

Nama : Ratika Dwi Anggraini

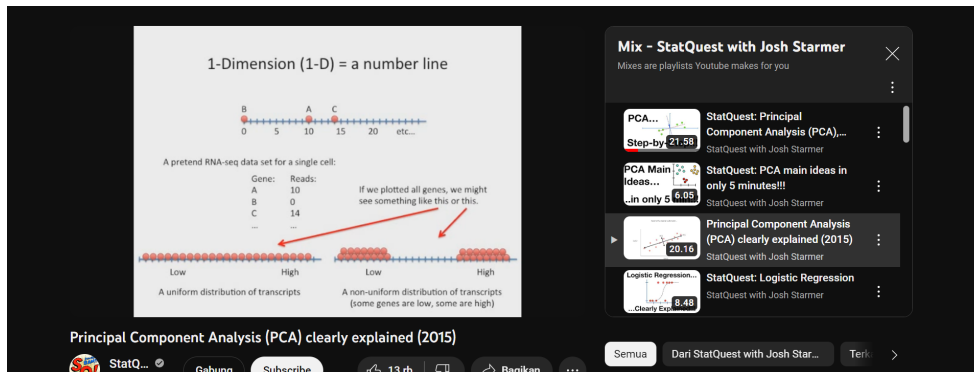
NIM : 1103201250

Understanding 3 Link StatQuest

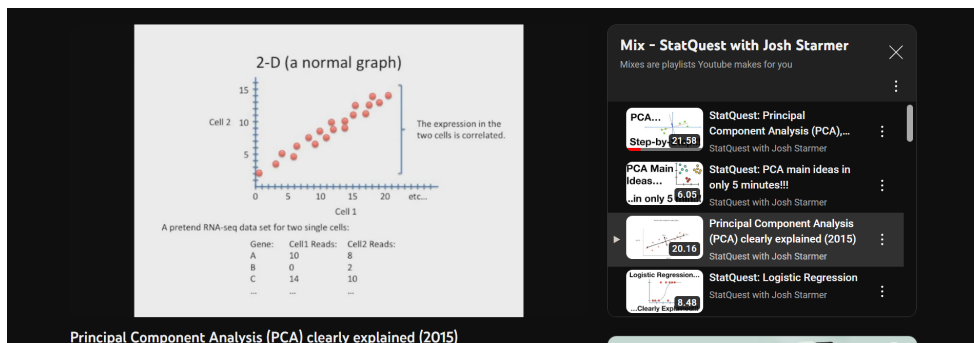
Youtube: Josh Starmer

1. Principal Component Analysis (PCA)

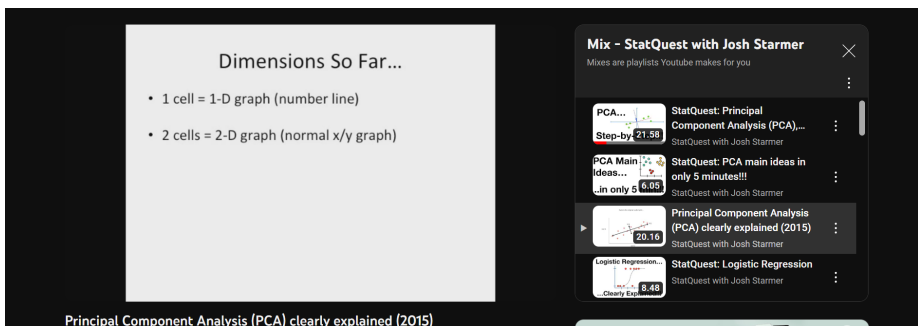
- PCA 1-D



- PCA 2-D



- Dimensi yang diketahui



- What does all of this have to do with PCA ?

What does all of this have to do with PCA?

- PCA takes a dataset with a lot of dimensions (i.e. lots of cells) and flattens it to 2 or 3 dimensions so we can look at it.
 - It tries to find a meaningful way to flatten the data by focusing on the things that are different between cells. (much, much more on this later)
- This is sort of like flattening a Z-stack of microscope images to make a single 2-D image for publication.

Principal Component Analysis (PCA) clearly explained (2015)

- How to identify key genes

How to identify key genes.

See how the cells are spread out left/right, above/below?

If we wanted to find out which genes had a big influence in putting dermal cells on the left and neural cells on the right, we could look at the influence scores in PC1.

Principal Component Analysis (PCA) clearly explained (2015)

2. StatQuest: K-nearest neighbors

- The K-nearest Neighbors Algorithm

The K-Nearest Neighbors Algorithm

- A super simple way classify data.

If you already had a lot of data that defined these cell types...

Stem Cells

Blood Vessel Cells

Fat Cells

We could use it to decide which type of cell this guy is...

0:39 / 5:30 • K-NN ove...

