QUIZ • 10 MIN

Linear Regression with Multiple Variables

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TOTAL POINTS 5

1. Suppose m=4 students have taken some class, and the class had a midterm exam and a final exam. You have collected a dataset of their scores on the two exams, which is as follows: 1 point

midterm exam	(midterm exam)^2	final exam
89	7921	96
72	5184	74
94	8836	87
69	4761	78

You'd like to use polynomial regression to predict a student's final exam score from their midterm exam score. Concretely, suppose you want to fit a model of the form $h_\theta(x) = \theta_0 + \theta_1 x_1 + \theta_2 x_2$, where x_1 is the midterm score and x_2 is (midterm score)^2. Further, you plan to use both feature scaling (dividing by the "max-min", or range, of a feature) and mean normalization.

What is the normalized feature $x_2^{(2)}$? (Hint: midterm = 72, final = 74 is training example 2.) Please round off your answer to two decimal places and enter in the text box below.

-0.76

2. You run gradient descent for 15 iterations with $\alpha = 0.3$ and compute $J(\theta)$ after each iteration. You find that the value of $J(\theta)$ **increases** over time. Based on this, which of the following conclusions seems most plausible? 1 point

- $\alpha = 0.3$ is an effective choice of learning rate.
- Rather than use the current value of α, it'd be more promising to try a larger value of α (say $\alpha = 1.0$).
- Rather than use the current value of α, it'd be more promising to try a smaller value of α (say $\alpha = 0.1$).