EXERCISE 2

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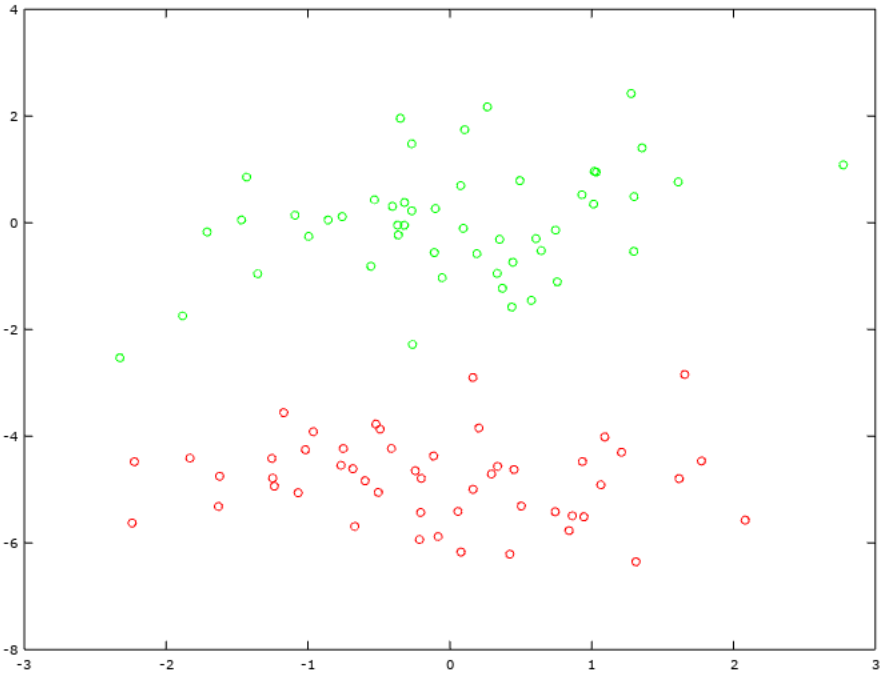
1. Binary Classification through Logistic Regression



(1) Download the data file "data.mat" (or "data.txt" if you are not using matlab) which contains a matrix of size 100×3. The first 50 rows are positive examples (label 1) of points in 2 dimensions. The last 50 rows are negative examples (label 0) also in 2 dimensions.
The first 5 rows of the file contains the following values (with precision 2):
1.3 -0.54 1
-2.3 -2.5 1
-0.37 -0.047 1
0.49 0.79 1
1 0.95 1
where the first two columns correspond to points in 2 dimensions, and the last column is the corresponding label.

(2) Implement in your favorite programming language the Logistic Regression algorithm, so that you classify correctly both types of data.
(3) Initialize the parameters of your model with random values in the interval $(-0.01, 0.01)$.
(4) Plot the data points using one color for each class of data. Also, plot the classifier line that you found using logistic regression.
(5) Prepare a report containing your final model (including parameters), your final α value, and your graph.

2. Exercise Submission

- Send your report to `cetina@informatik.uni-hamburg.de` with the email title string: MLEX2 Lastname1-Lastname2-Lastname3
- Deadline: A day before your next exercise session.
- Note: Do not forget to include your names in the report!