FACULTY OF ENGINEERING
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Computer Vision Task 4 Report

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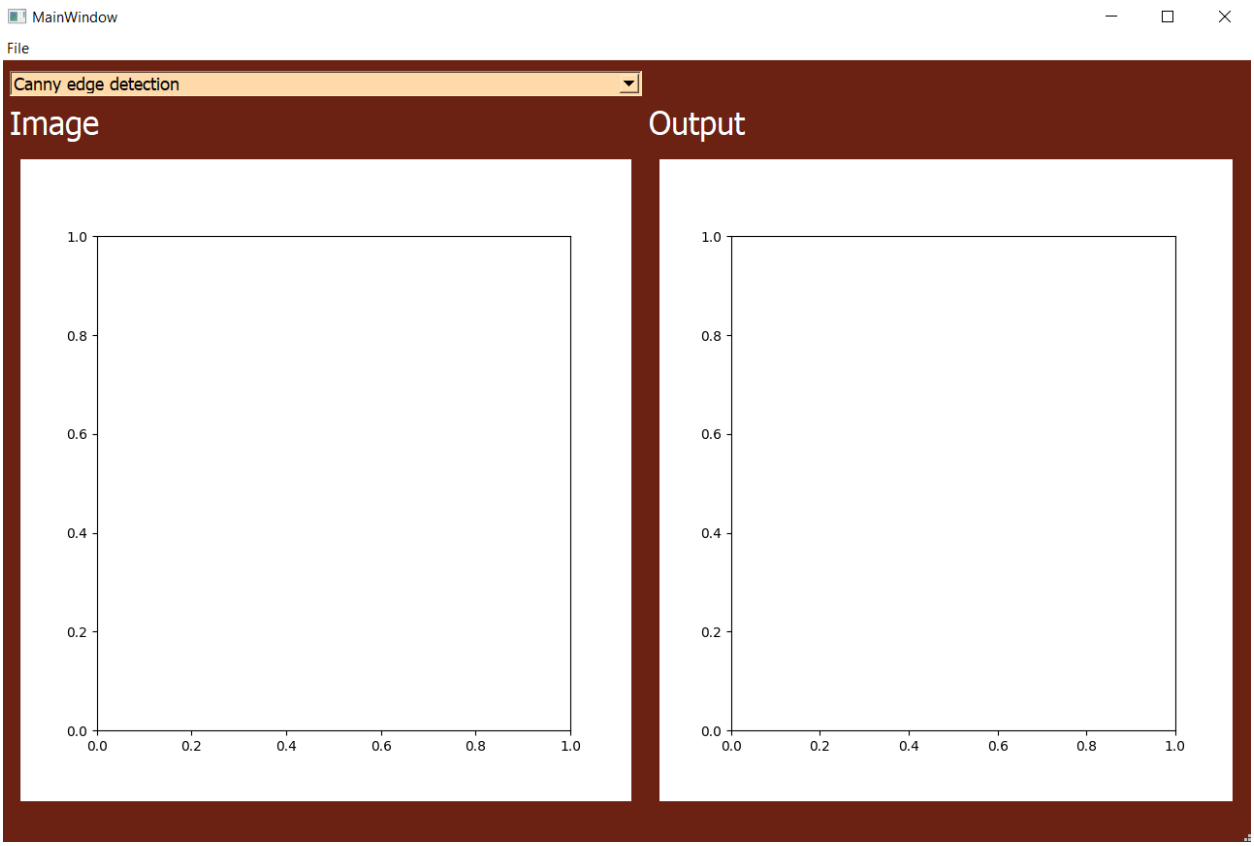
● Contents:

