Assignment 1 - MO444

Pedro Henrique M. X. Zacarin*

Abstract

In this assignment, a dataset consisting of 58 predictive attributes, 2 non-predictive attributes and a goal field from a popular news website was provided, showing the number of shares each story had. The goal consisted of predicting the number of shares utilizing gradient descent for linear regression and normal equations in order to create a satisfying model for prediction.

1. Introduction

A great amount of the news traffic from the web is generated through sharing. With the popularization of social media platforms, it's easier than ever for anyone to share stories they liked or found relevant with a group of friends or in their feed for any follower to see.

For the websites that creates the original pieces of news or articles, the reach of each story based on the number of shares it gets is always important, not only because it increases traffic for the website, but also because of the ad revenue it might generate.

In this assignment, we were provided with a dataset from the website "Mashable", which contains 58 features and a target consisting of the number of shares each piece of news had, in order to apply regression methods to try to predict the number of shares for new stories.

- Diagrams and figures are encouraged for making the paper richer

- The sections proposed here are not hard-constrained. It means, you can propose other sections as well as change the existing ones.

2. Proposed Solutions

The proposed solution for this assignment included:

- Perform linear regression and then devise linear regression-based alternatives

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*Is with the Institute of Computing, University of Campinas (Unicamp). **Contact**: phzacarin@gmail.com

Figure 1. A figure example spanning one column only.

Team	P	W	D	L	F	A	Pts
Manchester United	6	4	0	2	10	5	12
Celtic	6	3	0	3	8	9	9
Benfica	6	2	1	3	7	8	7
FC Copenhagen	6	2	1	2	5	8	7

- Devise and test more complex models

- Use different Gradient Descent learning rates when optimizing

- Compare the results obtained with Gradient Descent with Normal Equations results.

3. Development and Results

At first, a linear regression was performed with Gradient Descent algorithm in order to optimize the linearization, which consists in decreasing the cost function - the sum of the square of the errors between the prediction and the target. For the first run, normalization wasn't taken into account. After

4. Experiments and Discussion

Talk about the experiments carried out and the obtained results.

Examples of citations [1, 2]. For direct citations use something like:

Silva [3] for papers with one author. Silva and Souza [4] for papers with two authors. Silva et al. [5] for papers with three or more authors.

Example of a figure of one column.
Example of a figure spanning two columns.
Example of a table spanning only one column:
Example of a table spanning two columns:

5. Conclusions and Future Work

Present the main conclusions of the work as well as some future directions for other people interested in continuing

Day	Min Temp	Max Temp	Summary
Monday	11C	22C	A clear day with lots of sunshine. However, the strong breeze will bring down the temperatures.
Tuesday	9C	19C	Cloudy with rain, across many northern regions. Clear spells across most of Scotland and Northern Ireland, but rain reaching the far northwest.
Wednesday	10C	21C	Rain will still linger for the morning. Conditions will improve by early afternoon and continue throughout the evening.

this work.

References

[1] Kai Ni, Anitha Kannan, Antonio Criminisi, and John Winn. Epitomic location recognition. In *Proceedings of the IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR)*, Anchorage, AK, USA, 2008. 1

[2] Kai Ni, Anitha Kannan, Antonio Criminisi, and John Winn. Epitomic location recognition. *Transactions on Pattern Analysis and Machine Intelligence (TPAMI)*, 31(12):2158–2167, 2009. 1

[3] Fulano Silva and Beltrano Souza. Hey! this is my paper. In *European Conference on Nothing (ECN)*, pages 000–007, Graz, Austria, 2010. 1

[4] Fulano Silva. A paper on everything useless. In *European Conference on Nothing (ECN)*, pages 008–014, Graz, Austria, 2010. 1

[5] Fulano Silva, Beltrano Souza, and Sicrano Rocha. Revisiting the classical publishing problem. In *European Conference on Nothing (ECN)*, pages 015–021, Graz, Austria, 2010. 1