Brainstorm Neural Network

1. Introduction

* Black Box Model: Challenging to extract the marginal effects
* loss of interpretation since these algorithms typically do not produce simple prediction formulas
* necessary to assess the relationship between variable of interest and the response
* Most intuitive grasp is via visualization

1. Theory

* What is a marginal effect and why is it beneficial for interpretation
* How does a neural network work and what is it used for
* How does partial dependence plot work (algorithm etc)
* Discuss the benefits and downfalls of this approach

1. How this package differentiates from existing packages

* Pdp/ plotmo
  + No dynamic visualization with shiny
  + No bootstrap
  + Plot multiple predictors at once and an overview of all predictors
  + However, no correlation between predictors
  + Offers interactive visualization with ggplotly
  + Different algorithm-“poor man’s partial dependence plot” (plotmo): keeping other independent variables constant at median
  + Plotmo is not able to deal with neural networks
* Why use NeuralNetworkVisualization/ purpose of the package
  + Easy to understand output
  + Interactive and dynamic visualization
  + Bootstrap
  + Plot multiple predictor-response relationships easily

1. Code structure
   * How do the functions work
   * Which classes have been used
   * Which input does every function take and what is the class of the output
2. Examples

* Include pictures and code examples

1. Conclusion/ Room for extension
   * What problems does this package solve
   * Who is it aimed for
   * Extensions
     + ALE plots
     + ICE plots
     + Marginal effects at the representative values