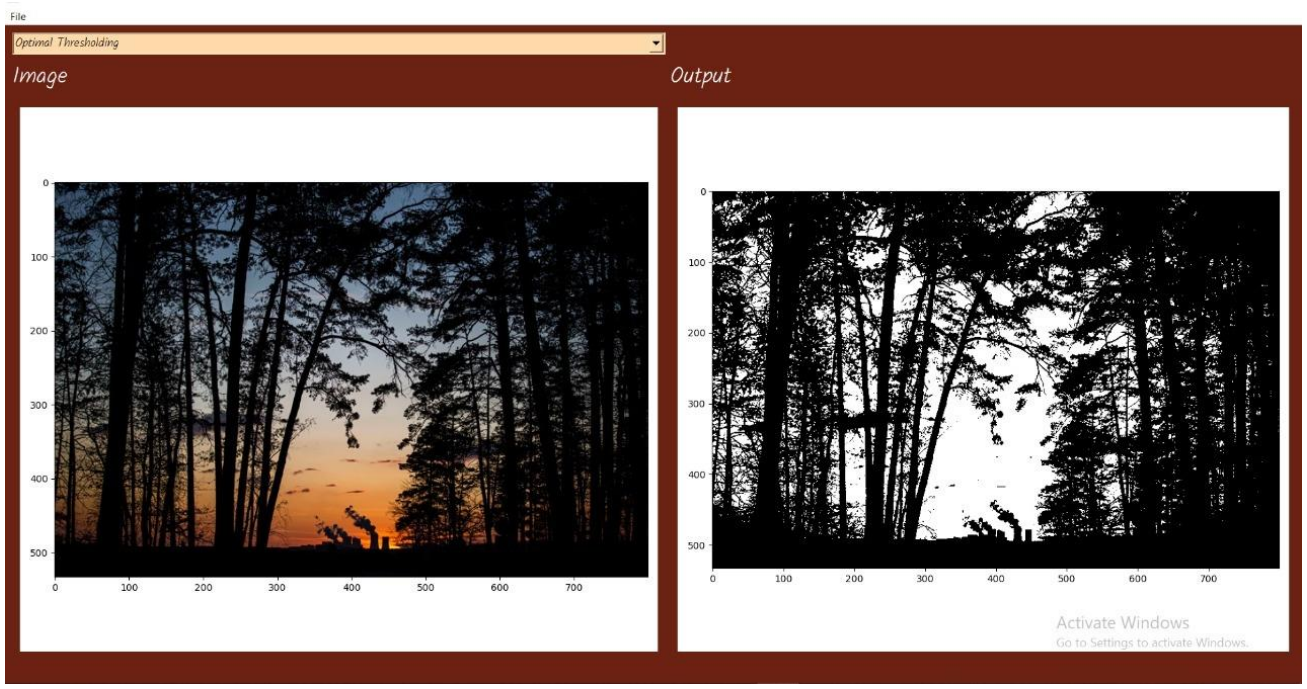
1- How to use the GUI:



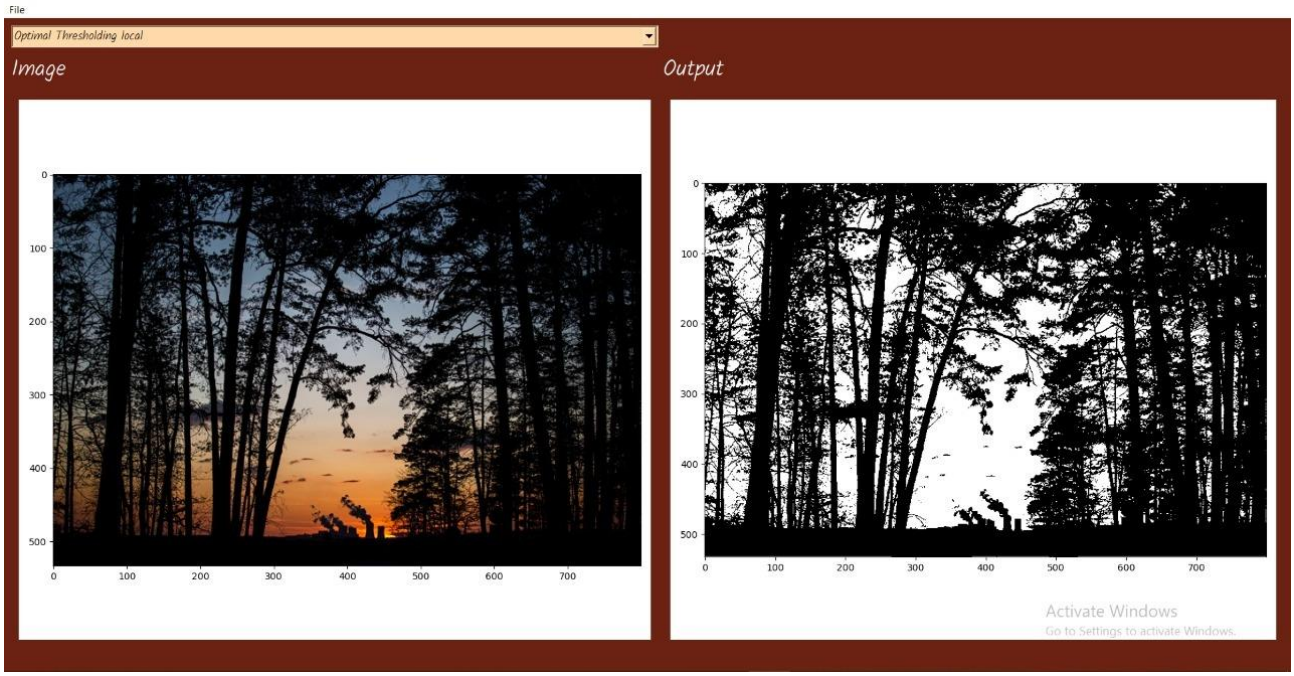
- Click on File from the menu bar, you will see one option, Load img.
    - Click on Load img to open an image in the image area.
    - You can Load both gray scale images and colored images.
- Click on the combo box and pick any of the tasks required:
    - The tasks are applied on Image and the output is displayed on the Output area.

