Outline Stat 332

Regression Analysis

Instructor: Prof. Khalaf S. Sultan

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Textbook:

Applied Linear Regression Models, Fifth Edition by Kutner, Nachtsheim and Neter

كتاب مترجم للطبعة الرابعة

نماذج إحصائية خطية تطبيقية (الجزء الأول)

المؤلف: نيتر واخرون .ترجمة: د. انيس كنجو – د. عبد الحميد الزيد – د. الحسيني عبد البر

Course Scope and Contents:

This course is an introduction to applied data analysis. We will explore data sets, examine various models for the data, assess the validity of their assumptions, and determine which conclusions we can make (if any). Data analysis is a bit of an art; there may be several valid approaches. We will strongly emphasize the importance of critical thinking about the data and the question of interest. Our overall goal is to use a basic set of modeling tools to explore and analyze data and to present the results in a scientific report. We then consider simple linear regression, a model that uses only one predictor. After briefly reviewing some linear algebra, we turn to multiple linear regression, a model that uses multiple variables to predict the response of interest. For all models, we will examine the underlying assumptions. More specifically, do the data support the assumptions? Do they contradict them? What are the consequences for inference? Also, we will explore some nonlinear models and data transformations. Finally, we discuss Linear regression based on the categorical with some applications

Course Calendar

Week	Date	Topics Covered
1	2/9/2018	Introduction and some basic concepts of probability and statistics
2	16/9/2018	Definition of the Simple linear regression model with some applications
3	23/9/2018	Estimation of the unknown parameters of the simple linear regression model
4	30/9/2018	Properties of the least square method
5	7/10/2018	Confidence estimation of the least square estimated of the coefficient of simple linear regression model.
6	14/10/2018	Hypotheses Testing of the simple linear regression model
7	21/10/2018	The efficiency of the simple linear regression model by using ANOVA
8	28/10/2018	Predication and residual analysis of the simple linear regression model
9	4/11/2018	Multiple linear regression model
10	11/11/2018	Estimation of the unknown parameters of the multiple linear regression model.
11	18/11/2018	Hypothesis testing of the multiple linear regression model
12	25/11/2018	Prediction and residual analysis of the multiple linear regression model
13	2/12/2018	Linear regression based on the categorical with some application
14	9/12/2018	Applications
15	16/12/2018	Revision

Assignments, project and Exams:

Assignments and projects	Will be given during the classes	10 marks
Midterm Exam I	Sunday 12/2/1440 (5:00-6:30pm)	25 marks
Midterm Exam II	Sunday 10/3/1440 (5:00-6:30pm)	25 marks
Final Exam	Monday 14/4/1440 (1:00-4:00pm)	40 marks

Computing:

In this course, we will use R language.

Attendance:

Students missing more than 25% of the total class hours won't be allowed to write the final exam.