MAT 4381 Project

Joe Zhang and Christian Paravalos

Winter 2024

Abstract

Linear regression is often used to model relationships between a response variable and one or more explanatory variables. In traditional settings, the ordinary least squares method is used to estimate the model. In this paper, the focus is to develop a linear model by estimating the model parameters under a Bayesian framework and compare the model against the traditional ordinary least squares model using a dataset.

Introduction

To model the relationship between a response variable and one or more explanatory variables, the simplest way to estimate a model is to assume that there is a linear relationship between the response variable and the predictor variables. The formulation of the model is

$$\boldsymbol{y} = X\boldsymbol{\beta} + \boldsymbol{\epsilon}$$

Ordinary Least Squares Regression Revisited

Bayesian Linear Regression

Application

Conclusion

References

https://en.wikipedia.org/wiki/Bayesian_linear_regression