2- Segmentation by Optimal thresholding

- The result of applying optimal thresholding (global).

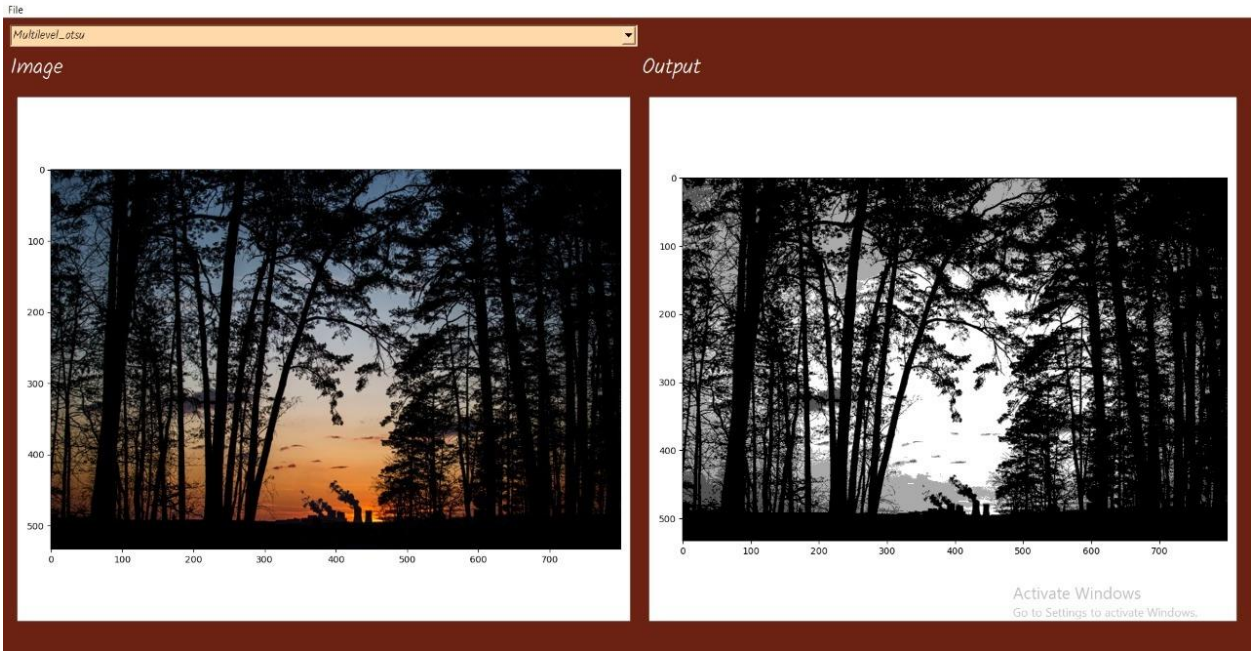


- The result of applying optimal thresholding (local). Window size = 130 pixels

