Last time:

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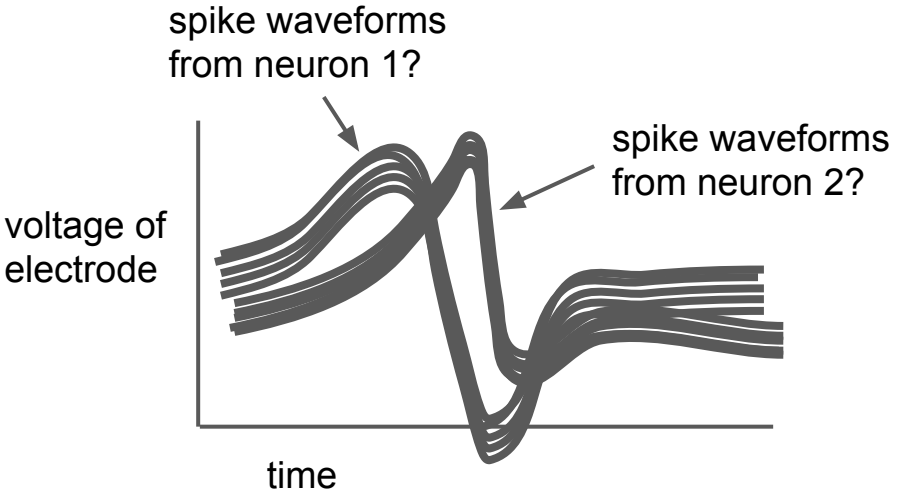
- identifying temporal templates with PCA



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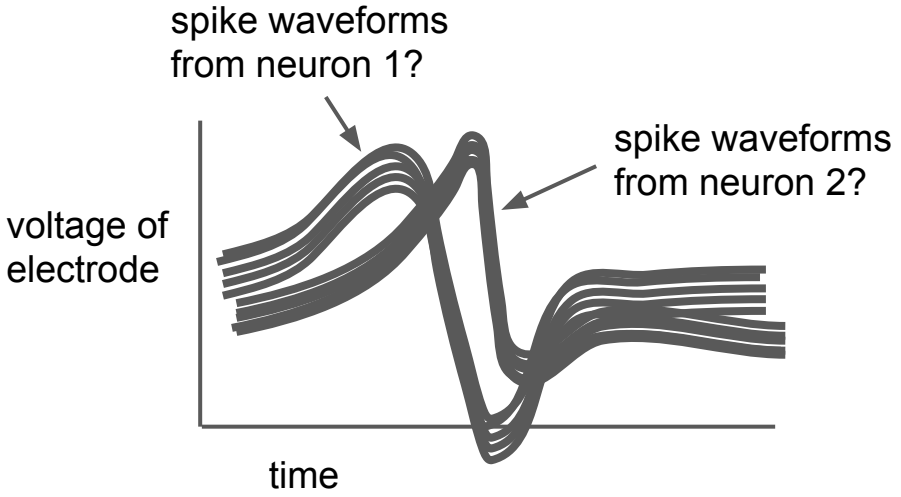
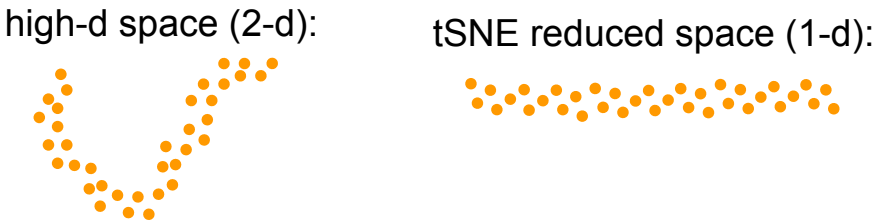


- using tSNE for nonlinear dimensionality reduction



Today:

- finish up on-your-own script with tSNE, increasing the number of clusters

- Clustering: k-means algorithm

Finish Colab notebook from last time (Section 3): varying number of clusters and applying tSNE.

On your own. 15 minutes!

