Spring 2020

Quantitative Analysis
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Problem Set 12

Due: 6/8

Computer Exercise

1. Load the `Carseats` data set in `ISLR` and use `CompPrice`, `Income`, `Advertising`, `Population`, `Price`, `Age` and `Education` as independent variables and `Sales` as dependent variable. And then split the data with 80 percent as training set and the remaining as testing set with `set.seed(1234)`. Please answer the following questions:

   (a) Please fit a `linear regression` with training set and compute the MSE with testing set.

   (b) Please fit a `neural network` with 3 hidden layers and 5, 3 and 2 neurons in each layer respectively. And plot this fitting network and compute the MSE.

   (c) Comparing these 2 models in (a) and (b), which model performs better?

   (d) Please draw a 1×2 plot with `Sales` at x-axis and predicted value by the models in y-axis.