Project IV-Within Distance

Assume distance of two instances x and c is defined as $D^d(x,c) = \|x-c\|_d$ as the d-degree norm of their difference vector. For a set of instances $X = \{x_i\}$, a representor c can be defined with a deviation vector $\boldsymbol{V^d}(\boldsymbol{c})$ such that its $\boldsymbol{i}^{\text{th}}$ element is equal to the distance of x_i from $\boldsymbol{c}$, i.e. $V_i^d(c) = D_d(x_i, c)$. Then $e^{d,d'}(X,c)$ as deviation of X respect to c is the norm of $V^d(c)$ with degree d'. Both ***d'*** and ***d*** can be from any degrees of 0, 1, 2 or ∞. Then, given a set of instances X (dataset of Iris can be downloaded from UCI repository), find the representator c of X to minimize deviation vector associated with each pair of degrees d and d' from the following set:

d	d'
1	2
1	∞
2	0
2	1
2	∞
∞	0
∞	1
∞	2

With the best wishes
M. Taheri