CS 436/536 Assignment-1

Description:

1. Get the data: Take any number of years data of price of a Ford Ranger (Min-Max): Ford Ranger Models, Generations & Redesigns | Cars.com
2. Run two linear regression model (one for minimum price and one for maximum price). Plot your loss curve for 100 iterations for both the cases.
3. You will notice that on the given URL that the prices from year 2012 to 2018 is missing. Your job is to predict the price of the Ranger in those years if Ford would have decided to launch its Ranger models in those years as well.
4. What are final values of Theta (Weights) after training?
5. Plot the year to price curve with predicted values of the missing (2012 to 2018) years.
6. Repeat the above process with feature scaling and dynamic learning rate.
7. Plot the loss curve again. Did you see any improvements?
8. What would be the possible price range for year 2012 to 2018 Ranger for this type of training with feature scaling and dynamic learning rate.
9. Plot the year to price curve with predicted values of the missing (2012 to 2018) years in this case as well.

Submission:

1. Due date is midnight of 24 Sep 2024. The total points will be reduced by 5% for each day after the due date.
2. Submission in a single PDF file. Include all the code with comments, plots, and summary.
3. Code comments are required for this assignment. Including linear regression models code, plotting related code and perdition related code. [60 points]
4. Plot all 4 models' loss curves and year-price plot including missing values. [5 points for each, 30 points in total]
5. Write a small summary paragraph. For example: What is the price range of next generation Ranger predicted by your program (For 2025)? What are final values of Theta after training? What is your thought on your model? How can you improve it? Comparison of performance? Will you buy a next generation Ranger at that price? [10 points]

Note:

1. It is important that everyone submits their entire notebook code in PDF format as well merged to the report. If this is not done points will be deducted.
2. Feel free to provide links of your notebook in your report as well.
3. Review and follow these Watson College Academic Honesty policies that spell out the consequences of academic dishonesty.
4. Do not copy/give code from/to others. If plagiarism is found, both will receive zero point.
5. You can submit multiple times before due date, only the last submission will be graded.