**ID5030 Assignment 3**

**Logistic Regression and Classification using TensorFlow**

Due 6/03/2018

Estimated Time : 6-8 hours

This assignment involves learning to program in the TensorFlow environment. It involves implementing logistic regression in the TensorFlow environment and testing it on a given real world data set. We have broken up the problem into several parts. Answer all of them and include a short report within a .docx file as with previous assignments.

**Glioma Survival Prediction:** Download your data from <https://drive.google.com/drive/folders/1ODhD7WGXN3g_I8HKZ3h9Qf4Zetc8yyfh?usp=sharing>

The data contains 30 columns of features calculated from Magnetic Resonance images of Gliomas. These features are expected to have a correlation with the overall survival of the glioma patient. Here overall survival **(OS)** refers to the number of days the patient survived post the first Magnetic Resonance scan. The features have been manually extracted for you and they include shape and first order texture features. Features such as circularity of the lesion (glioma), elongation of the lesion, volume of the lesion, maximum diameter etc. are few examples of the **shape**-based features. While, Mean value of the lesion, standard deviation, skewness, kurtosis etc. are examples of the **first order texture-based** features.

Implement the logistic regression classifier in **TensorFlow** to predict the overall survival in days. Train and validate the model using **30\_train\_features.csv**. You can for your own understanding implement linear regression and test it on the given data set. As in previous submissions include the general code in a .docx file and also answer the following questions.

* 1. On the test data ( **30\_test\_features.csv**) report your result as a correlation coefficient between your prediction and the ground truth. Include a correlation plot.
  2. Which features do you think are most correlated with the overall survival. You can indicate the features with the column headings.