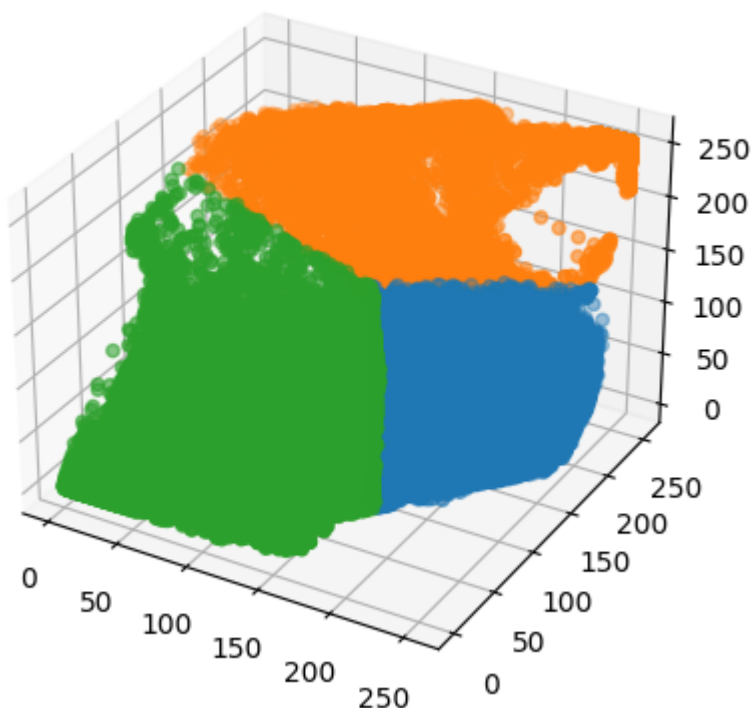


Week-2 Report

Q: Consider the image corresponding to $k = 3$ given in the book. The three major clusters are the blue part, yellow part, and black part. Are you getting the same/similar results as those of book ? You can see that the face of the kid has been clustered along with the yellow pixels while the face of the cartoon figure has been clustered with the blue sky. Can you mathematically explain this result ? You can show the 3D plot of the distribution of the pixel intensity (RGB) by taking a small section of pixels from the face of both the figures and from the Yellow part in the original image for supporting your answer.

A: Yes, I am getting similar results as those of book.



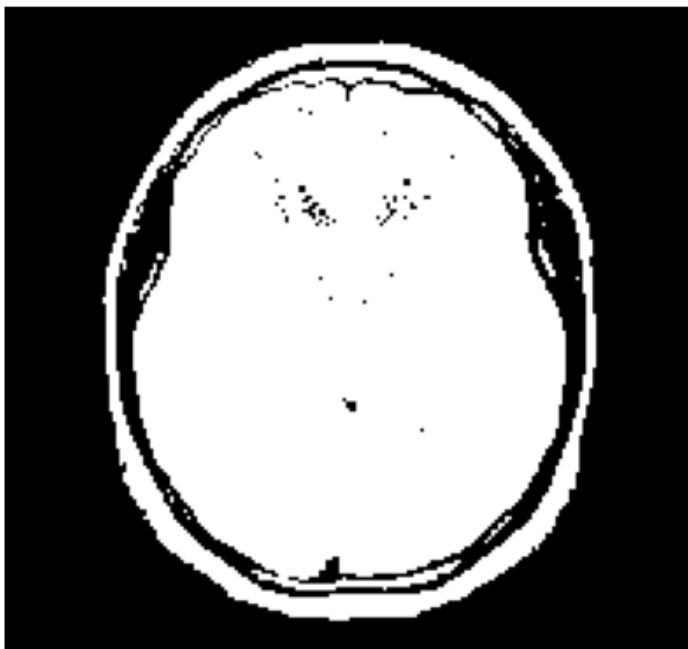
This is the 3D plot of the distribution of the pixel intensity of all 3 clusters. We can see that the clustering is intuitively correct so our image has been correctly segmented. Another thing we can say is the norm of yellow point and the skin coloured point is lesser than other colours (blue, brown) so the face of the boy is clustered with the yellow colour.

Q: Look at the segmented T-shirt of the boy. The lining pattern is preserved while clustering. Don't you think that the pixels of blue lines and white lines (in the original image) are close enough to be clustered together. What could be the reason for the preservation of lining pattern ?

A: But the RGB vector or data point in the 3D space will be completely different as while strips will have all 3 values large whereas blue strips will have only B value large others will be low so no scope of being clustered together.

Q: Logic for Masking

A: Firstly by we make a binary image from the original one by comparing the pixel intensity of each pixel with the image's mean intensity value and if it's less than that then we assign the value 0 to it otherwise 1



But as we can see in this image the skull is still present in it so now we need to remove the skull in some automated way

Observation: skull is a fully connected component in this image so if we can find some pixel inside the skull then we can recursively eliminate the skull by calling the same function for their neighbours (DFS)

After removing skull:



After that we can apply k means algo for segmentation and after that I got the segmented image like this,

