

Prediction of Mobile Model Price using Machine Learning Techniques



Kumuda S, Vishal Karur, Karthick Balaje S E.

Abstract: Mobile phone has become a common commodity and usually the most common purchased item. Thousands of types of mobiles are released every year with new features and new specification and new designs. So the real question is prediction is that what is the real price of the mobile and to estimate the price of the mobile within the market for optimal marketing and successful launch of the product. Price has become a major factor for development of any product and its sustainability in the market. Mobile prices also impact the marketing of the mobile and also its popularity with other competitors. With the available specifications and desired designs, money is also an important factor to survive within the market. Customer usually sees that they are able to buy with the specification with the given estimated price or not. So to estimating the price is an important factor before releasing the mobile and also to know about the market and competitors. In this Prediction, Dataset is collected from the existing market and different algorithms are applied to reduce the complexity and also identify the major selection features and get the best comparison within the data. This Tool is used to find the best price with maximum specifications.

Keywords: Machine Learning, Data Collection, Forward Selection, Backward Selection.

I. INTRODUCTION

Price always has a important impact factor in the product buying aspect and also in the mindset of the buyer who would consider “what is the worth and is it good to buy within this range”. During any product launch into the market, there is a lot of variables and factors are considered and especially in mobiles many features and specification like memory is considered and also the impacting of the cost also may have impact with the competition in the market place. In Mobile there are many specification and features like camera, video, quality of processor, quality of the material. There is many constraints in consideration of the price, as the product should be economical and reachable with overall consideration. Mobile Prices and Specification is mainly considered for selection and comparison. Different tools and Classifiers are used select best features and select the dataset for comparison. Since thousands of mobiles are released each

year so dataset is complex to collect. So with selective feature, it is used to reduce the complexity of the dataset and get the estimate price to get an idea to release the product in the market. In this Prediction, There are many multiple variables to be considered to get the précised results of the price and other features. of the mobile dataset this will help the buyer and also the marketer and the developer to get precise information from historical data of mobile phones and help them to decide are fine and satisfactory. In this project KNN Model algorithm, it is used to find the distances between K models and model for testing the dataset. The accuracy is also calculated using K model and the training model is used. The KNN model is used to predict the model for price.

II. PRESENT WORK

This project consists of five main steps that are mentioned below

- Data Collection.
- Analysis of Data.
- Visualizing the Data.
- Classification of Data.
- Testing.

A. Data Collection

Different features and data about mobile is collected. Type of mobile used-Android or Any other Type, Size of the Screen, Memory of RAM, Camera Pixels, thickness and length of the mobile and also the durability of the battery is collected.

Table- I: Dataset Collected.

Feature	Minimum	Maximum
Size of the Screen (inches)	4.0	15.0
Weight(gram)	80.0	700.0
Thickness(mm)	4.0	14.0
Memory(GB)	1.0	10.0
Battery	300.0	9900.0

B. Analysis Of Data

The Data collected is analyzed and it takes the range of minimum and maximum into consideration and takes the count and derives its mean value. The price value is divided into different categories as shown below and also it’s divided into training data set and instances data set for more accuracy.

Manuscript received on October 20, 2021.

Revised Manuscript received on October 30, 2021.

Manuscript published on October 30, 2021.

* Correspondence Author

Kumuda*, Department of Electronics and Communication, NIE Institute of Technology, Mysore (Karnataka), India.

Vishal Karur, Department of Electronics and Communication, JSS Academy of Technical Education, Bengaluru (Karnataka), India.

Karthick Balaje S E., Department of Electronics and Communication, Karunya Institute of Technology and Sciences, Coimbatore (Tamil Nadu), India.

© The Authors. Published by Blue Eyes Intelligence Engineering and Sciences Publication (BEIESP). This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

Table- II: Price prediction Classification.

Count	Category
Less than 170	Very Affordable.
170-310	Affordable
310-50	Expensive

C. Visualizing Of Data

Data would be visualized with the price prediction classification model using Elbow Method. Complexity of the model is reduced using principal variables. If there are higher no of constraints and features and variables there would be more complexity and harder to visualize the data .so if the features are related we could use reduction algorithms to reduce the complexity. Features selection is used to select a particular dimension and eliminate other features and keep only features which give the most specific information. Extraction of dataset is used to find the specific dataset and features by forward and backward selection in which forward selection we start with no features then we add the important features which would give out the important information and In Backward Selection we eliminate the feature which does not give any information and keep only the main features .

D. Classification Of Data

After the data is visualized, the model is designed to find the accuracy where it is modeled with number of correct samples with total number. Classification is done to find the correct accuracy and correct samples instances. Classification is also done with predicated price and features and percentage of accuracy of positive samples with total samples.

E. Testing

With the preprocessed data, The prediction of test data is done with different features where preprocessed data is split for testing and training dataset. The data set is used to find the Accuracy and also the performance and also the predicated value of the product.

III. RESULT

A. Using Elbow Method.

The number of error rates is taken into consideration with K dataset values .The error values is taken into consideration. The test values are taken with range of predicated price and accuracy is calculated and the features are selected. The unit module accuracy is calculated with positive samples with negative samples that is the failed number that is the percentage of accuracy.