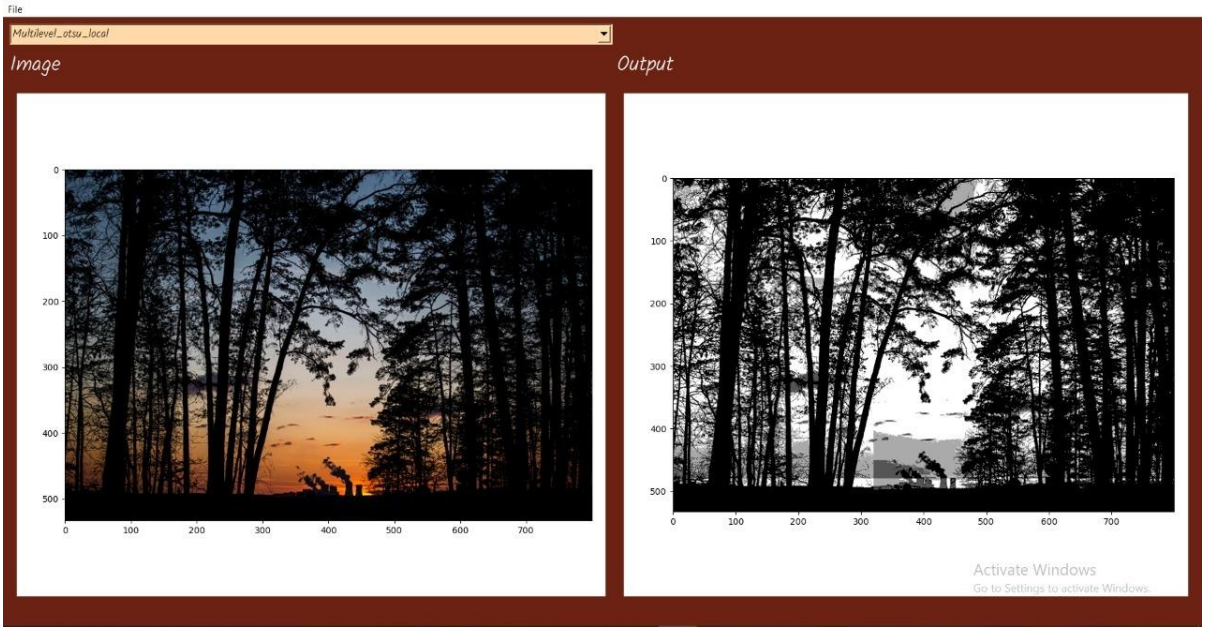


3- Segmentation by Otsu MultiLevel

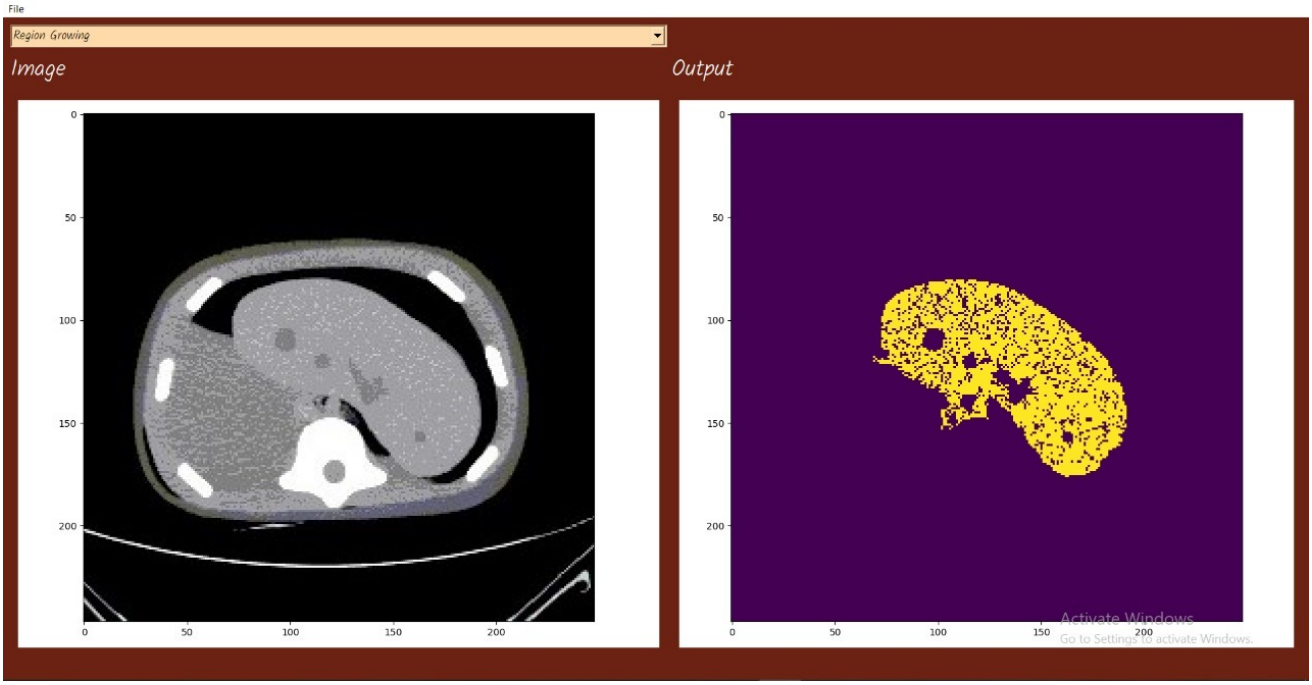
- The Otsu thresholding (Multilevel) (global).

