

Hausdorff Distance

- A means of determining the resemblance of one point set to another
- Examines the fraction of points in one set that lie near points in the other set

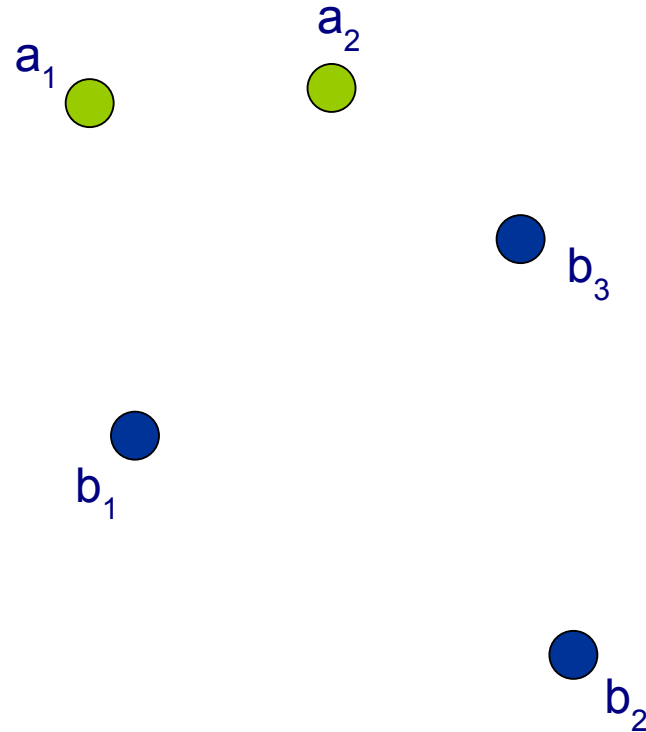
$$H(A, B) = \max \{h(A, B), h(B, A)\}$$

$$h(A, B) = \max_{a \in A} \left\{ \min_{b \in B} \{d(a, b)\} \right\}$$


Hausdorff Distance

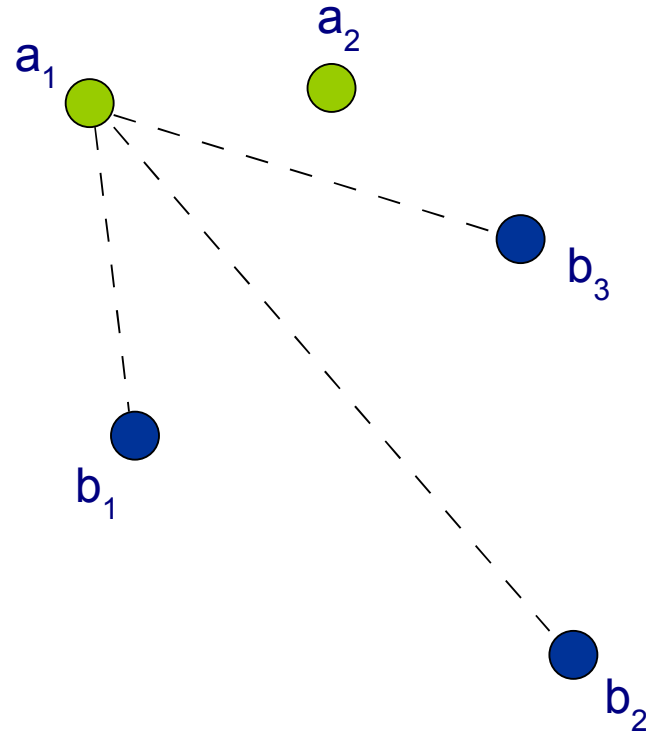
Example

Given two sets of points
A and B, find $h(A,B)$



Example

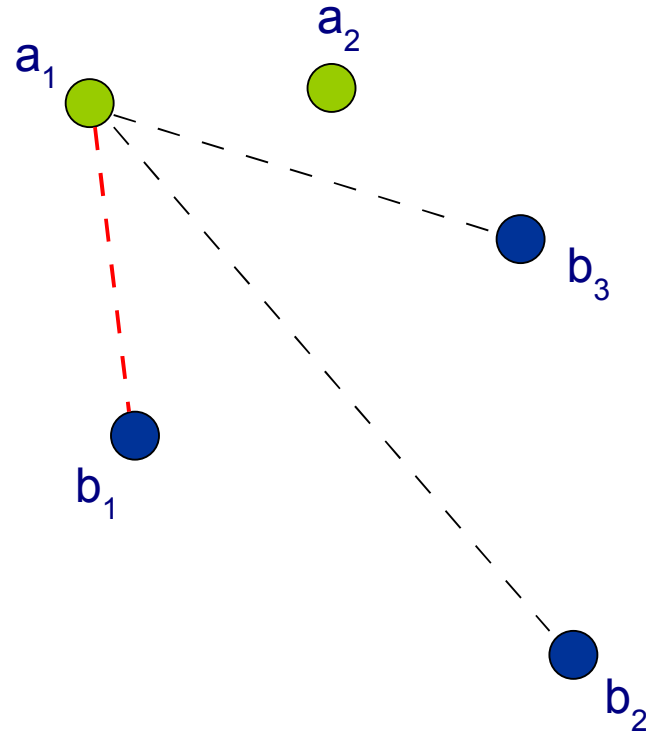
Compute the distance
between a_1 and each b_j