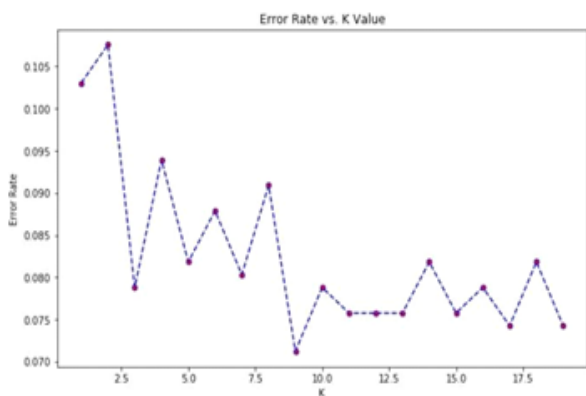


Fig.1. Model loss. Error rate vs. K value.

B. Comparison of Features

The comparison of features is visualized into graphs and the predicated value is estimated and the feature is extracted and the comparison is taken into consideration to give out important information.

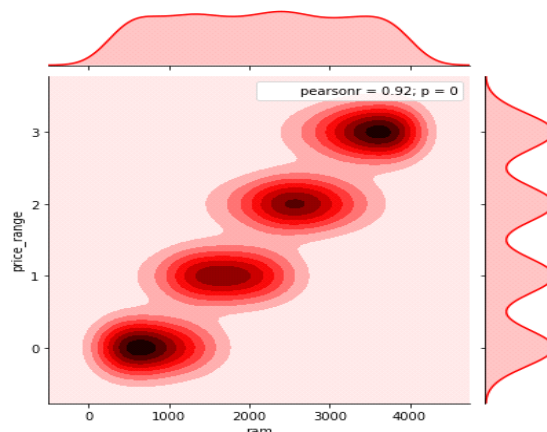


Fig.2. Price range vs. Ram Size

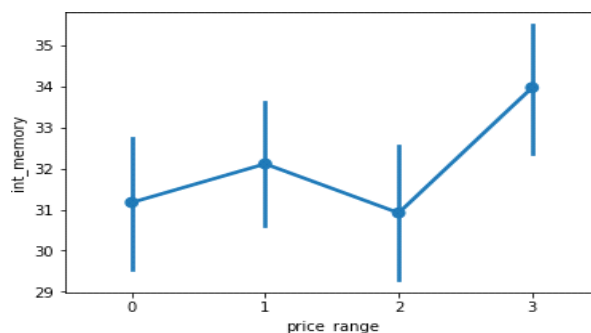


Fig.3. Memory vs. Price Range

If the customer or the developer wants to take the consideration of the predication of the price range and with other Memory and Ram size. The accuracy is calculated by comparison of features with Price using K model.

IV. CONCLUSION

This Project deals with the predication of the price and the features of the mobile .It uses Feature selection to give precise features to be selected and get maximum accuracy results. If there is Forward selection in the data set then it reduces the accuracy of the features and In Backward selection, if we eliminate an important part then its efficiency is reduced. This project model could be improved by developing software that could predict by selecting features so that it could be used while launching the new product. If there are more features and selections are added to the dataset the given real instances then it would be more precise and accurate result would be available.

REFERENCES

1. G. O. Young, "Synthetic structure of industrial plastics (Book style with paper title and editor)," in *Plastics*, 2nd ed. vol. 3, J. Peters, Ed. New York: McGraw-Hill, 1964, pp. 15–64.

2. W.-K. Chen, *Linear Networks and Systems* (Book style). Belmont, CA: Wadsworth, 1993, pp. 123–135.
3. H. Poor, *An Introduction to Signal Detection and Estimation*. New York: Springer-Verlag, 1985, ch. 4.
4. B. Smith, “An approach to graphs of linear forms (Unpublished work style),” unpublished.
5. E. H. Miller, “A note on reflector arrays (Periodical style—Accepted for publication),” *IEEE Trans. Antennas Propagat.*, to be published.
6. J. Wang, “Fundamentals of erbium-doped fiber amplifiers arrays (Periodical style—Submitted for publication),” *IEEE J. Quantum Electron.*, submitted for publication.
7. C. J. Kaufman, Rocky Mountain Research Lab., Boulder, CO, private communication, May 1995.
8. Y. Yorozu, M. Hirano, K. Oka, and Y. Tagawa, “Electron spectroscopy studies on magneto-optical media and plastic substrate interfaces(Translation Journals style),” *IEEE Transl. J. Magn.Jpn.*, vol. 2, Aug. 1987, pp. 740–741 [*Dig. 9th Annu. Conf. Magnetism Japan*, 1982, p. 301].
9. M. Young, *The Technical Writers Handbook*. Mill Valley, CA: University Science, 1989.
10. (Basic Book/Monograph Online Sources) J. K. Author. (year, month, day). *Title* (edition) [Type of medium]. Volume(issue). Available: [http://www.\(URL\)](http://www.(URL))
11. J. Jones. (1991, May 10). *Networks* (2nd ed.) [Online]. Available: <http://www.atm.com>
12. (Journal Online Sources style) K. Author. (year, month). *Title. Journal* [Type of medium]. Volume(issue), paging if given. Available: [http://www.\(URL\)](http://www.(URL))

AUTHORS PROFILE



Kumuda, S. I am Artificial Intelligences enthusiastic and I have done my bachelors in Electronics and Communication in NIE institute of technology. I love to code and have done many internships in the field of Artificial Intelligences and trying to gain experiences in Artificial intelligences.



Vishal Karur, I love coding and have a interest in Data science and I have done many courses in Data sciences would like to work as a data analyst and would like to contribute in that field. I am looking for opportunities in research which would build up my data science path.



Karthick Balaje S E. I am from a small town and want to develop myself in the field of coding and I always felt I want to improve myself and help myself to be at the top position and I I am interested in Data Analytics Field.