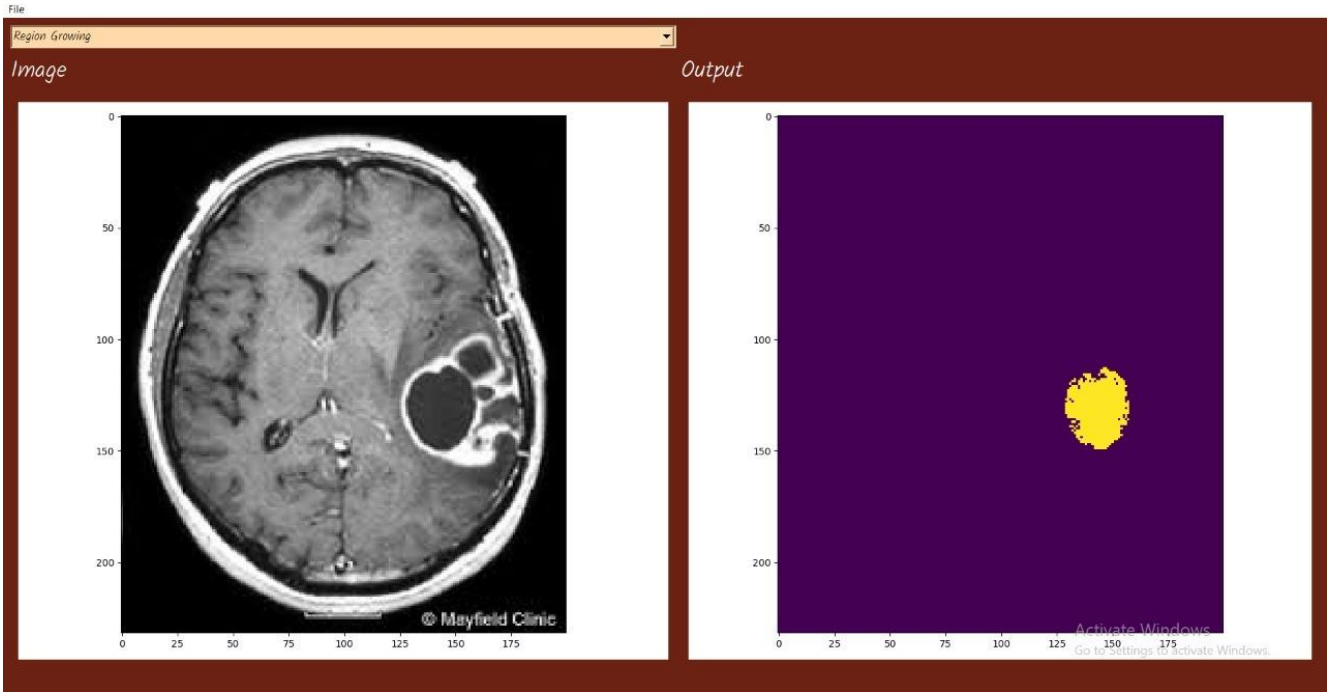


- The Otsu thresholding (Multilevel) (Local).
  Since the algorithm is computationally expensive we picked a window size of 150 pixels to speed up the calculations.



