รายงานวิศวกรรมศาสตร์
มหาวิทยาลัยเชียงใหม่
Engineering Report
Chiang Mai University

Report

Midterm Project: Used Phone Price Prediction with screen_size

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Abstract

In this project, I developed the machine learning model to predict the "normalized_used_price" of the phone by using "screen_size" as the variable that I used for the prediction. My model has achieved R2 score by used polynomial regression model for 0.58, 0.14 for mean square error and 0.29 for mean absolute error. I used screen_size and normalize_used_price as an important factor for the prediction because one of choice that people or even I am used to concern to buy the phone is to think about the screen size then think about the price as the next factor. My model might be use for predicting the screen size of the mobile phone and the relative price that the buyer will pay for to buy the mobile phone.

Polynomial Regression model

I decided to use a polynomial regression model to normalize used phoneprices since it had greatest r2score, lowest mean square and mean absolute errors when compared to other regression models. The r2 score for my polynomial regression model is 0.58, the mean square error is 0.14, and the mean absolute error is 0.29.

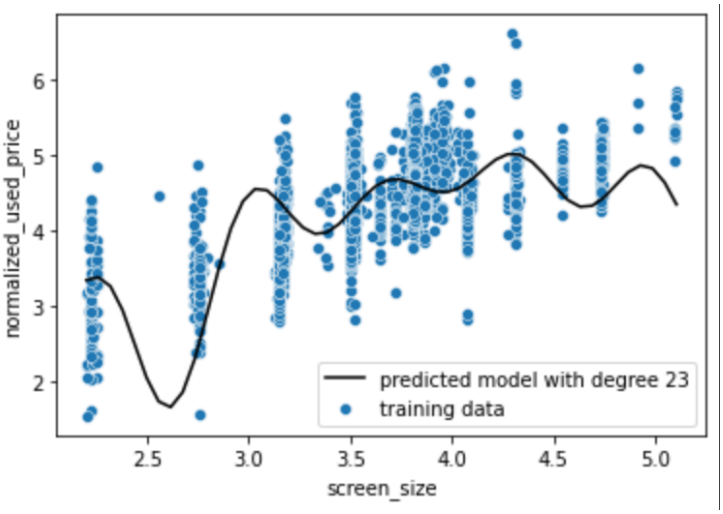

Fig.1 using polynomial regression with degree of 23

as I have tested my polynomial regression model has the best R2 score of using degree at 23 and were able to predict much accurate than other degrees so I used this degree for my model to predict the normalize_used_phone price.

Performance testing

Sample testing of my price prediction with screen_size and normalize_used_price variables

Y[index in array]	Predict Price	Actual Price	Difference of actual price and predict price
0	4.51361882	4.30757245	-0.20604637
1	4.58844465	5.16209665	0.57365199
2	4.93022567	5.11108377	0.1808581
3	4.96268445	5.13538659	0.17270213
4	4.71339391	4.3899948	-0.3233991
5	5.02681251	4.41388861	-0.6129239
6	4.65002142	3.87825937	-0.7717621

Average error between prediction price and actual price is: -0.1409885

Conclusion

Most important factors that people usually concern before buying mobile phone is screen size and their price, in this project I intend to predict the price that is related to screen size of the phone, as I have tried of using those regression model that I have learned linear regression, polynomial regression, ridge regression, and lasso regression that model that fit most of the data that I choose to be the variable for prediction is polynomial regression since this model has the highest R2 score and lowest mean square error and mean absolute error and able to catch most of the data as Fig.1 has showed.