**DAILY ASSESSMENT FORMAT**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Date:** | **20/07/2020** | **Name:** | **Abhishek Vasudev Mahendrakar** | |
| **Course:** | **Coursera-Machine Learning with Python** | **USN:** | **4AL17EC003** | |
| **Topic:** | **Week-2** | **Semester & Section:** | **6th-‘A’** | |
| **Github Repository:** | **ECEAbhishekVMahendrakar** | **E-mail:** | **abhi2244mahendrakar@gmail.com** | |
| **FORENOON SESSION DETAILS** | | | |
| **Image of session** | | | |
| **Report – Report can be typed or hand written for up to two pages.**   1. **Introduction to Regression**  * Define Regression?   **“Regression is basically a statistical approach to find the relationship between variables.”**   * Types of Regression Models:  1. Simple Regression  * Simple Linear Regression * Simple Non-Linear Regression  1. Multiple Regression  * Multiple Linear Regression * Multiple Non-Linear Regression * Application of Regression: * Sales forecasting * Satisfaction analysis * Price estimation * Employment Income etc * Regression Algorithms: * Ordinal Regression * Poisson Regression * Fast forest quantile regression * Linear, Polynomial, Lasso, Stepwise, Rigid regression * Bayesian linear regression * Neural Network regression * Decision forest regression * Boosted decision tree regression * KNN(K- nearest neighbor’s)  1. **Simple Linear Regression**  * Pros of Linear Regression: * Very fast * No parameter tuning * Easy to understand and highly interpretable.  1. **Model Evaluation in Regression Models**  * Model evaluation approaches: * Train and Test on the same dataset * Train/Test split * **What is training and out of sample accuracy?** * **Training Accuracy** * **High training accuracy isn’t necessarily a good thing** * **Result of over-fitting** * **Out-of-Sample Accuracy** * **It is important that our models have a high, out-of-sample accuracy**  1. **Evaluation Metrics in Regression Models**  * **Types of Error Models** * **Mean Absolute Error(MAE)** * **Mean Squared Error(MSE)** * **Root Mean Squared Error(RMSE)** * **Relative Absolute Error(RAE)** * **Relative Squared Error(RSE)** * **R-Squared(1-RSE)**  1. **Multiple Linear Regression**  * **How to estimate Ɵ?** * **Ordinary Least Square** * **Linear algebra operation** * **Takes a long time for large datasets(10k+ rows)** * **An optimization algorithm** * **Gradient Descent** * **Proper approach if you have a very large dataset** | | | |