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A Review: Online Mobile Price Range Prediction Using Machine Learning

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Abstract: ***The most frequently purchased item today is typically a mobile phone, which has become a common commodity. Every year, thousands of different mobile phone models with new features, specifications, and designs are released. So, determining the mobile's actual pricing and estimating its position in the market are crucial for effective marketing and a product's successful launch. Mobile device prices have an impact on both how well it is marketed and how well it is received by its rivals. In addition to the available standards and desired designs, financial stability is crucial for market survival. Customers typically check whether they can buy the specified item at the projected price or not. So, before releasing the mobile device, estimating the pricing is crucial, as is learning about the market and competition. This study uses supervised machine learning to propose a mobile price prediction system. To anticipate "Whether the mobile with certain features will be Economical or Expensive" is the major motive of this research work. The actual dataset is gathered from online sources. Several independent variables are used in multiple linear regression, but there is only one dependent variable whose actual and predicted values are compared to determine the accuracy of results. The predictions were made using a variety of methodologies, including multiple linear regression analysis, k-nearest neighbors, naive bayes, and decision trees. The forecasts are then assessed and compared to identify those that deliver the best results. The four strategies all delivered performance that was equivalent. We want tomake the predictions using more advanced algorithms in the future. The optimal feature selection technique and classifier for the given dataset are used to draw conclusions. Any form of marketing or business can use this study to identify the ideal product (with minimum cost and maximum features).***

Introduction:

Price is the marketing and commercial attribute that has the most impact. The first question the consumer asks is how much the things cost. The main issue of any consumer is "whether he can buy something with the circumstances offered or not." As a result, the main objective of the research is to calculate home pricing. The route to the aforementioned goal only begins with this paper. Artificial intelligence, or a computer's capacity for intelligent response to queries, is now a fairly vast field of engineering. We have access to the most recent artificial intelligence techniques thanks to machine learning, including classification, regression, supervised and unsupervised learning, among other things. There are many machine learning tools accessible, including MAT LAB, Python, Cygwin, WEKA, and others. Among the choices are decision trees, Nave Bayes, and a number of additional classifiers. Many sorts of algorithms are needed in order to narrow the dataset down to the greatest qualities. As a result, the problem's computational complexity will be decreased. The dataset's dimensionality is typically reduced using a number of optimization techniques because this is an optimization problem. One of the most used apps for sales and transactions right now is mobile. New mobile phones with updated software and more apps are released every day. Many tens of thousands of cell phones are bought and traded each day. As a result, the mobile pricing class prediction is a case study for the specific problem type, namely choosing the best product. Each item's genuine cost can be ascertained using the same process, including vehicles, motorcycles, generators, motors, food, medications, and more. For example, one of the most important programmes for figuring out mobile costs is Mobile Processor. In the busy world we live in today, battery life is extremely crucial. While choosing a mobile device, it's also important to take its size and thickness into account. Video consistency, camera pixels, and internal memory all need to be remembered. One of the most significant technological limitations of the twenty-first century is internet browsing. The size of the mobile device also affects the list of available

functionalities. Hence, using all of the aforementioned factors, we'll determine if the smartphone will be very expensive, affordable,pricey, or very-costly.

I. RELATED WORK

Asim et al [1] suggests to anticipate "Whether the mobile with certain features will be Economical or Expensive" is the major motive of this research work. The real data set is gathered from online sources. Several feature selection techniques are used to find and eliminate redundant and less essential features with the least amount of computational complexity. In order to attain the highest accuracy possible, a variety of classifiers are used. Results are contrasted based on the fewest features chosen and the maximum accuracy attained. The optimal feature selection technique and classifier for the given dataset are used to draw conclusions. Any form of marketing or business that wants to locate the best product can use this work.

It is advised that this research be continued in order to find a more sophisticated answer to the issue at hand and a more precise instrument for pricing calculation. With the exception of the combination of WrapperattributEval and Descision Tree J48 classifier, this work may be finished with results that are comparable for both Feature selection techniques and classifiers. This combination has the highest accuracy and has chosen the fewest, most suitable features. It is significant to remember that in Forward selection, increasing the number of pointless or duplicated features reduces the effectiveness of both classifiers. Backward selection loses effectiveness if any significant feature is removed from the data set. The data set's small number of instances is the primary cause of its low accuracy rate. While working, it's important to keep in mind that turning a regression problem into a classification problem adds extra error.

Noor et al [2] suggests that, this study uses supervised machine learning to offer a system for predicting car prices. The machine learning prediction approach used in the study, multiple linear regression, provided 98% prediction accuracy. Several independent variables are used in multiple linear regression, but there is only one dependent variable whose actual and predicted values are compared to determine the accuracy of results. This study suggests a system in which the price is a dependent variable that can be predicted. The price is determined by a number of variables, including the model, make, city, version, colour, mileage, alloy wheels, and power steering of the car. The data set utilised in this study can be extremely helpful for undertaking related research with various prediction methodologies.

This data collection can be used to predict automobile prices using the same or alternative prediction tools. The data collected for this study made it easier to anticipate used automobile prices using the linear regression method. Many inferences were drawn from the data set. By removing irrelevant variables from the dataset during the processing and analysis phase, the suggested system analysed the variables, chose the most pertinent variables from the dataset, and decreased the complexity of the model. The same data set will be utilised to estimate used car prices in the future usingfuzzy logic, KNN, and genetic algorithms.

Kumuda et al [3] The most frequently purchased item today is typically a mobile phone, which has become a common commodity. Every year, thousands of different mobile phone models with new features, specifications, and designs are released. So, determining the mobile's actual pricing and estimating its position in the market are crucial for effective marketing and a product's successful launch. In addition to the available standards and desired designs, financial stability is crucial for market survival. Customers typically check whether they can buy the specified item at the projected price or not. Hence, before releasing a mobile device, determining the pricing is crucial, as is learning about the market and rivals. In order to reduce complexity, identify key selection factors, and obtain the most accurate comparison within the data, a dataset from the current market is collected for this prediction. The best pricing with the most specifications can be found with this tool.

This project focuses on estimating the cost and mobile device features. In order to provide exact features for selection and obtain the most accurate results, feature selection is used. The accuracy of the features is lowered if the data set contains forward selection. If a crucial component of backward selection is removed, its effectiveness is diminished. This project approach could be enhanced by creating software that could foretell feature selections to be used when a new product is launched. A more exact and accurate result would be obtainable if additional attributes and selections were added to the dataset along with the provided genuine occurrences.

Renuka et al [4] suggests that "Whether the mobile with certain features will be Economical or Expensive" is the major motive of this research work. Real Dataset is compiled using online resources. Several feature selection techniques are used to find and eliminate redundant and less essential features with the least amount of computational complexity. In order to attain the highest accuracy possible, a variety of classifiers are used. Results are contrasted based on the fewest features chosen and the maximum accuracy attained. The optimal feature selection technique and classifier for the given dataset are used to draw conclusions. Any form of marketing or business can use this study to identify the ideal product (with minimum cost and maximum features). to accuratelyforecast the price range for mobile devices.

With results that are equivalent for both Feature selection techniques and classifier, this study can be considered complete. This combination has the highest accuracy and has chosen the fewest, most suitable features. It is significant to remember that in Forward selection, increasing the number of pointless or duplicated features reduces the effectiveness of both classifiers. Backward selection loses effectiveness if any

significant feature is removed from the data set. The data set's small number of instances is the primary cause of its low accuracy rate. While working, it's important to keep in mind that turning a regression problem into a classification problem adds extra error.

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