Capstone Project Submission

**Instructions:**

1. Please fill in all the required information.
2. Avoid grammatical errors.

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| **Member’s Name, Email and Contribution: (Individual project)** |
| **Member : Harshad Savle**  **Email:** [harshad.savle@gmail.com](mailto:harshad.savle@gmail.com)  **Tasks :**   1. Clean and prepare the data for analysis. 2. Done Initial analysis and visualization. 3. Prepared Project Summary 4. Prepared Key Notes and conclusion 5. Done the visualization for analysis. 6. Added Useful Codes to simplify the analysis. 7. Prepared conclusions and PPT 8. Prepared introduction and key finding 9. Prepared Technical Documentation 10. Prepared Project Presentation |
| **Please paste the GitHub Repo link.** |
| **GitHub Link:** <https://github.com/harshadsavle/mobile_price_range_prediction>  **Google Drive link:** <https://drive.google.com/drive/folders/1cB885ZAvVmigm9EKaBxfSYLLIqaCc2GI?usp=sharing> |

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| **Please write a short summary of your Capstone project and its components. Describe the problem statement, your approaches and your conclusions. (200-400 words)**  **Problem Statement:**  In competitive mobile phone market companies wants to understand the sales data of mobile phones and the factors which drive the prices of the mobile phones.  The objective is to find out some relation between features of a mobile phone(eg:- Internal Memory, Ram etc) and its selling price. In this problem, we do not have predict the actual price but range indicating how high the price is  This dataset has around 2000 observations in it with 21 columns and it is a mix between categorical and numeric values.  Analysing the data to discover key understandings (not limited to these) such as:   * Which factors affects the most in predicting mobile price? * Does size of screen of mobile phone affects the price or not? * Effect of Connectivity like 3g and 4g with mobiles price? * Which mobiles phones in market are highest in demand? * What is the relation of mobile camera with price of mobile?   **Our Approach:**  The approach followed here is to first check the sanctity of the data and then understand the features involved. The events followed were in our approach:   * Understanding the problem statement and the datasets * Exploratory data analysis of categorical and continuous variables against our target variable. * Data manipulation feature selection and engineering, feature scaling, outlier detection and treatment and encoding categorical features. * Modeling – the baseline model logistic regression was chosen consideting our features were mostly categorical with few having continuous importance. * Model performance and evaluation * We did hyperparameter tuning to fetch respective scores from the evaluation metrics such as a precision, recall and f1 score. * Price range prediction |

# Conclusion from EDA:

* It can be seen that the price range is uniformly distributed all over the range. This validates the hypothesis about this feature.
* Half of the devices have Bluetooth and half of the devices don’t have Bluetooth.
* There is not continuous increase in pixel width as we move from low cost to high cost mobiles with ‘Medium cost’ and ‘High cost’ has almost equal pixel width. May be pixel size can say that it would be a driving factor in deciding price range.

## Ram is increasing the price range is also increasing.

* The pixel height is almost similar as we move from low cost to very high cost. Little variation pixel height.
* The feature 3G connectivity play an important role in prediction of price ranges

# Feature importance:

After comparing all features of the dataset we can figure out that ram has the highest importance

Screen height and screen width was highly correlated so we made new feature from those features and removed

Them from dataset.

# Conclusion from Machine Learning:

* + From the exploratory data analysis we can easily see that here are mobile phones in 4 different price ranges.
  + The number of the elements is almost similar.
  + Half the devices have Bluetooth, and half don’t.
  + Costly phones are lighter and ram, battery power, pixels played more significant role in deciding the price range of mobile phone.