Capstone Project Submission

Instructions:

i) Please fill in all the required information.

ii) Avoid grammatical errors.

Team Member’s Name, Email, and Contribution:

Team Member’s Role:-

**Pratyush Kumar Rath**

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● Data Understanding

● Feature Analysis

● Data Visualization

● Feature Engineering

● Random forest

● Gradient Boosting

● Hyperparameter tuning

● Summary

**Bikesh Kumar Maharana**

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● Data Understanding

● Feature Analysis

● Data Visualization

● Multivariate Analysis

● Decision Tree

● SVM

● Research Analytics

●Technical Documentation

**Gourav Singh**

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● Data Understanding

● Data Visualization

●Univariate analysis

● Multivariate Analysis

● KNN

● Naïve Bayes

● Research Analytics

●Technical Documentation

Github Link:-

During the purchase of mobile phones, various features like memory, display, battery, camera, etc., are considered. People fail to make correct decisions, due to the non-availability of necessary resources to cross-validate the price. To address this issue, a machine learning model is developed using the data related to the key features of the mobile phone. The developed model is then used to predict the price range of the new mobile phone. Machine learning algorithms namely KNN Classifier, Random Forest Classifier (RFC),Gradient Boosting Classifier,Logistic Regression, Decision Tree Classifier, SVM, GridsearchCV are used to train the model and predict the output as low, medium, high or very high. In order to improve the classification accuracy feature selection method is used.

There are many things we consider before buying a mobile as we used our mobile for various purpose like connecting with our family , playing games ,taking a photos to keep our memory. So this such specifications such as RAM, internal memory ,Wi-Fi , 3G/4G connectivity etc. plays important role to buy a mobile. To analysis of this important factor from time to time and come up with the best setoff specifications and price ranges so that people will buy the mobile. Hence through the various ML modules we will help the company to estimate the price range of mobiles according to feature so the maximum amount of sell will be possible.

We made Exploratory Data Analysis using the data,made pre-processing ,feature analysis,correlation heat map.After this we made Train test split using the data and applying models of Logistic Regression, Decision Tree ,Random Forest ,KNN Classifier ,Naive Bayes ,SVM ,Gradient Boosting Classifier. After that applied Hyper parameter tuning to Random Forest and Gradient Boosting with GridsearchCV as these two models performed best among others.Then we got following conclusion :-

⁕ From The EDA We Get That The Feature ‘RAM’ Is The Most Relative Feature With Our

Dependable Feature ‘Price Range’. More RAM Capacity Will Increase The Price Of The Mobile.

⁕ The Battery Power And Pixel Height Also Positively Correlated With Price Range That

Means It Will Also Create Some Impact To The Calculation.

⁕ By Implementing All The Models We Have Found That Gradient Boosting Has The Best

Score Of 91.2% Followed By Logistic Regression of 91.1% And Random Forest Of 89%.

⁕ By Appling Hyper Parameter Tuning We Get The Score Of Gradient Boosting Of 92%.

⁕ So We Can Conclude That The Best For This Dataset Is Gradient Boosting With Hyper

Parameter Tuning, Which Can Be Used For Future Prediction Of The DataSet.