Clustering

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- main problem: what is a cluster?
  → many different definitions of cluster
  → many different algorithms
- second problem: how many clusters?

k-means algorithm

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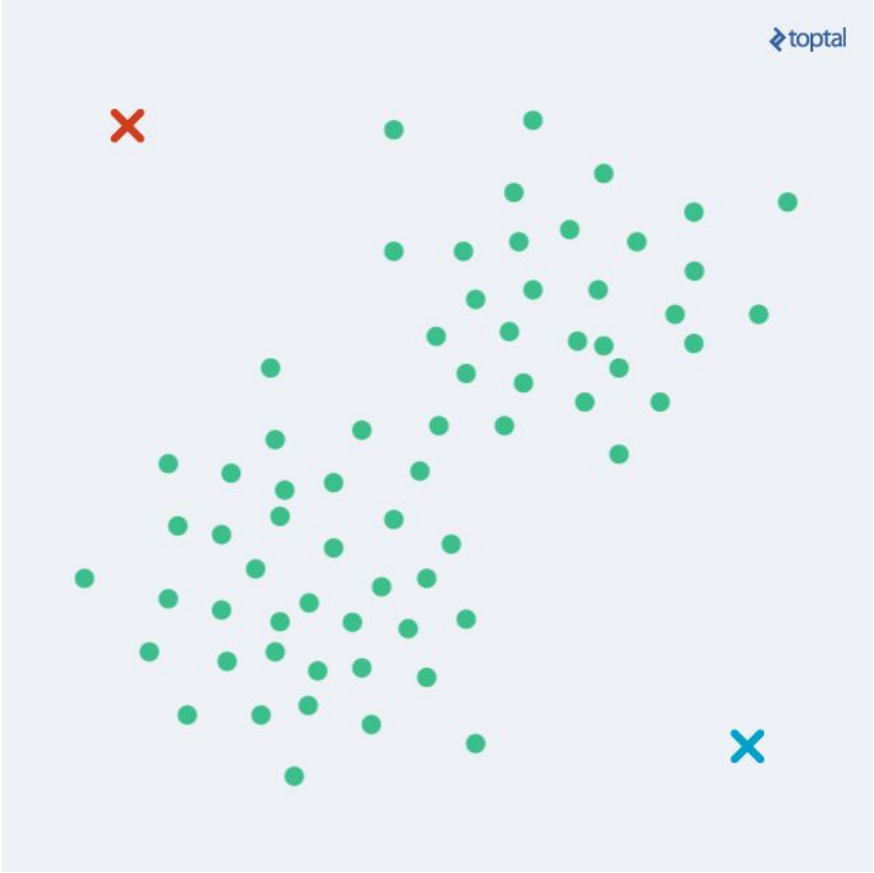
  - each cluster has a mean ← parameters
  - each data point belongs to cluster with nearest mean

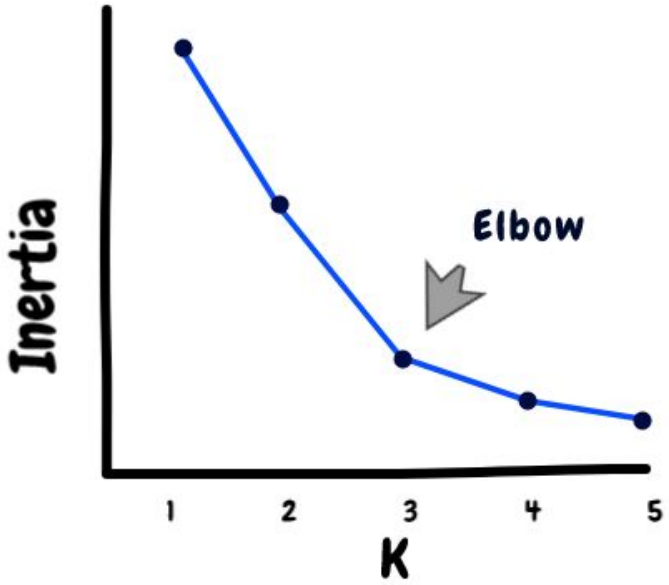
- the *k* means are identified via an alternating procedure:
  - start with initial means as random
  - repeat:
    - step 1: assign data points to cluster
    - step 2: re-compute means based on cluster's updated members

k-means algorithm



How to choose the number of clusters, *k*?

- plot “intertia” --- sum of within-cluster distances between the cluster mean and cluster’s members



Note: Always visualize the chosen clusters with PCA/tSNE!

k means algorithm in Python

Work on Colab notebooks together.