AccelerateAI

Data Science Global Bootcamp

Assignment 07

Multiple Linear Regression

Q1. MLR Stepwise Regression – Household Expense

500 household were surveyed on their monthly expenses. The data is in the file ***MLR_MonthlyExpense.***

For this, use the monthly payment as the dependent variable.

1) Begin with family size and iterative add one variable and estimate the resulting regression equation.
2) Does adding any explanatory variable lead to a fall in adjusted R-Squared.
3) Which variables are added in the final model?
4) Interpret the coefficients, R-squared and standard error of estimate for the final model.
5) What result do you get if you use mlxtend stepwise regression?

Q2. MLR Feature Selection – Box Office Revenue Prediction

An industry analyst is interested in building a predictive model to understand the impact of various factors and opening week revenue numbers in the overall collections of a movie (Total revenue).

Box Office collection of Bollywood movies were recorded. The data is provided in file: ***MLR_MovieBoxOffice_data.csv.***

1) Identify the variables that can be used to fit a linear regression model.
2) How is the revenue impacted by genre of the movie?
3) Does the month have any role to play in movie opening?
4) Use any variable reduction technique to fit a model using all relevant variables.
5) Do you find any outliers in the dataset? What could be the possible reason for those being outliers?

Q3. MLR – Feature Selection – Building Energy Efficiency

A study looked into assessing the heating load and cooling load requirements of buildings (that is, energy efficiency) as a function of building parameters. We perform energy analysis using 12 different building shapes. The dataset comprises 768 samples and 8 features, aiming to predict two real valued responses (heating load and cooling load). File: ***MLR_BuildingEffciency.csv***

1) Which features impact the heating load?
2) Which features impact the cooling load?

The data files can be found here: https://github.com/Accelerate-AI/Data-Science-Global-Bootcamp/tree/main/ClassAssignment/Assignment07