**MET AD688 Assignment 4**

**Competitive Intelligence on Used Cars**

**Assignment Objective**: In this assignment, you will employ advanced web scraping techniques to gather competitive intelligence on used cars. You will use the provided car dealership website and Jupyter Notebook to conduct your analysis. The objective is to extract, analyze, and interpret data to derive meaningful insights about the pricing and depreciation of a specific car model across different locations.

**Possible Points**: 8

**Task 4-0: Managerial Report Structure**

Your paper should be structured and presented in the form of a managerial report, APA format. This report should include:

* Cover Page
* Table of Contents
* Executive Summary
* Main Body (3 - 4 pages, APA format)
  + Explain your methodology for data collection.
  + Explain your Data Analysis Techniques and findings for tasks 4-1 to 4-4.
  + Provide recommendations based on the analysis of your data.
* Appendices
  + Visualizations
  + Screenshots of code and output

**Submission Requirements**: You are required to submit your managerial report, along with your python or R files used for this assignment.

*(max 1 point)*

**Task 4-1: Extract Prices for Your Selected car across Two Locations**

You are required to select a car make and model of your choice (for example, Nissan Rogue, Toyota Camry) and choose two different cities for data collection (for example, New York, Austin). Use the web scraping code provided to extract the prices of your selected car make and model across each of the chosen locations. You are required to create the following two visualizations and one other of your choice to provide a deeper understanding of the data collected for each location.

**Histogram:** This will allow you to display the distribution of car prices in each location.

**Scatter Plot**: This will allow you to compare the prices for variables like car age or mileage for each location.

*(max 2 points)*

**Task 4-2: Determine the average price of the car in each location**

Calculate the average price for your selected car in each of the locations identified. In addition, use various summary statistics (for example median, standard deviation, maximum, minimum) to gain a deeper understanding of the car prices in each area.

*(max 1 point)*

**Task 4-3: Calculate the Depreciation Value**

Calculate the depreciation value of the car you selected across the two locations and compare the values. Note that there are several options to choose from when calculating the depreciation of a car, for example, the straight-line depreciation method or you can use a simple or multiple linear regression model.

*(max 2 points)*

**Task 4-4: Price Prediction**

Predict the price of a three (3) year old car of the make and model you’ve selected in each location.

*(max 1 point)*

**Task 4-5: Executive Summary**

Prepare an Executive Summary that succinctly summarizes the objectives, methods, key findings, and recommendations of your report.

*(max 1 point)*