Hausdorff Distance

Example

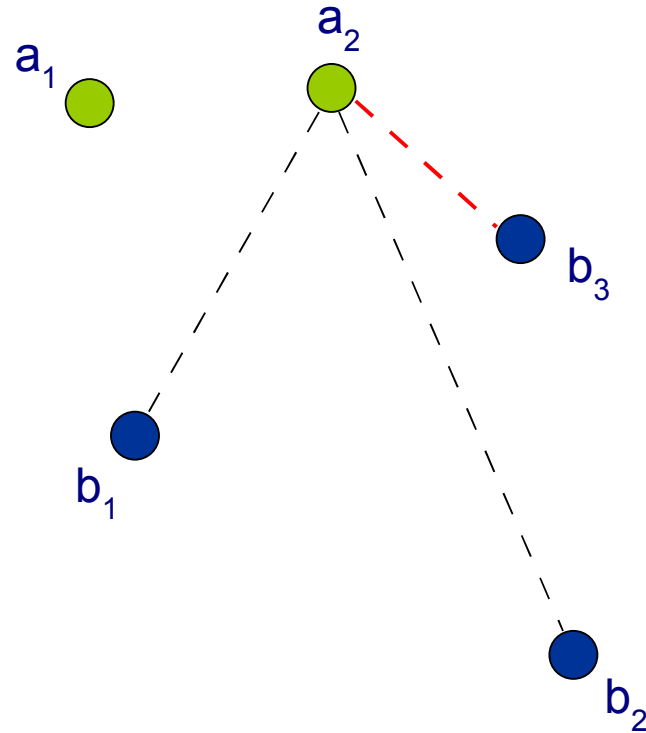
Keep the shortest



Hausdorff Distance

Example

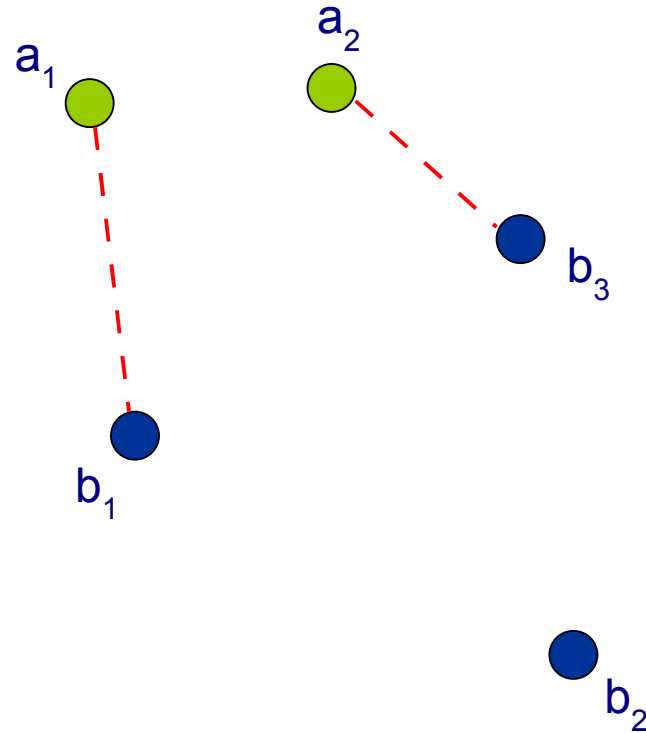
Do the same for a_2



Hausdorff Distance

Example

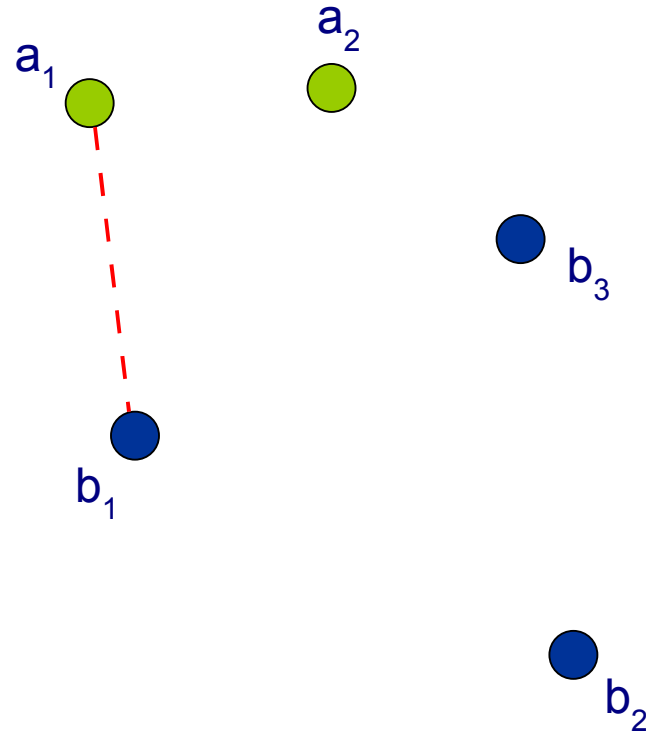
Find the largest of these two distances