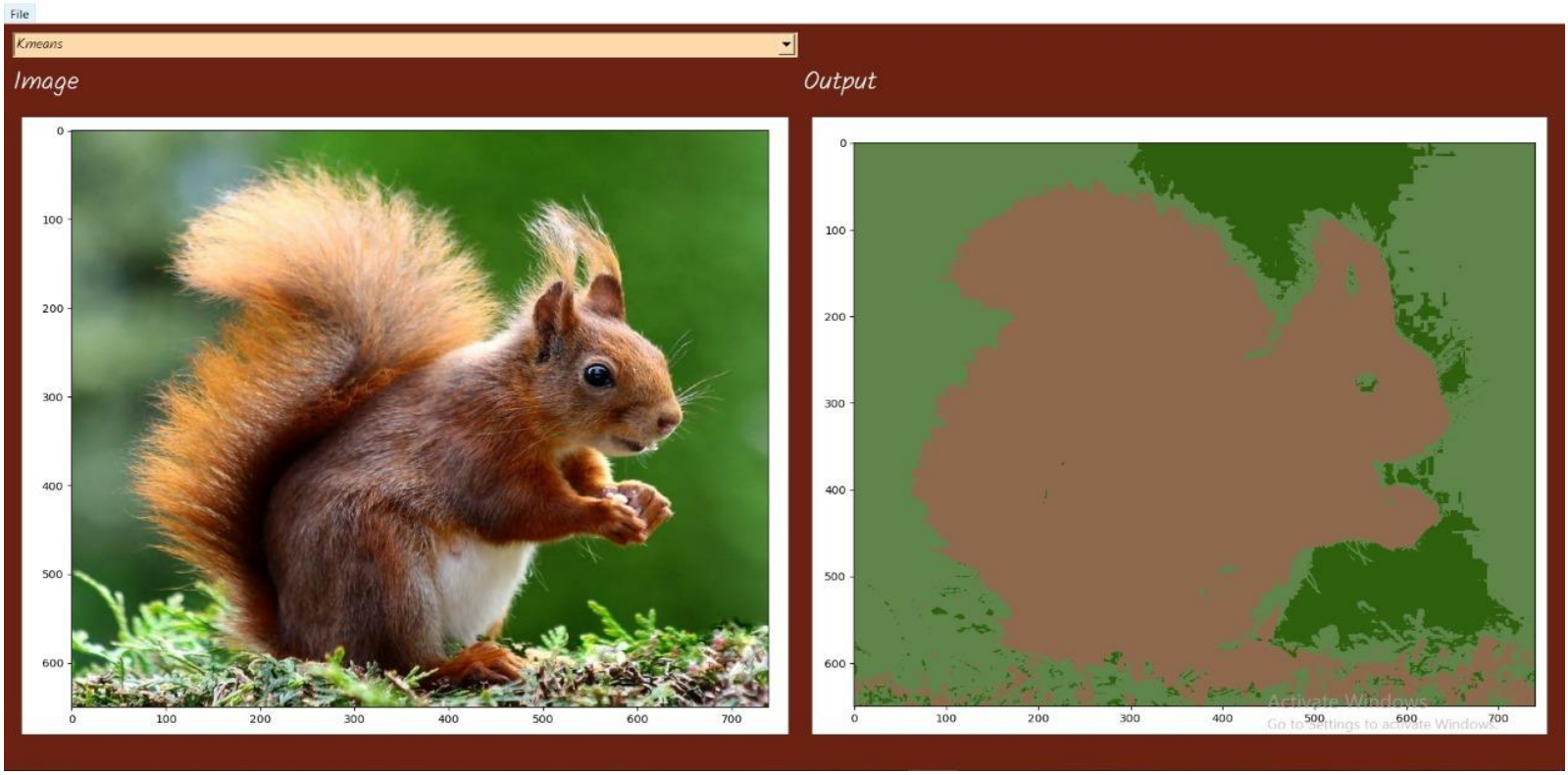
4- Segmentation using Region Growing





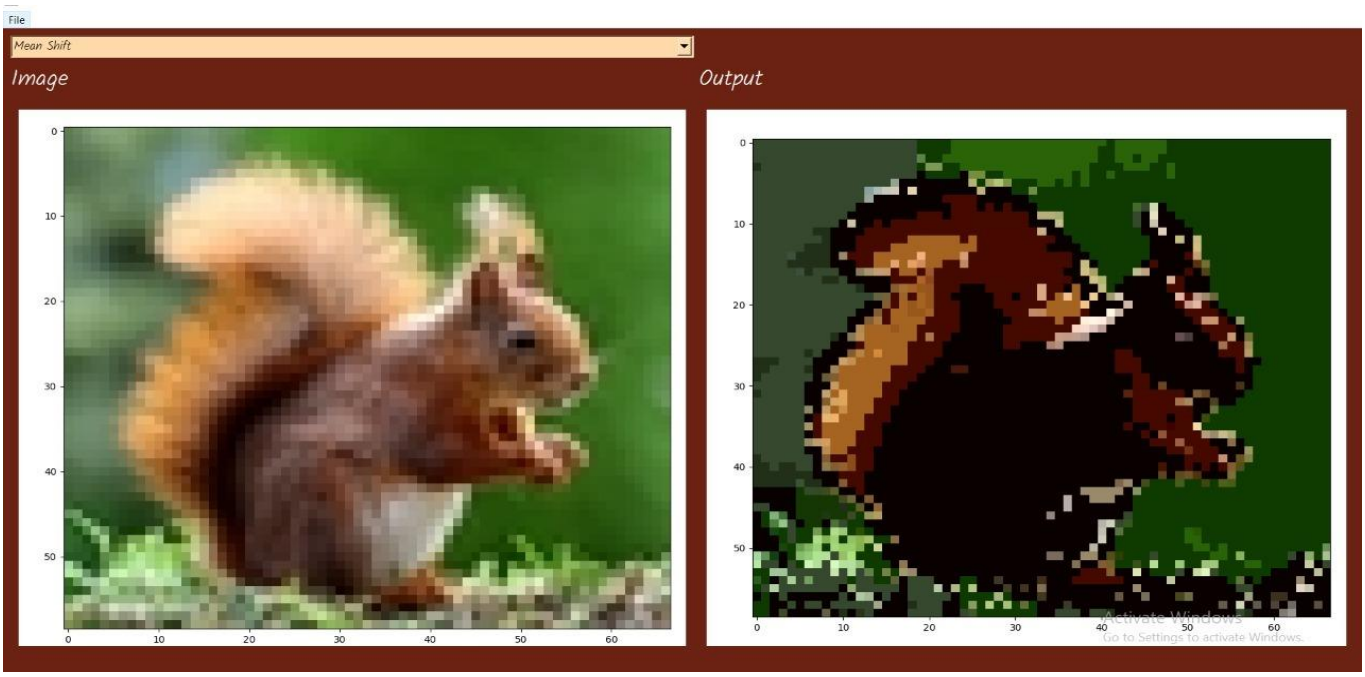
5- Segmentation by Kmeans

Number of clusters =3



6- Segmentation by Mean Shift

Mean shift is a very computationally expensive algorithm so to be able to get a result we needed to use a very small image in size the image used is 67 x 59 pixels image, a Gaussian kernel is used with a band width of 2, for big sizes of data a small bandwidth is recommended, the number of clusters detected by the algorithm are 307 clusters.



7- Agglomerative clustering

Number of clusters = 9

All results images are uploaded on github for better quality.