

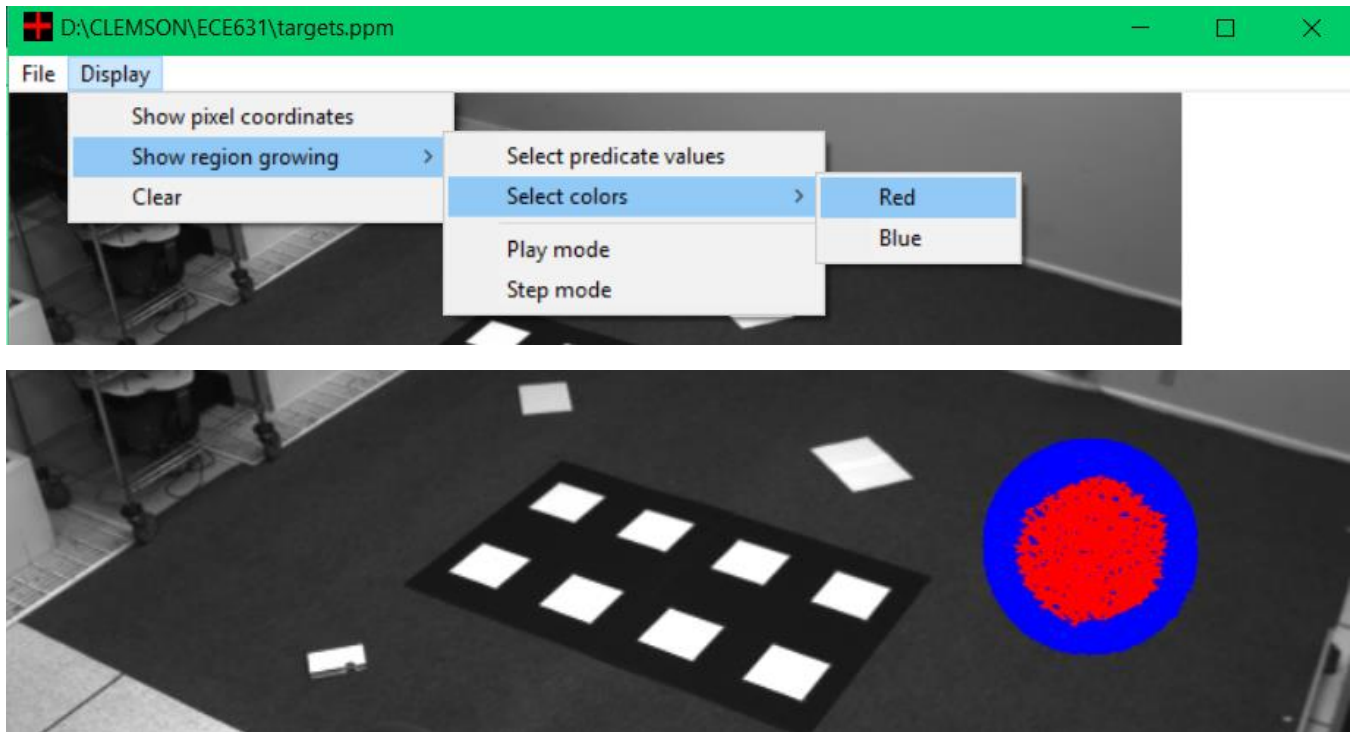
ECE 6310 Introduction to Computer Vision

