

Hough Transform

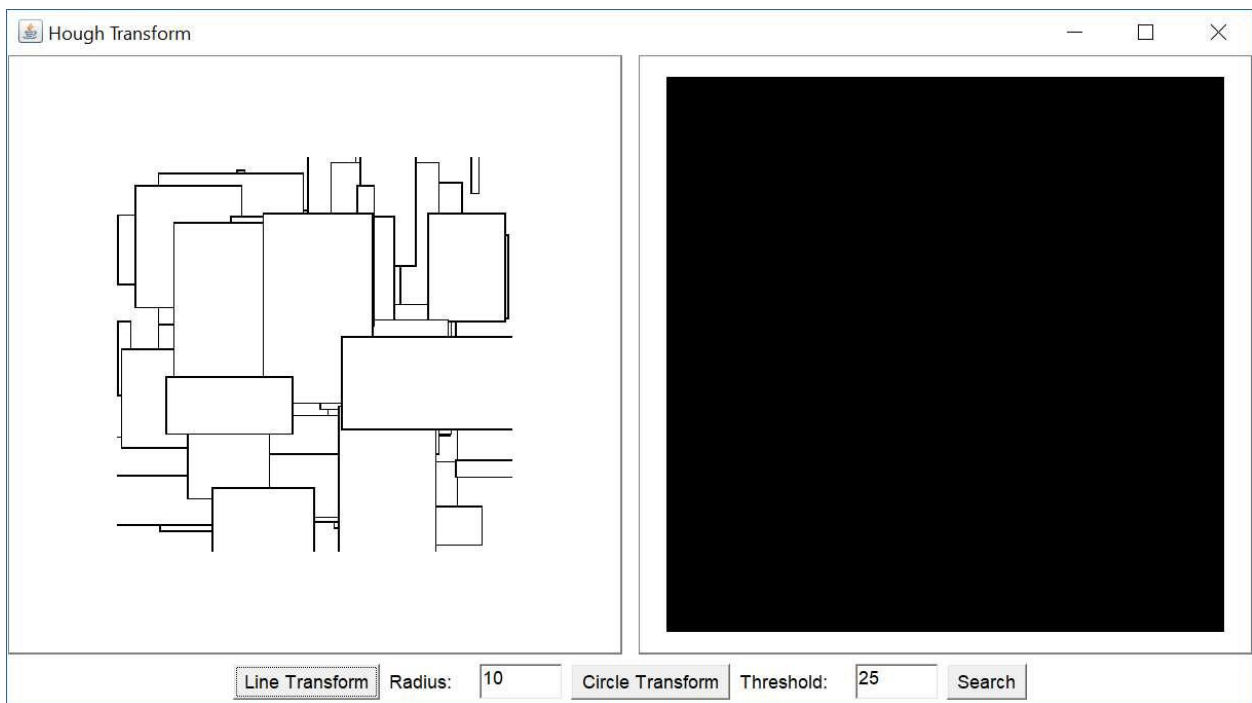
COMP 3301 — Assignment 4 Due: March 18, 2018 (Monday) 11:30 PM

Objectives:

In this assignment you will implement the straight-line and circle Hough transforms discussed in class. The goal is to give you a further understanding of Hough transform, as well as the straight-line and circle detection problems.

Your Task:

