IoT Analytics (EE8225)
Fall 2020
Assignment 1
Deadline, Tuesday Oct 13, 2020

Please download the case study for this assignment, the case can be found on the D2L, in the library E-reserve, you will find a case study called "PREDICTING AUTOMOBILE PRICES USING NEURAL NETWORKS". The dataset Cars_Data_full.xls required for this assignment can be found in folder "assignments". In the era of IoT, the car prices could be distributed across many stores, and each store is considered as a centralized node in the network with its own local data. In this assignment, we will focus on centralized processing.

Goal: After working through the assignment questions, students will be able to do the following:

- Understand Regression and Neural Network models.
- Compare and contrast the advantages and disadvantages of different prediction models and determine which one is most suitable for car pricing.

Programming: **If you plan to use R, below are relevant readings.**

- W. N. Venables, D. M. Smith, and the R Core Team, "An Introduction to R: Notes on R; A Programming Environment for Data Analysis and Graphics, Version 3.6.0," April 26, 2019, accessed July 2, 2019, https://cran.r-project.org/doc/manuals/r-release/R-intro.pdf.
- Stefan Fritsch, Frauke Guenther, Marvin N. Wright, Marc Suling, and Sebastian M. Mueller, "Training of Neural Networks," February 7, 2019, accessed July 2, 2019, https://cran.r-project.org/web/packages/neuralnet/neuralnet.pdf.

Assignment Questions

1. Discuss a conceptual model to predict the MRSP including significant variables, correlation, your plan for training and testing.
2. Build regression and neural networks models to predict the MSRP of a car. *Upload your code*.
3. Validate and interpret the model using a different number of hidden neurons and significant variables.
4. Compare results of neural networks and linear regression, support each model by validating the results.
5. Make a decision and offer your recommendations.
6. How would your decision change if you work in a distributed environment? What changes you need to make into your model? Discuss your distributed modeling strategy.

Submission Guidelines

Please note that this is individual submission, any copy of code, or answers will be considered as plagiarism

To Submit: Zip all of your word/pdf/code files into a folder lastname.firsname.id.zip and upload to folder "Assignment 1"