Region Interaction

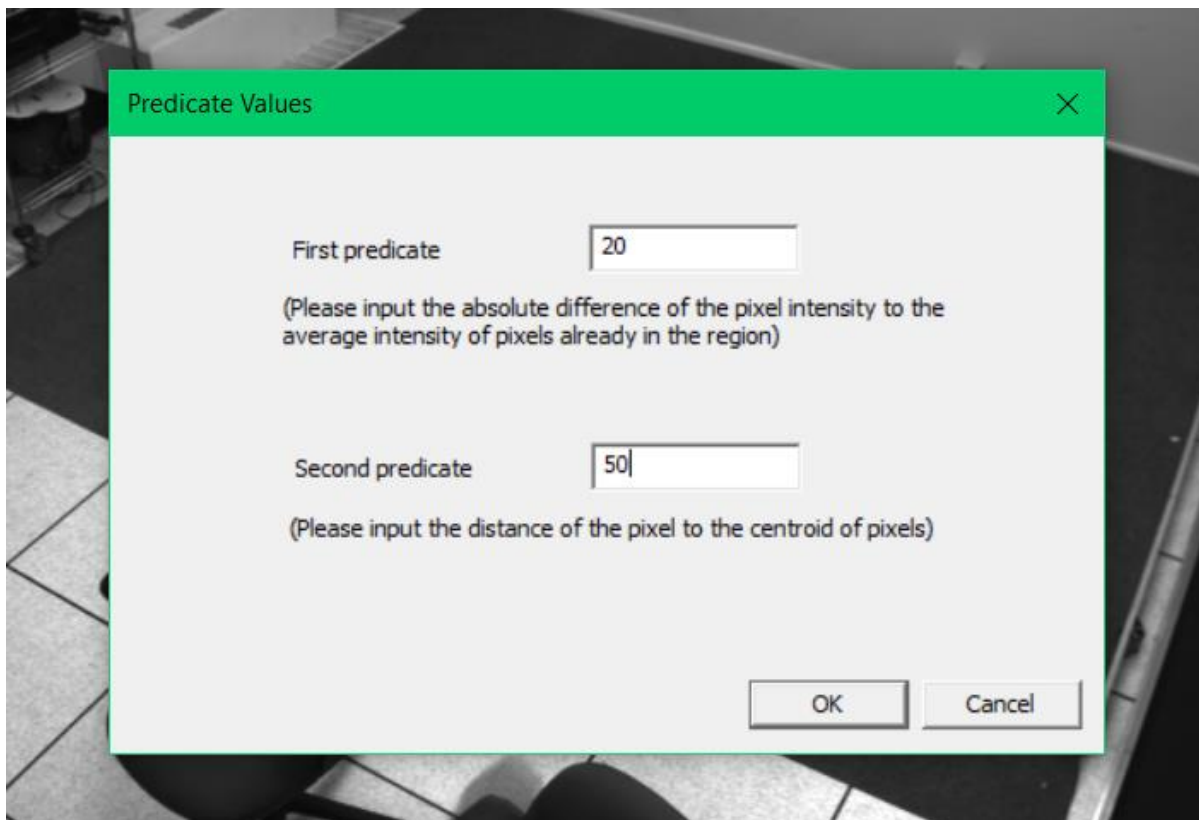
Chunheng Zhao

In this lab, I implemented the interactive region growing program which allows the user to click any location in an image and visualize the results of growing a region there. Basically, there are two parts of the codes. One is the plus program which allows user to load and display the image and demonstrates several GUI and event handling techniques. The region growing code demonstrates growing a region based upon two predicates.

In my implementation, the program has a GUI option that allows the user to select **blue** or **red** for pixels that join the region. Also, in the program, there is a “**clear**” option that could clear the result of the previous region grow and display the original image.



The program has a menu option to grow the region in “play” mode or in “step” mode. In the play mode, the pixel joins the region each 1 ms. In step mode, the pixel joins the region each time the user presses the key “j”. The program allows the user to change between modes while a region is growing. In order to achieve this part, I created a **child thread** to do the region growing while we could still control GUI to pause the process or change the mode. Because “_beginthread” can’t return values directly, I used global variables to do it. In my program, the two modes could be checked as “selected” in the menu. If the mode is not checked, it means that mode is off. Thus, the program could be only in one mode which means if it is in play mode and you click on the step mode, then the play mode stops, and the step mode would continue to run. One thing is if the mode stops due to the uncheck in the menu, it doesn’t clear the results and would keep the pattern on the image until you click “clear”. So, if you stop one mode and restart it without using “clear”, the algorithm would continue working on the last pattern.



The program uses a dialog box to allow the user to select values for two predicates for joining the region. The first predicate is the absolute difference of the pixel intensity to the average intensity of pixels already in the region. The second predicate is the distance of the pixel to the centroid of pixels already in the region. Both predicates are applied at the same time while growing a region. Thus, it is easy to find and understand that the bigger the two predicates are, the bigger the growing region would be.

