9/9/19

EE5601: Representation Learning

- Course Outline
- References
- Motivation
- K-means algorithm/clustering

Notation: • $\{\underline{x}_i\}_{i=1}^{N}$; $\underline{x}_i \in \mathbb{R}^d$

• K clusters $(K \ll N)$

$\rightarrow \mathcal{S} = \{S_1, \ldots S_K\}$

$$W = \sum_{i=1}^{K} \frac{1}{|S_i|} \sum_{\underline{x} \in S_i} \| \underline{x} - \underline{\mu}_i \|_2^2$$

Find: $\arg\min_{\mathcal{S}} W = \mathcal{S}^*$