AI 511 – Machine Learning

Tutorial 1

03-09-2021

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1. Minimize the following expression using the closed form method and gradient descent (3 iterations).

$$f(x, y, z) = x^2 + yz + 1$$

$$\alpha = 10^{-1}$$

$$(x_{\text{initial}}, y_{\text{initial}}, z_{\text{initial}}) = (2, 1, 1)$$

2. Extend the gradient descent code from the notebook to perform gradient descent on 3 variables.

3. (a) If you have two input variables, how do you think the data space will look like? (Hint : $y = f(x_1, x_2)$)
   (b) If the above scenario is considered for linear regression, what would the model space look like?
   (c) In the linear regression model, how many parameters have to be calculated to create a model?

Submission Details:

- Deadline: September 5th, 11:59PM
- Format: PDF on Slack. Handwritten work is accepted. If there is any code, include a screenshot of the code.

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