

***DIP Mini project***

# ***Color-Based Segmentation Using K-Means Clustering***

segment colors in an automated fashion using  
k-means clustering.

# ***Our team***



***Shridharshan v.a.k***  
***(RA2011003010180)***

CSE – C1

***Gunnu Jairaj***  
***(RA2011003010171)***

CSE – C1



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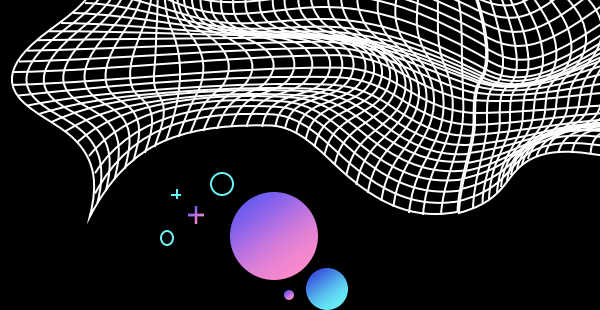
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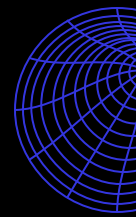
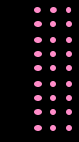

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# ***Abstract***

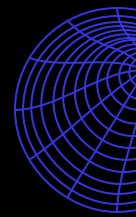



Clustering is a way to separate groups of objects. K-means clustering treats each object as having a location in space. It finds partitions such that objects within each cluster are as close to each other as possible, and as far from objects in other clusters as possible. You can use the `imsegkmeans` function to separate image pixels by value into clusters within a color space. This example performs k-means clustering of an image in the RGB and L\*a\*b\* color spaces to show how using different color spaces can improve segmentation results.






# ***Problem statement***

In this project we'll be trying to separate the blue nuclei from an image of tissue stained with hemotoxylin and eosin (H&E). We'll be classifying the RGB colors by K-means clustering and then classify them in a\*b\* color space. We then create image which is segmented into colors finally giving out the resulted blue<sup>+</sup> nuclei.



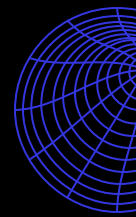




# *Objective*



The objective of this project is to apply K-means clustering and segment the given image in RGB format and then convert it into a\*b\* segmentation then classify the image and produce the required image as output, in this case we apply k-means clustering to separate blue nuclei from an image of tissue stained with hemotoxylin and eosin (H&E).



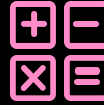
# ***Scope of project***

***Classify Colors in RGB  
Color Space Using K-  
Means Clustering***

***Classify Colors in  $a^*b^*$   
Space Using K-Means  
Clustering***

***Convert Image from  
RGB Color Space to  
 $L^*a^*b^*$  Color Space***

***Create Images that  
Segment H&E Image by  
Color***



# ***Matlab view***

H&E Image

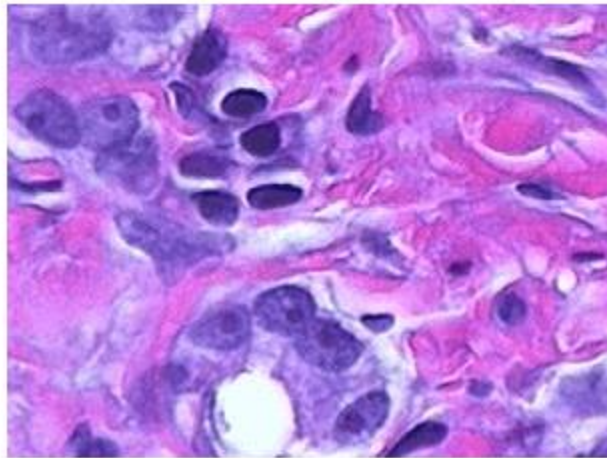
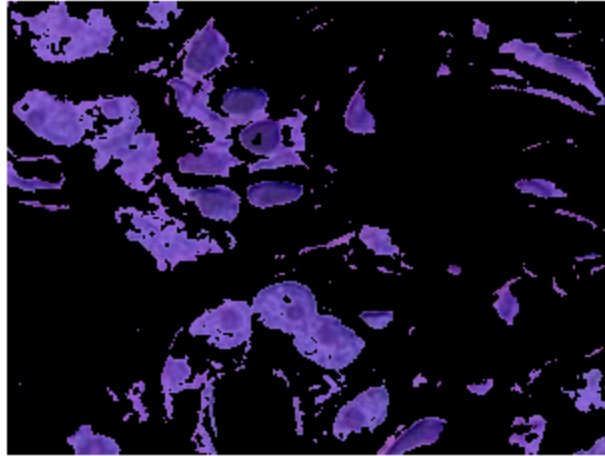


Image courtesy of Alan Partin, Johns Hopkins University





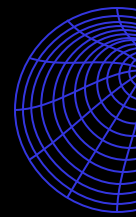


# ***Matlab view***

Blue Nuclei





# *Reference*

- 
- Understanding Color Spaces and Color Space Conversion by matlab.
  - Image Processing Toolbox : Perform image processing, visualization, and analysis by matlab.
  - Color-Based Segmentation Using the L\*a\*b\* Color Space by matlab.
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***Thanks!***