Hausdorff Distance

Example

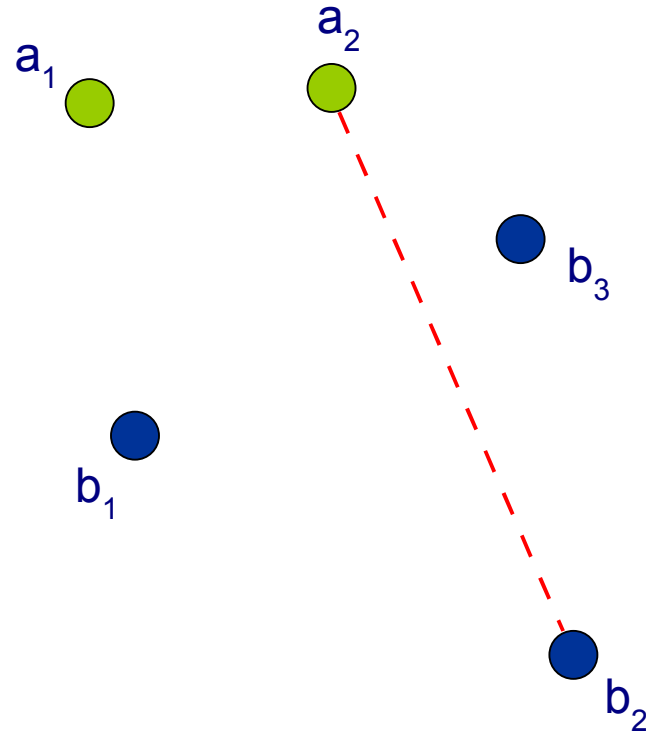
This is $h(A,B)$



Hausdorff Distance

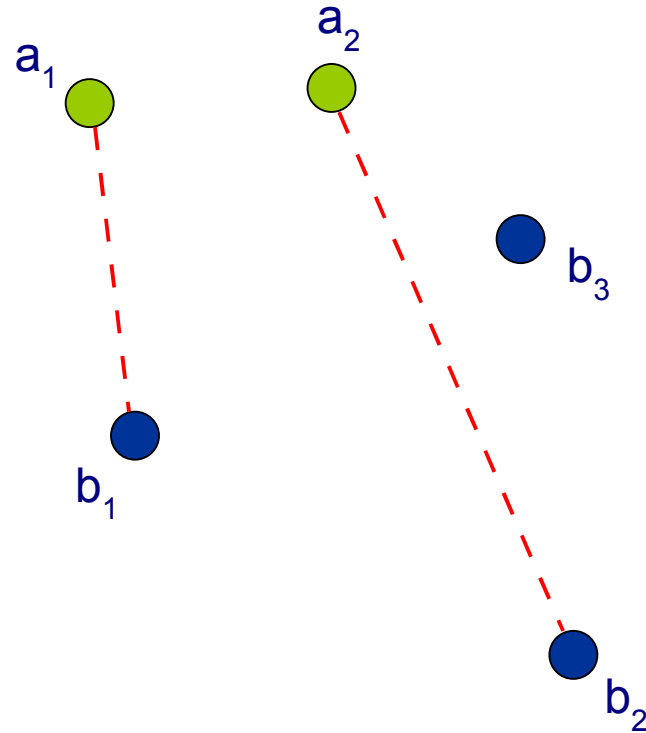
Example

This is $h(B,A)$



Example

$$H(A,B) = \max(h(A,B), h(B,A))$$



Hausdorff Distance

Example

This is $H(A,B)$

