Programming Exercise 2: Logistic Regression

Throughout the exercise, you will be using the scripts `ex2.m` and `ex2_reg.m`.

Suppose that you are the administrator of a university department and you want to determine each applicant's chance of admission based on their results on two exams. You have historical data from previous applicants that you can use as a training set for logistic regression. For each training example, you have the applicant's scores on two exams and the admissions decision.

Your task is to build a classi cation model that estimates an applicant's probability of admission based the scores from those two exams. This outline and the framework code in `ex2.m` will guide you through the exercise.

1.1 Visualizing the data

Before starting to implement any learning algo
visualize the data if possibl4. In the rst part of `ex2.m` the code will load the

you to look at the co8e in `plotDecisionBoundary.m` to see how to plot such a boundary using the values.

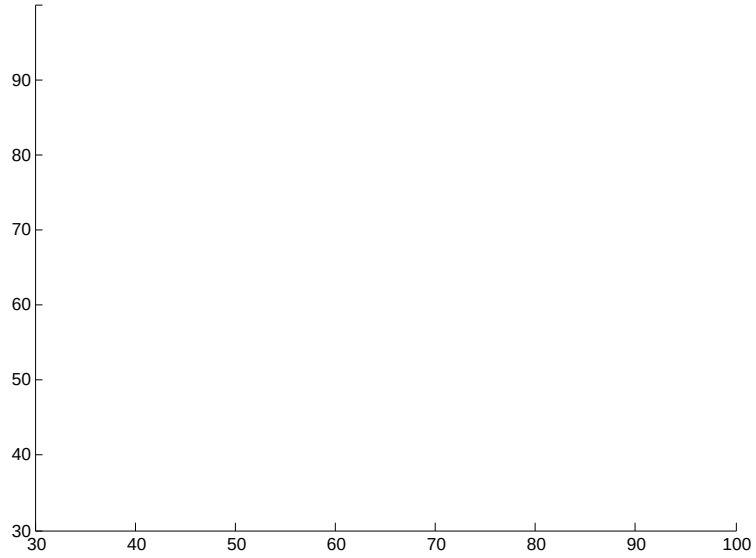

Figure 2: Training data with decision boundary

1.2.4 Evaluating logistic regression

After learning the parameters, you can use the mo8el to predict whether a

2 Regularized logistic regression

negative examples by a straight-line through the plot. Therefore, a straight-

Note that you should not regularize the parameter $_0$; thus, the nal summation above is for $j = 1$ to n, not $j = 0$ to n. The gradient of the cost function is a vector where the j^{th} element is de ned as follows:

$$\frac{@J( )}{@ _0} = [(fu15.814\ 8.087\ Td\ [(1)]TJETq1\ 0\ 0\ 1\ 213.872\ 593.331\ cm[]0\ d\ 0\ J\ 0.478\ w\ 0\ 0\ r$$

2.5 Optional (ungraded) exercises

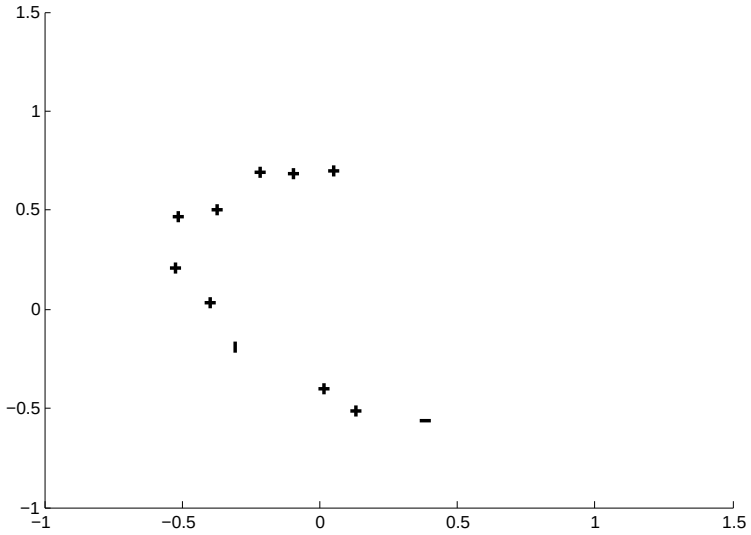

Figure 5: No regularization (Over tting) (= 0)

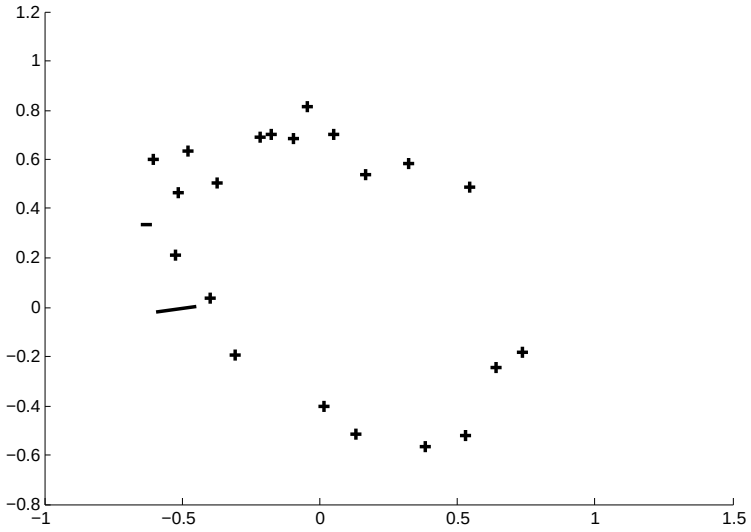

Figure 6: Too much regularization (Under tting) (= 100)

Submission and Grading