CPSC 4820

QUICK SELECT TOOL USING OPENCV IMAGE SEGMENTATION

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1 Introduction

The main idea behind this project was to create a tool similar to Photoshop's Quick Select tool. This tool marks a region it believes the user would like to be selected based on a position they click on within the image. However, this project will take a different spin on it. Instead, the user will select a rectangular area in an image, and then use image segmentation to determine the objects within the selected area and highlight those objects.

2 Overview

The code is fairly straightforward with Python.There are two main things that need to be done: add mouse click events, and then perform the image segmentation and show the borders.

3 Mouse Click Events

To use mouse click events in OpenCV, simply use the setMouseCallback function and attach a function to a named window. This means a function must be made that passes arguments for the mouse event, x, y, flags, and other parameters. The only arguments needed however are the mouse event, x, and y. In the event of mouse left button down, the x and y values will be added to a list to indicate the starting corner of the rectangle. There must also be a way to determine the current state, which will be provided by a boolean value since a click and drag can be decided by two states. In the event that the mouse moves, a rectangle must be drawn which shows the area that is currently being selecting. As soon as the user lifts the left mouse button, the second set of x and y must be added to the list in proper order and change the state to a processing state. That is all for the mouse click events.

4 Image Segmentation

There is a while loop that constantly displays the image. While this loop is going, OpenCV still handles the mouse click events in parallel. Thus, as states change in the mouse click events, they also change in the while loop. This is as long as the states are kept track of as global variables. Once the state is set to processing, the rectangular area can be put into a separate variable and OpenCV can perform image segmentation over that area. The details covering image segmentation are on the OpenCV website listed below.

5 References

https://docs.opencv.org/master/d3/db4/tutorial_py_watershed.html