CSCI316 Big Data Mining Implementation and Techniques

Laboratory 6

Objective: TensorFlow and Keras practice and implementation of Perceptron.

1. TensorFlow and Kera Basics
Walk through example codes in Lecture 7. Understand the how to use TensorFlow and its high-level API Keras.

2. Implement Perceptron in Pain TensorFlow and with the Keras API
The task is to implement a perceptron in the plain TensorFlow and with the Keras API. The perceptron is trained with the public Abalone dataset (https://archive.ics.uci.edu/ml/datasets/Abalone). *(Note. the same dataset will be used in the next (assessed) lab.)*

The target value is the number of rings (i.e., a **regression** problem). Use all other attributes as the predicting variables. The first attribute (i.e., sex) is nominal. You should use one-hot encoding to pre-process it. However, for a quick implementation (for practice purpures), you can remove the first variable. Also use TensorBoard to generate a visualised graph for your model.

IMPORTANT NOTE
The code in the Lecture 7 are from TensorFlow 1.14, which different from TensorFlow 2 installed in the lab computers. To make the code in the lecture note executable directly, run the following code in your Jupyter Nootebook:

```
import tensorflow.compat.v1 as tf
tf.disable_v2_behavior()
```

More information is here: https://www.tensorflow.org/guide/migrate