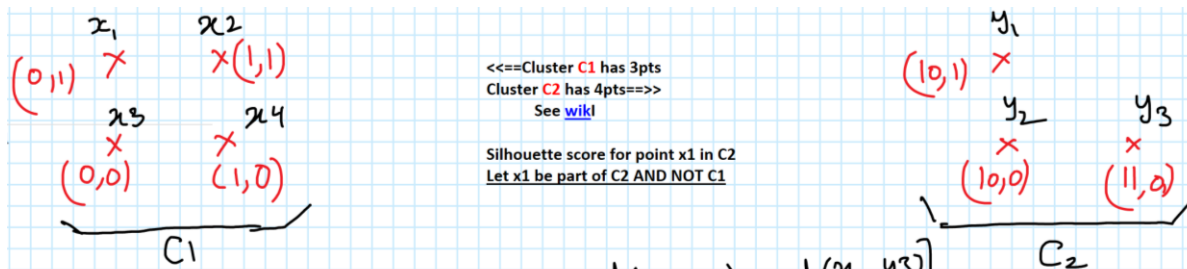
My folder: D:\data\OneDrive\Documents\cluster\_analysis

There are two clusters, C1 and C2. Silhouette score is calculated for each point in the two clusters. We show a sample calculation for point x1, part of cluster C1. The IInd part below shows value of silhouette score if x1 is considered part of cluster C2 instead of C1.



### Part II

What if X1 is considered part of wrong cluster that is of C2 and not of C1. Silhouette score is negative as the following calculation shows.



$$a_{x_1} = \frac{1}{(4-1)} [d(x_1, y_1) + d(x_1, y_2) + d(x_1, y_3)]$$

$$b_{x_1} = \frac{1}{3} [d(x_1, x_2) + d(x_1, x_3) + d(x_1, x_4)]$$

$$S_{x_1} = \frac{[b_{x_1} - a_{x_1}]}{\max(b_{x_1}, a_{x_1})}$$

$$= \text{-ve value}$$

as  $a_{x_1} > b_{x_1}$

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