k-Means Clustering

L 39

Goal: To investigate clustering as a way to perform segmentation, and the k-means method in particular.

k-means is a very simple clustering method. The dataset is represented as a scatter plot in some **feature space.**
For example, a pixel could be represented by:

- **intensity**
- **gradient magnitude**
- **Laplacian**

Or, for datasets that have multiple images:

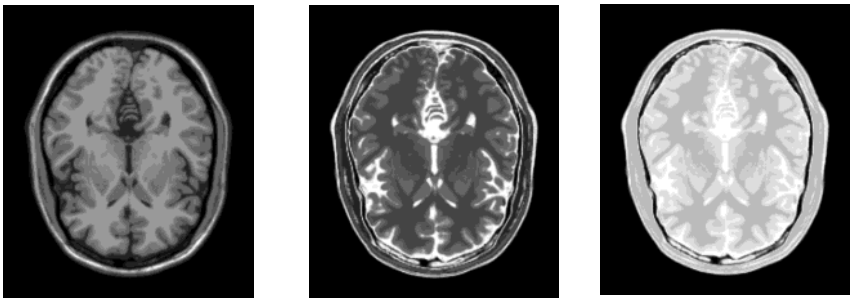
- **T1**
- **T2**
- **PD**

The user specifies ***k,*** the number of clusters he/she wants.
Then here's the k-means algorithm:

1. **randomly choose *k* regressors as prototypes**
2. **assign each scatter point to its nearest prototype**
3. **recalculate new prototypes (the mean of its members)**
4. **if the prototypes changed significantly, to to step 2**

Example: BrainWeb MRI data

T1 T2 PD



(slick MatLab demo)