

1 Lab 11 - Implicit Lines and Circles

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Goals

The goals for this lab are:

1. Explore texture
2. Practice using a `loop` control structure to create an image made of `strokes` based on `implicit lines`.
3. Practice using `implicit lines` and `implicit circles` and the distances from these equations to create a scene or object.
4. Create new stroke styles using patterns of `points`, `lines`, and `ellipses` that model the textures seen in many impressionist paintings.

Modality

Pair or Individual (per instructors specifications)

Details

Task: You must create one image using Processing which is *created using implicit lines and implicit circles* as bounding lines for objects. The distance from these equations can be used to determine how far the stroke is from the original line and which side of the line/circle the equation falls. Use this distance to determine whether this stroke should be colored and, if so, what color.

The scene should be created using strokes that are similar to the textures found in impressionist paintings. The final scene should then be created

¹Lab developed by Katelyn Hicks under supervision of Zoë Wood

with two different stroke types (i.e.: by varying the sizes of the strokes or how close together the strokes appear to each other).

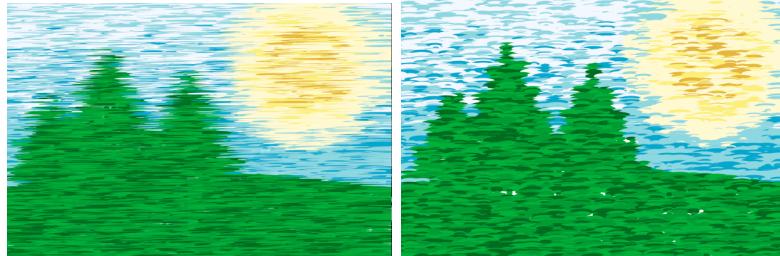


Figure 1: An example of using implicit circles for the ground plane and the sun and using implicit lines to find the intersection of three lines for each tree. The distance from the ground is used to determine the color of the sky and the distance from the center of the circle determines the color of the sun. Both of these distances determine the color intensity. Varying sizes of ellipses were used to create horizontal strokes and create different stroke types on the images.

Your lab must:

- be at least 400 x 400
- be in color
- create a scene or object using both `implicit lines` and `implicit circles`
- use the distance from the implicit line/circle to determine the color
- use `points`, `lines`, or `ellipses` to create the same scene with two different stroke types
- strokes should vary in color across the scene
- strokes should model the style of the textures found in impressionist art

Demo:

In order to receive credit for this lab, you and your partner must demo your sketch to your instructor.

Resources:

- Implicit Line - given two end points x_0, y_0 and x_1, y_1 the implicit line equation is:
$$f(x, y) = (y_0 - y_1) * x + (x_1 - x_0) * y + x_0 * y_1 - x_1 * y_0 = 0$$

- Implicit circle - given a center x_c, y_c) and radius r :
$$f(x, y) = (x - x_c)^2 + (y - y_c)^2 - r^2 = 0$$

Sample Impressionist paintings:



Figure 2: Paul Cezanne: "Mount Sainte-Victoire view from Lauves"



Figure 3: Paul Signac: "Le Palais des Papes, Avignon (The Papal Palace, Avignon)"

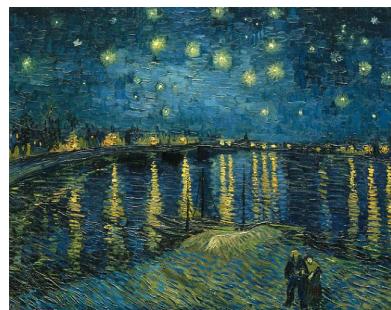


Figure 4: Vincent Van Gogh: "Starry Night Over the Rhone"