Phone Classification

Phone Classification Data Set

Overview

A collection of features characterizing mobile phones, including battery power, camera specifications, network support, memory, screen dimensions, and other attributes. The 'price_range' column categorizes phones by price.

Problems to solve

1 Review feature/columns.

3 Provide visualization of data set.

2 Explore the data.

4 Predicting the price of a cell phones based on various features.

Columns

1. battery_power: The capacity of the phone's battery,
2. blue: Indicates whether the phone has Bluetooth capability. clock_speed: The speed at which the phone's central processing unit (CPU) operates, often measured in GHz (gigahertz).
3. dual_sim: Indicates whether the phone supports dual SIM cards.
4. fc (Front Camera): The resolution or megapixels of the front camera.
5. four_g: Indicates whether the phone supports 4G connectivity.
6. int_memory (Internal Memory): The amount of internal storage capacity in megabytes.
7. m_dep (Mobile Depth): The thickness or depth of the phone.
8. mobile_wt (Mobile Weight): The weight of the phone, often measured in grams.

Columns continued

1. mobile_wt (Mobile Weight): The weight of the phone, often measured in grams.
2. n_cores (Number of Cores): The number of processing cores in the phone's CPU.
3. pc (Primary Camera): The resolution or megapixels of the primary (rear) camera.
4. px_height: The height of the phone's display resolution in pixels.
5. px_width: The width of the phone's display resolution in pixels.
6. ram (Random Access Memory): The amount of RAM in megabytes, which affects the phone's performance.
7. sc_h (Screen Height): The height of the phone's screen in centimeters.
8. sc_w (Screen Width): The width of the phone's screen in centimeters.
