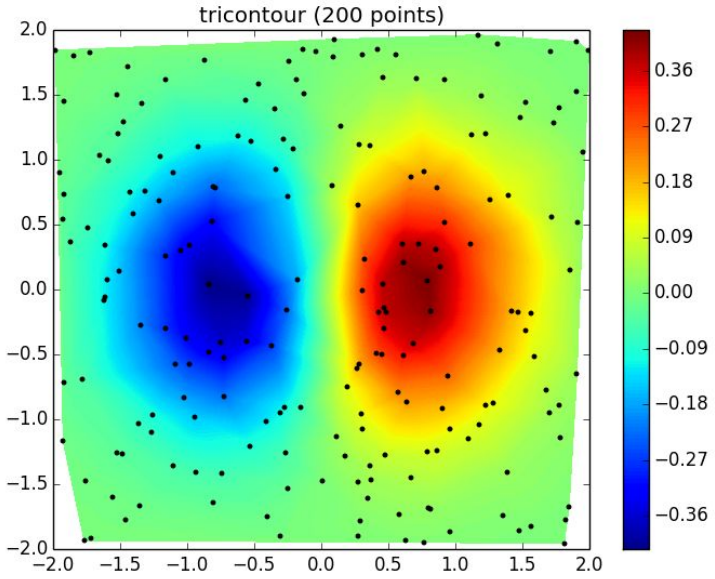
Feature: Scatter plot Contour
Estimated Hours:

- Explore and create a solution (11 h)
- Implement solution (13.5 h)
- Testing/validation (4 h)
- Code Review (3 h)
- Documentation (5 h)

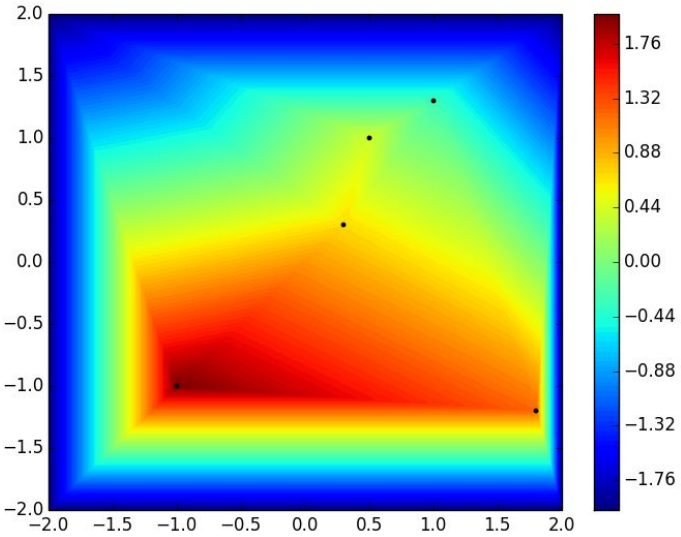
Feature:
An easy to use, out of the box solution to create a color contour using a scatter plot without the user having to interpolate the data into the proper grid format

Solution:

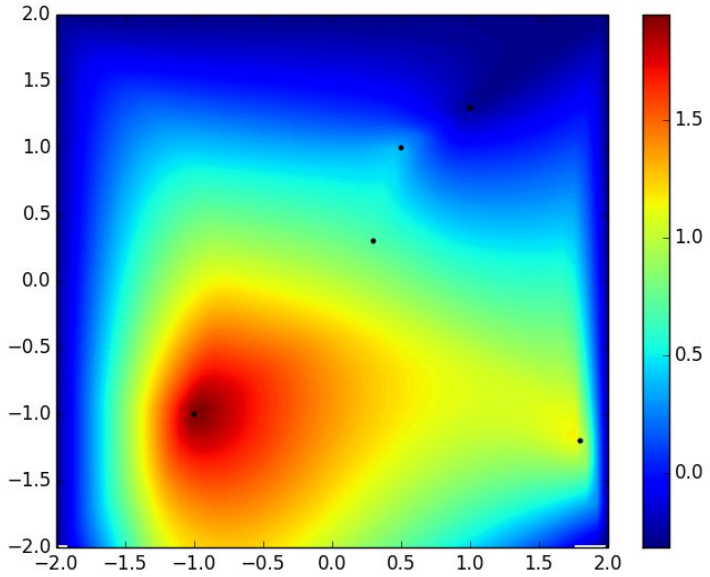
Our first idea when approaching this task was to use a linear interpolation of points to obtain a grid. However, while researching, we came across a method of interpolation using triangulation and tricontour that accomplished something similar to our desired results. Using this method, we came up with the following graph:



This solution seemed good, however, we realized that the triangulation method used created an undesirable sharpness to the contour when data density was low, as seen in the following graph:

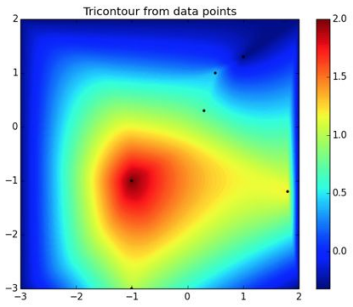


We then went back to a linear interpolation solution using contourf and filling in the edge coordinates with default values to create a smooth contour:

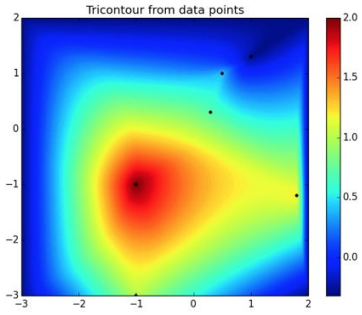


Testing:

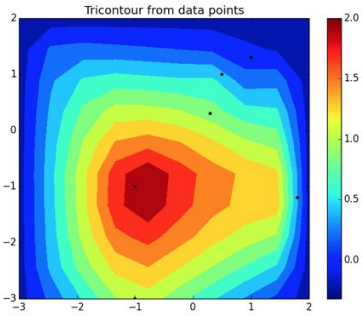
To test our feature we insured that all the functionality was working as it is supposed to. We first tested the main functionalities by using sample data without setting any optional values. We then test each and every optional parameter to ensure either the default value was getting triggered or the value provided by the user. Below are the results of our test cases.



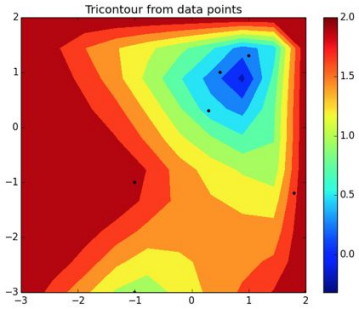
test_all_defaults.png



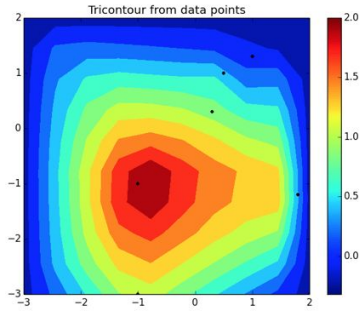
test_circular.png



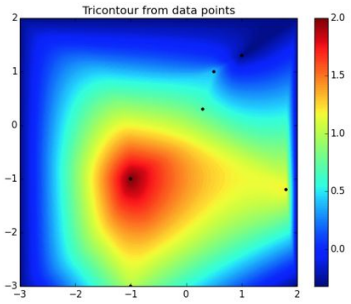
test_colour_density.png



test_edge_max.png



test_inputted_edge.png



test_triangular.png