Course Outline

Course Code : DBA3803
Course Title : Predictive Analytics in Business
Class Date : From 8/8/2023 To 24/11/2023
Semester : 1st, Academic Year 2023/2024
Faculty : Assistant Professor Long Zhao, PhD
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Overview

This course aims to develop an understanding of forecasting methods from data science for analyzing complex issues and solving business problems. We will make productive use of analytics tools available in R and Python as well as ChatGPT. Because these tools are mature and convenient, we will instead focus on the thinking behind the methodology instead of coding. Moreover, we will also learn the limitations of forecasting methods and common illusions in predictive analytics. Although the class focuses on relatively simplified models, it aims to bridge the classroom knowledge and business applications, such as portfolio construction and customer retention.

Course Objectives

Master the popular regression and classification methods; understand the concept of the loss function, bias-variance tradeoff, and learning curves.

Assessment

Assessment Components	Weightage
Participation	10%
Two quizzes	40%
Two group projects	50%

Schedule and Outline

Week	Date	Topic	Remark
1	Aug. 9th	Introduction to Data Science	
2	Aug. 16th	Brief introduction of prompt engineering	
3	Aug. 23rd	Loss Function + Linear Regression	
4	Aug. 30th	Bias-Variance Tradeoff	
5	Sep. 6th	Regularization: LASSO & Ridge	
6	Sep. 13th	Project 1 & Quiz 1 Review	
-	Sep. 20th	No class: Recess week	Project 1 due
7	Sep. 27th	Trees	In-class quiz 1
8	Oct. 4th	Enhancement of Tree & Classification Tree	
9	Oct. 11th	Gradient Boost	
10	Oct. 18th	No class: I need to attend the INFORMS conference	
11	Oct. 25th	Logistic Regression & Project 2	
12	Nov. 1st	Overfitting in Validation & Quiz 2 Review	
13	Nov. 8th	Smart choice of objective	In-class quiz 2

			Project 2 is due in the 14th week

General Guide & Reading (e.g. Case preparation guide, project report guide, main textbook & supplementary materials, etc)

Optional textbook: An Introduction to Statistical Learning with Applications in R (Videos) ; Learning From Data (Videos)

Hands-on coding experience: DataCamp

ChatGPT Prompt Engineering for Developers

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