9. talk_time: The maximum time a phone can be used for a phone call on a full battery charge.
10. three_g: Indicates whether the phone supports 3G connectivity.
11. touch_screen: Indicates whether the phone has a touch screen. Values might be 0 or 1.
12. wifi: Indicates whether the phone supports Wi-Fi connectivity. Values might be 0 or 1.
13. price_range: The target variable or label, representing the price range category to which the phone belongs.

```
RangeIndex: 2000 entries, 0 to 1999
Data columns (total 21 columns):
 #   Column         Non-Null Count   Dtype
---  ------         --------------   -----
 0   battery_power  2000 non-null    int64
 1   blue           2000 non-null    int64
 2   clock_speed    2000 non-null    float64
 3   dual_sim       2000 non-null    int64
 4   fc             2000 non-null    int64
 5   four_g         2000 non-null    int64
 6   int_memory     2000 non-null    int64
 7   m_dep          2000 non-null    float64
 8   mobile_wt      2000 non-null    int64
 9   n_cores        2000 non-null    int64
 10  pc             2000 non-null    int64
 11  px_height      2000 non-null    int64
 12  px_width       2000 non-null    int64
 13  ram            2000 non-null    int64
 14  sc_h           2000 non-null    int64
 15  sc_w           2000 non-null    int64
 16  talk_time      2000 non-null    int64
 17  three_g        2000 non-null    int64
 18  touch_screen   2000 non-null    int64
 19  wifi           2000 non-null    int64
 20  price_range    2000 non-null    int64
dtypes: float64(2), int64(19)
memory usage: 328.3 KB
```
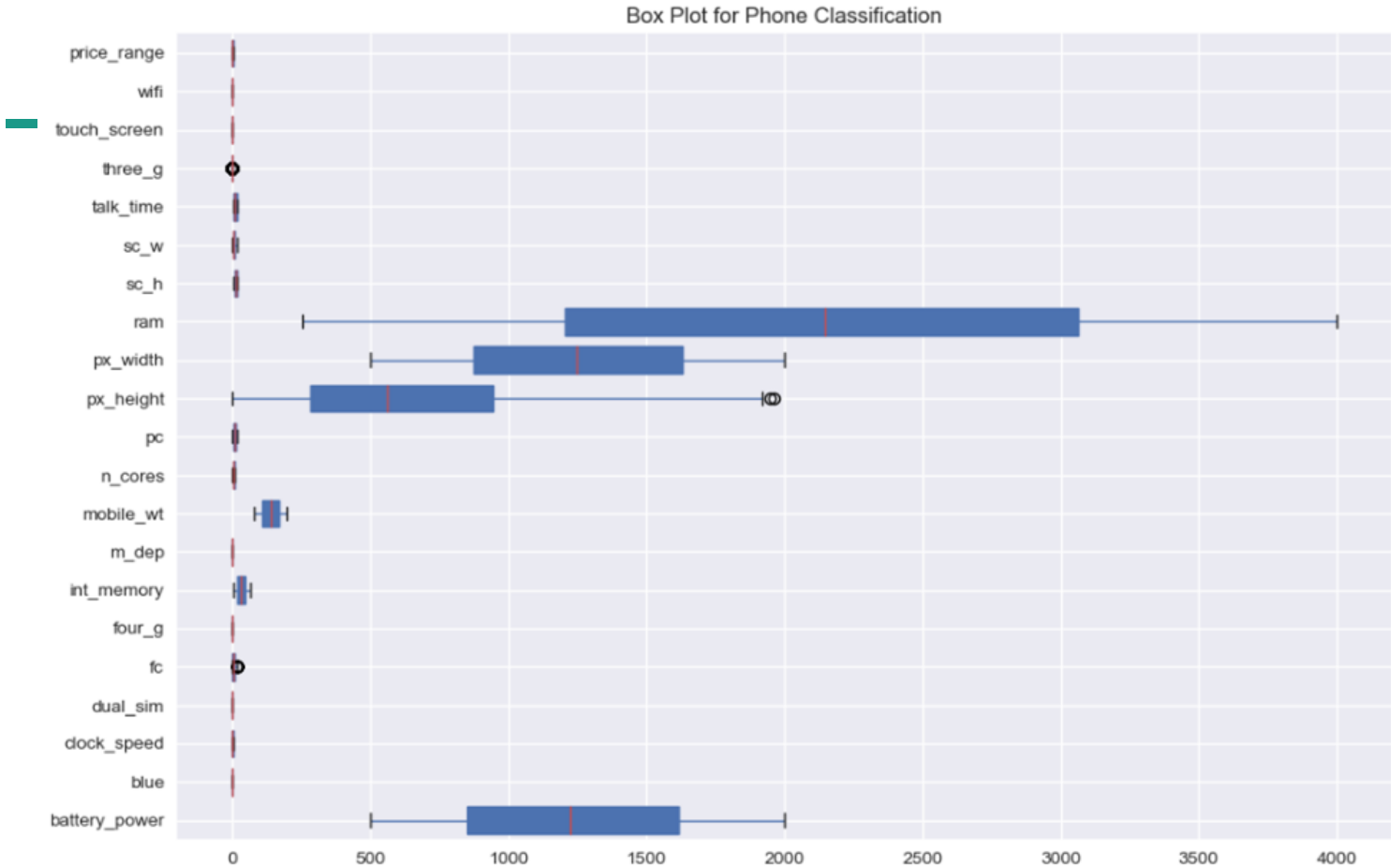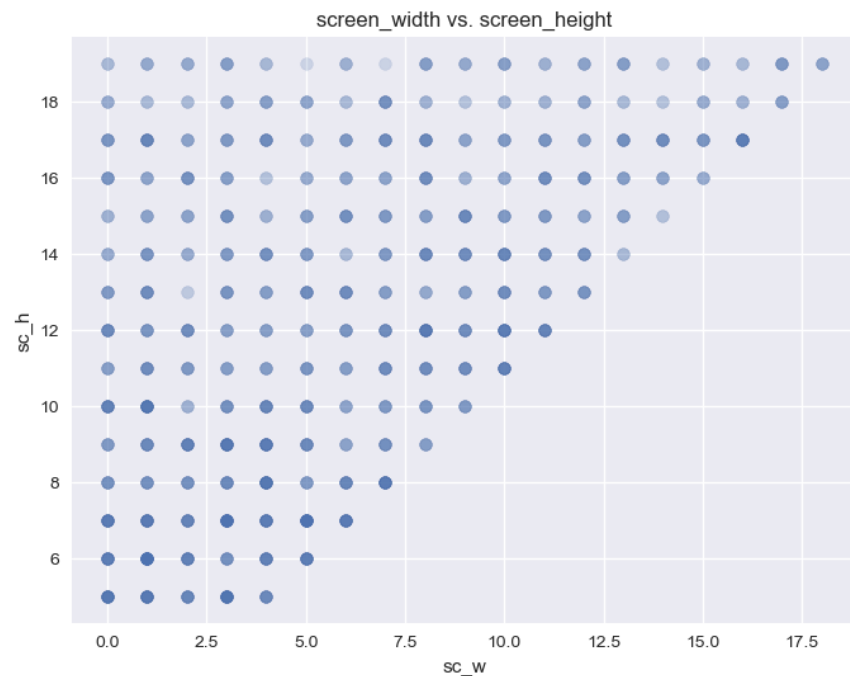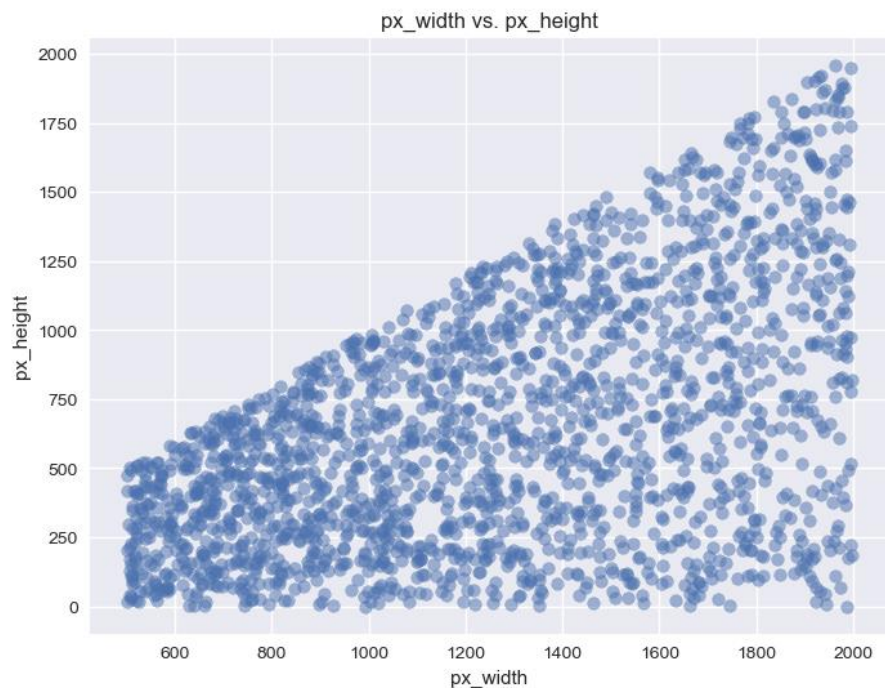
Understanding the data

