MTRE4490 Machine Learning for Robot Perception

Project #7

Due by 11:59 pm on 03/30/20 (Monday)

In this project, you are required to develop a Python program using the unsupervised learning algorithm (K-Means) to classify the pixels in the image below.

In particular, the project requirements are below:

1. In the first line of your Python code, use a comment line to show all group members' names.
2. In the image above, each pixel is represented with a vector with the RGB values (i.e. [R G B]. Use the K-Means algorithm to classify all pixels in the image into 3 groups.
3. For each pixel in the first group, replace its RGB values with [255 0 0]; For each pixel in the second group, replace its RGB values with [0 255 0]; For each pixel in the third group, replace its RGB values with [0 0 255].
4. Display both the resulting image and original image on your computer monitor.
5. Each group saves your Python code as "Image_Segmentation.py" and uploads it to the D2L drop box.

Grading Rubric

- 20 points: The Python code is submitted correctly.
- 30 points: The code runs without any syntax errors.
- 30 point: A window on the computer screen shows both the original image and the resulting image
- 20 points. The image segmentation result is a kind of success.