Homework #1

Due on February 11th, 2020
Machine Learning
CS559WS—Spring 2020
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Probability Theory

Problem 1

By using a change of variables, verify that the univariate Gaussian distribution given by

$$N(x|\mu,\sigma^2 = \frac{1}{\sqrt{2\pi\sigma^2}}\exp\{-\frac{1}{2\sigma^2}(x-\mu)^2\} \tag{1}$$

satisfies $E(x) = \mu$. Next, by differentiating both sides of normalization condition

$$\int_{-\infty}^{-\infty} N(x|\mu,\sigma^2)dx = 1 \tag{2}$$

with respect to σ^2, verify that the Gaussian satisfies $E(x^2) = \mu^2 + \sigma^2$

Solution

Solution

Linear Regression

Machine Learning

Problem 4

Build at least four regression models (e.g., linear, polynomial, non-linear) to predict the count of total rental bikes including both casual and registered. Explore data to reduce the number of features. Use K-fold cross validation and report the mean squared error (MSE) on the testing data.

Solution

```
1  import numpy
2
3  for i in A:
4      print(A+"test")
```

Problem 5A