Market trends


Box Plot for Phone Classification

Market trends

Comparison of screen dimensions.

Trend analysis

In this visual scenario, we aim to develop a robust machine learning model that can accurately estimate the price range of cell phones using relevant attributes such as 'px_width', 'px_height', 'ram', and 'battery_power'. The goal is to create a reliable tool that can assist consumers and industry stakeholders in understanding how specific hardware features contribute to the pricing of cell phones. This predictive capability can aid consumers in making informed purchasing decisions and offer valuable insights to manufacturers and retailers in setting competitive pricing strategies.

Bar Chart for px_width, px_height, ram, and battery_power

Line Graph for Selected Features in Phone Dataset
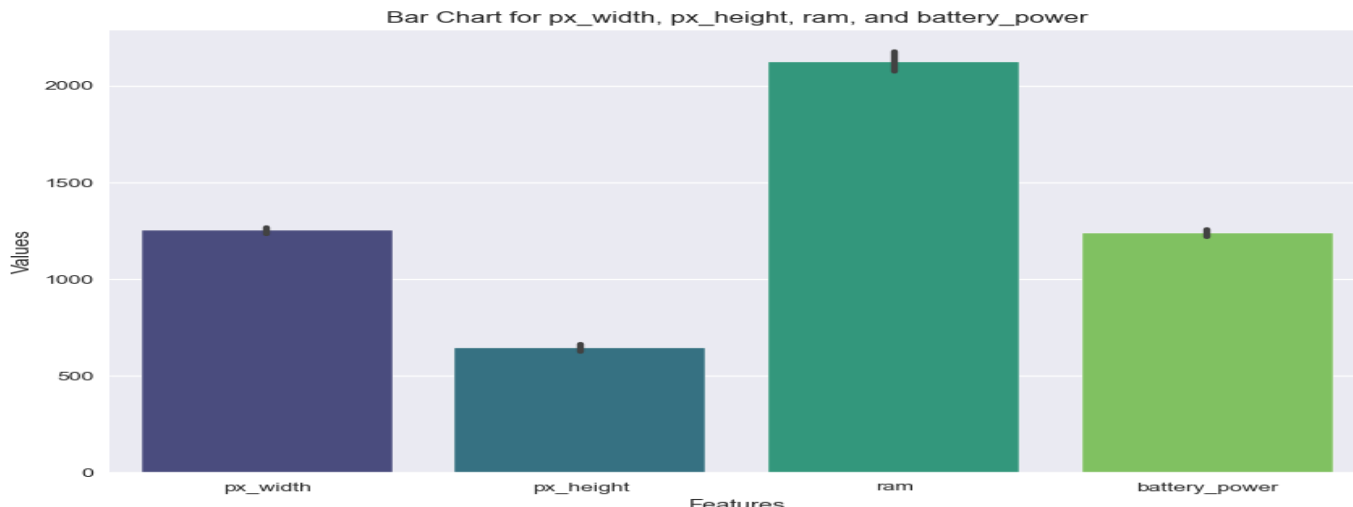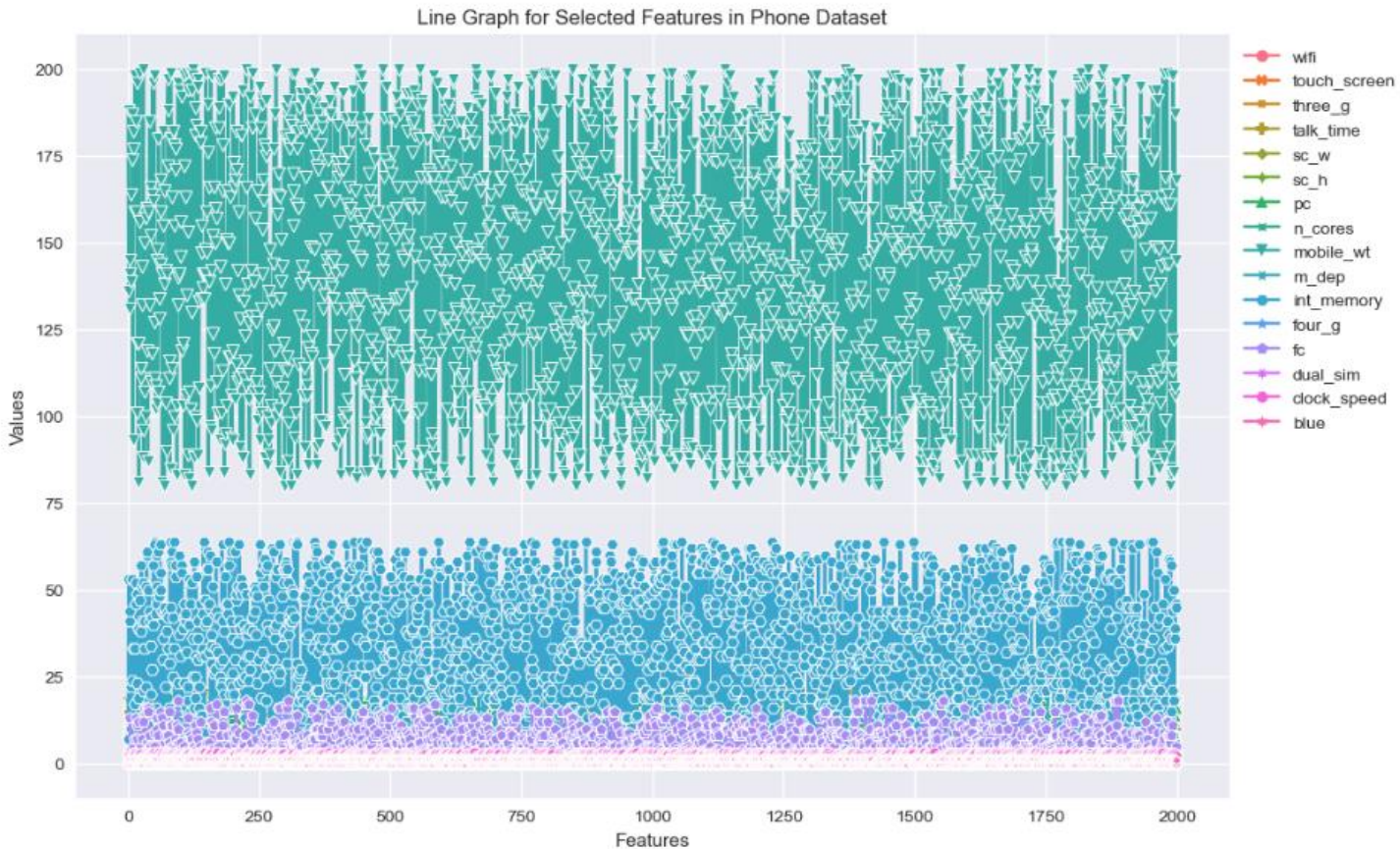
Target audience

Consumer, discerning the areas where clients are inclined to invest more based on phone features.

Process

0
1

RandomForestClassifier

Accuracy: 0.9075
With original data

SVM Classifier

Accuracy: 0.9675
With original data

0
2

0
3

GaussianNB

Accuracy: 0.8125
With original data

Predictions

Provide a visual for considerable reasons why client will spend more money based on certain features.

Features

Phone

['px_width', 'px_height', 'ram', 'battery_power']

Target

Price

['price_range']

Outcome | knn_classifier

Acc.

Classification Report

92.50

Summary

In conclusion, the findings indicate that customers, when making decisions about purchasing a cell phone, tend to prioritize specific hardware attributes such as 'px_width', 'px_height', 'ram', and 'battery_power'. Focusing on these key features appears to yield more accurate predictions of the price range, suggesting their crucial role in determining the perceived value and pricing of cell phones in the market. This insight can be valuable for both consumers and industry stakeholders in understanding the influential factors in the pricing of mobile devices.

Data Analyst
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Presently enrolled as a student at the Institute of Data Science, Possessing a background in corporate banking investigation

Thank you.