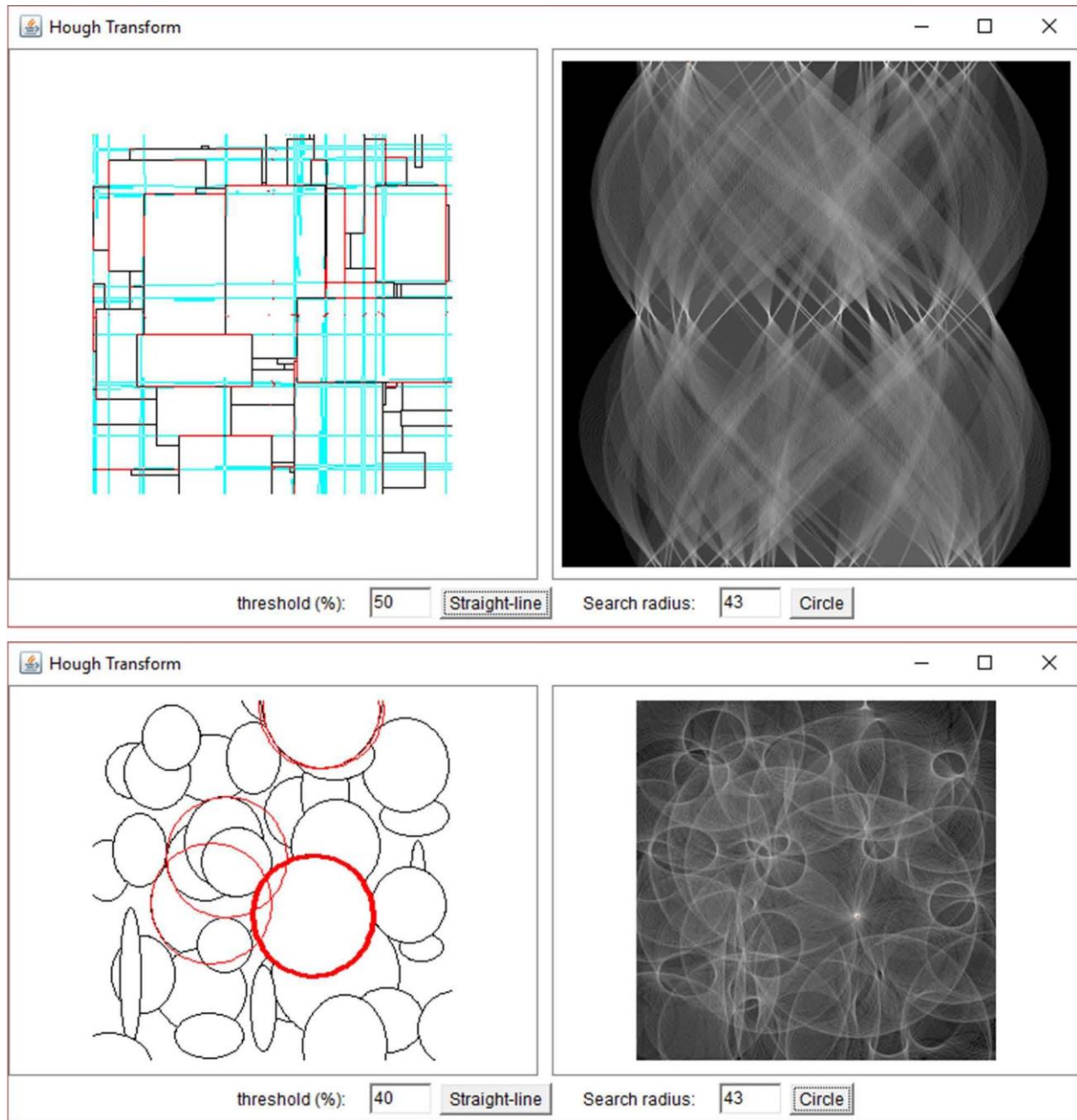
You need to implement both straight line and circle Hough transforms. For straight-line Hough transform, the polar parameter space should be used. For circle Hough transform, you only need to search for circles with a known radius, which is given by the user through a text field. Show detected lines and circles under user-specified threshold through plotting the corresponding shapes on the input image.



Output of the skeletal program

Getting Started:

A skeletal program is supplied to get you started, which you are required to use as the basis of your implementation. To run the skeletal program, you need to put the testing images in the same folder. The program opens a window that contains two panels, and displays the input image in both panels. It also contains code for displaying blank transformation results.



Output of a sample solution

Grading:

Your program will be tested and graded using a standard Java environment. The grade will be based on your program's functionality (whether or not it works under different settings), as well as the efficiency of your implementation. The weights for different components are as follows:

- Correct Hough transformation results for straight-lines 35%
- Display detected straight-lines on the input image 15%
- Correct Hough transformation for circles under different radius settings 35%
- Display detected circles on the input image 15%
- Extra Marks: Draw the lines at exact start and end locations 5%

Each time the buttons are pressed, the image on the left should be cleared from the previous result and the new resulting lines or circles must be shown.

What and How to Hand in:

You are handing in the source of your program, as well as any other source files required for running your program. Your source code must contain sufficient internal documentation to facilitate grading. This includes names & student numbers of all contributing members of the group, a brief description of what the programs do, and a listing of known bugs and features, if any, at the top of the file, and/or in a readme.txt file contained in the zip file. Send in your source program through the Direct2Learn's Dropbox as a single .zip file. No late submission is allowed.