

Phone Price Prediction

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1. Project Title

Phone Price Prediction

2. Team Members

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3. Objective

The objective of this project is to build a machine learning model that can predict the price of a phone based on its features such as RAM, storage, camera quality, and battery capacity. The model will help consumers and manufacturers by providing insights into the pricing of phones based on technical specifications.

4. Background and Motivation

Smartphones are an essential part of everyday life, with a wide range of features and prices. Predicting the price of a phone based on its specifications can help both manufacturers and consumers. Manufacturers can use the model to price their products competitively, while consumers can get an estimate of the value of a phone before purchasing it.

5. Proposed Methodology

We will approach the project with the following steps:

Data Collection

We will collect data on phone specifications and prices from publicly available datasets, such as those found on Kaggle (e.g., Mobile Price Classification Dataset).

Algorithms/Models

We plan to implement machine learning models such as Linear Regression, Decision Trees, Random Forests, and Gradient Boosting Machines (GBM) to predict the price of a phone. We will experiment with different models and select the one that provides the highest accuracy.

Tools and Technologies

We will use Python with libraries such as `scikit-learn`, `Pandas`, and `Matplotlib` for data preprocessing, model building, and evaluation. We will also explore using advanced libraries such as `XGBoost` for better performance.

Evaluation Metrics

The models will be evaluated using metrics such as Mean Absolute Error (MAE), Root Mean Squared Error (RMSE), and R-squared to measure the accuracy of the price predictions.

6. Expected Outcomes

We expect to develop a machine learning model with an accuracy of at least 80% in predicting the price of phones based on their features. We anticipate challenges such as overfitting and feature selection, which we will address through cross-validation and hyperparameter tuning.

7. References

- Mobile Price Classification Dataset, Kaggle: <https://www.kaggle.com/datasets/berkayeserr/phone-prices>

8. Conclusion

By the end of this project, we aim to have a functional model capable of predicting the price of a phone based on its technical features. This model can be useful for manufacturers to set competitive prices and for consumers to evaluate phone prices based on their preferences.