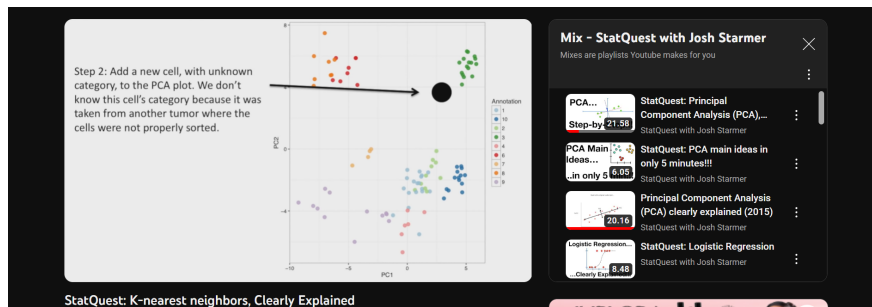
StatQuest: K-nearest neighbors, Clearly Explained

- Star with dataset with known categories

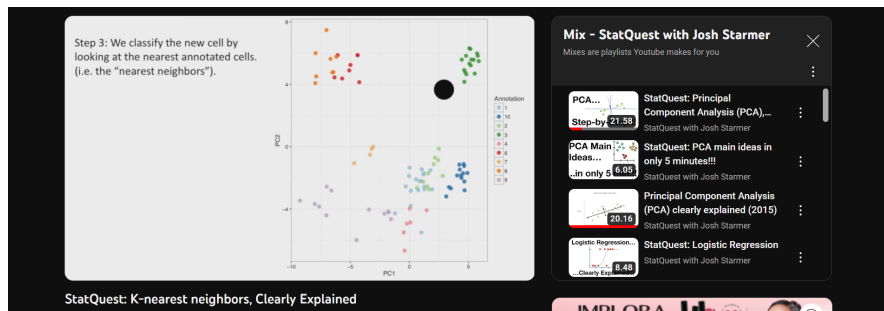
Step 1: Start with a dataset with known categories. In this case, we have different cell types from an intestinal tumor. Then cluster that data. In this case, we used PCA.

StatQuest: K-nearest neighbors, Clearly Explained

- Menambahkan cell baru

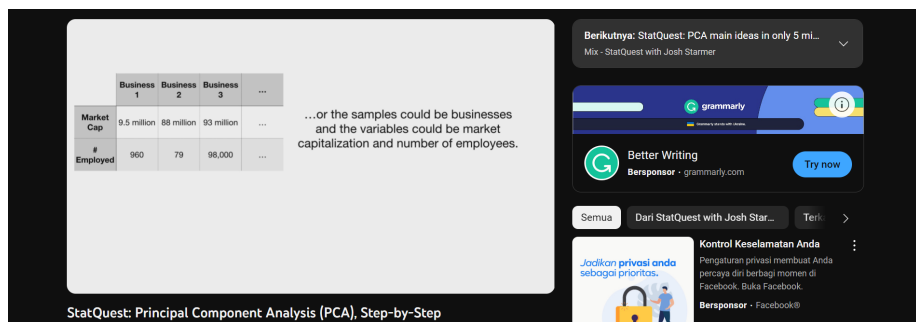


- Klasifikasi cell baru dengan cell terdekatnya

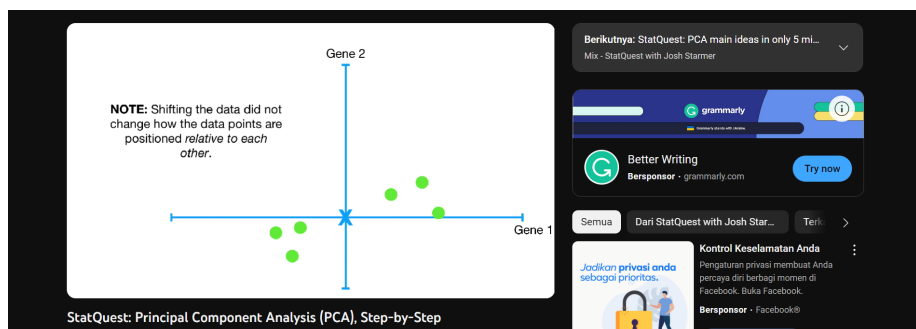


3. Principal Component Analisis (PCA)

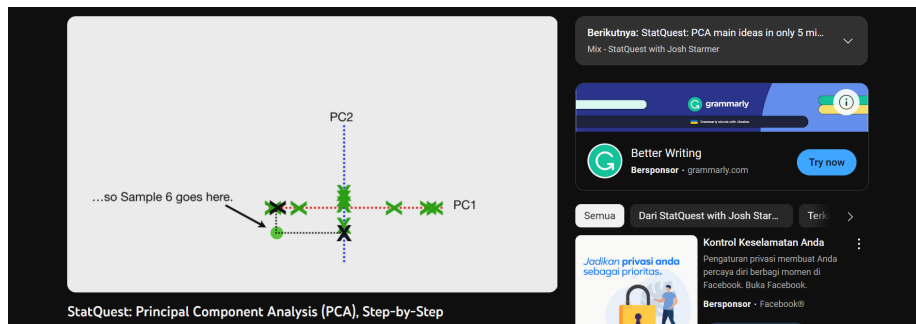
- Conceptual motivation for PCA



- Worked out for 2-dimension data



- Drawing the PCA graph



- PCA worked for 3 dimensiona; data

