

CELLPHONE PRICE ON DATA VISUALISATION

Team members

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PROBLEM STATEMENT

- The problem is to visualize cell phone price data to gain insights into the factors influencing cell phone prices. This involves exploring relationships between various attributes of cell phones, such as specifications (RAM, storage, camera quality), brand, release year, and market trends, and their corresponding prices. The visualization aims to provide stakeholders, including manufacturers, retailers, and consumers, with valuable insights for pricing strategies, product positioning, and purchasing decisions.

MOTIVATION

- the title “Cell Phone Price Data Visualization” reflects the central focus of the project: analyzing and visualizing data related to cell phone prices. By visualizing this data, we aim to uncover patterns, trends, and relationships that can inform decision-making in the cell phone industry.

DATASET USED

The dataset used contains information about various attributes of cell phones and their corresponding prices. It includes features such as RAM, storage capacity, camera quality, brand, release year, and price. The dataset should be diverse and representative of different price ranges, brands, and market segments to provide comprehensive insights.

PYTHON LIBRARIES

- Pandas is a Python library used for data manipulation and analysis. It provides easy-to-use data structures and data analysis tools
- Matplotlib: It's a comprehensive library for creating static, animated, and interactive visualizations in Python.
- Seaborn: It's based on Matplotlib and provides a high-level interface for drawing attractive statistical graphics.



CELL PHONE PRICE ON DATA VISUALISATION

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ABSTRACT

- This abstract explores the use of data visualization techniques to analyze and understand the pricing trends of cell phones. As the market for mobile phones expands and evolves, prices fluctuate due to various factors such as technology advancements, brand value, and market competition. Effective visualization of this data can provide insights into these trends, enabling consumers, manufacturers, and analysts to make informed decisions.

INTRODUCTION

- The cell phone market is one of the most dynamic and rapidly evolving sectors in the global economy. As technological advancements continue to accelerate, the diversity and complexity of available mobile devices expand, influencing the pricing strategies employed by manufacturers and retailers. Understanding these price dynamics is crucial for various stakeholders, including consumers, manufacturers, and market analysts.

ADVANTAGE OF EXISTING METHOD

- Existing methods of visualizing cell phone prices offer several advantages, making them effective tools for analyzing market trends and aiding decision-making processes. Here are the key advantages.

- Enhanced Comprehension

Simplified Data Interpretation: Visualization transforms complex numerical data into easily understandable graphical formats, such as line graphs, bar charts, and scatter plots. This simplification aids stakeholders in quickly grasping key insights and trends without requiring advanced statistical knowledge

ADVANTAGES OF EXISTING METHOD

- Trend Identification:

Historical Price Trends: Line graphs and time series visualizations effectively illustrate how cell phone prices change over time, highlighting patterns such as the typical price decline of older models or the pricing cycle of new product launches.

Comparative Analysis:

Brand Comparison: Bar charts and other comparative visualizations enable clear comparisons between different brands, showcasing how premium brands like Apple and Samsung price their products relative to budget brands such as Xiaomi and Motorola.

DISADVANTGES

- While data visualization offers numerous advantages for understanding cell phone prices, it also has certain limitations and disadvantages. Here are the key drawbacks.
- Data Quality and Integrity:

Inaccurate Data: Visualizations are only as reliable as the underlying data.

Inaccurate, outdated, or incomplete data can lead to misleading visualizations, resulting in incorrect conclusions and decisions.

DISADVANTGES

- Data Cleaning Challenges:

Preparing data for visualization often requires extensive cleaning and preprocessing. This can be time-consuming and prone to errors, especially with large datasets from multiple source.

Loss of Detail:

Visualizations can sometimes oversimplify complex data. Important nuances and details may be lost in the process, leading to an incomplete understanding of the pricing dynamics.

PROPOSED METHOD

- To address the limitations of existing visualization methods and enhance the analysis of cell phone prices, we propose a comprehensive and robust method that leverages advanced techniques and best practices in data visualization. This method aims to improve data accuracy, interactivity, and user engagement while providing detailed and insightful visualizations.

ARCHITECTURE

- The architecture for a cell phone price data visualization system involves several key components that work together to collect, process, and visualize data efficiently. Here's a comprehensive architecture that includes data sources, processing layers, storage, and visualization tools
- Web Scraping: Tools like BeautifulSoup, Scrapy, or Selenium to extract price data from e-commerce sites, manufacturer websites, and price comparison platforms.

ARCHITECTURE

- APIs:

Integrations with APIs from retailers, price tracking websites, and market research firms to obtain real-time and historical price data.

Databases:

Market research databases providing structured datasets on cell phone prices and features.

ARCHITECTURE

- **Batch Processing:** Schedule regular data extraction jobs using tools like Apache Airflow or cron jobs to gather data at specific intervals.
- **Real-Time Processing:** Utilize streaming platforms like Apache Kafka or AWS Kinesis to handle real-time data feeds from APIs.
- **Raw Data Storage:** Store raw data in a data lake (e.g., Amazon S3, Azure Blob Storage) for archival and historical analysis.
- **Relational Database:** Use a relational database (e.g., PostgreSQL, MySQL) for cleaned and structured data, ensuring efficient querying and analysis.

RESULT

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
```

```
RangeIndex: 7871 entries, 0 to 7870
```

```
Data columns (total 14 columns):
```

#	Column	Non-Null Count	Dtype
0	Date	7871 non-null	object
1	ID	7871 non-null	int64
2	Name	7871 non-null	object
3	Neo Reference ID	7871 non-null	int64
4	NASA JPL URL	7871 non-null	object
5	Absolute Magnitude H	7870 non-null	float64
6	Estimated Diameter Min (km)	7870 non-null	float64
7	Estimated Diameter Max (km)	7870 non-null	float64
8	Is Potentially Hazardous Asteroid	7871 non-null	bool
9	Close Approach Date Full	7871 non-null	object
10	Relative Velocity (km/h)	7871 non-null	float64
11	Miss Distance (astronomical units)	7871 non-null	float64
12	Miss Distance (kilometers)	7871 non-null	float64
13	Orbiting Body	7871 non-null	object

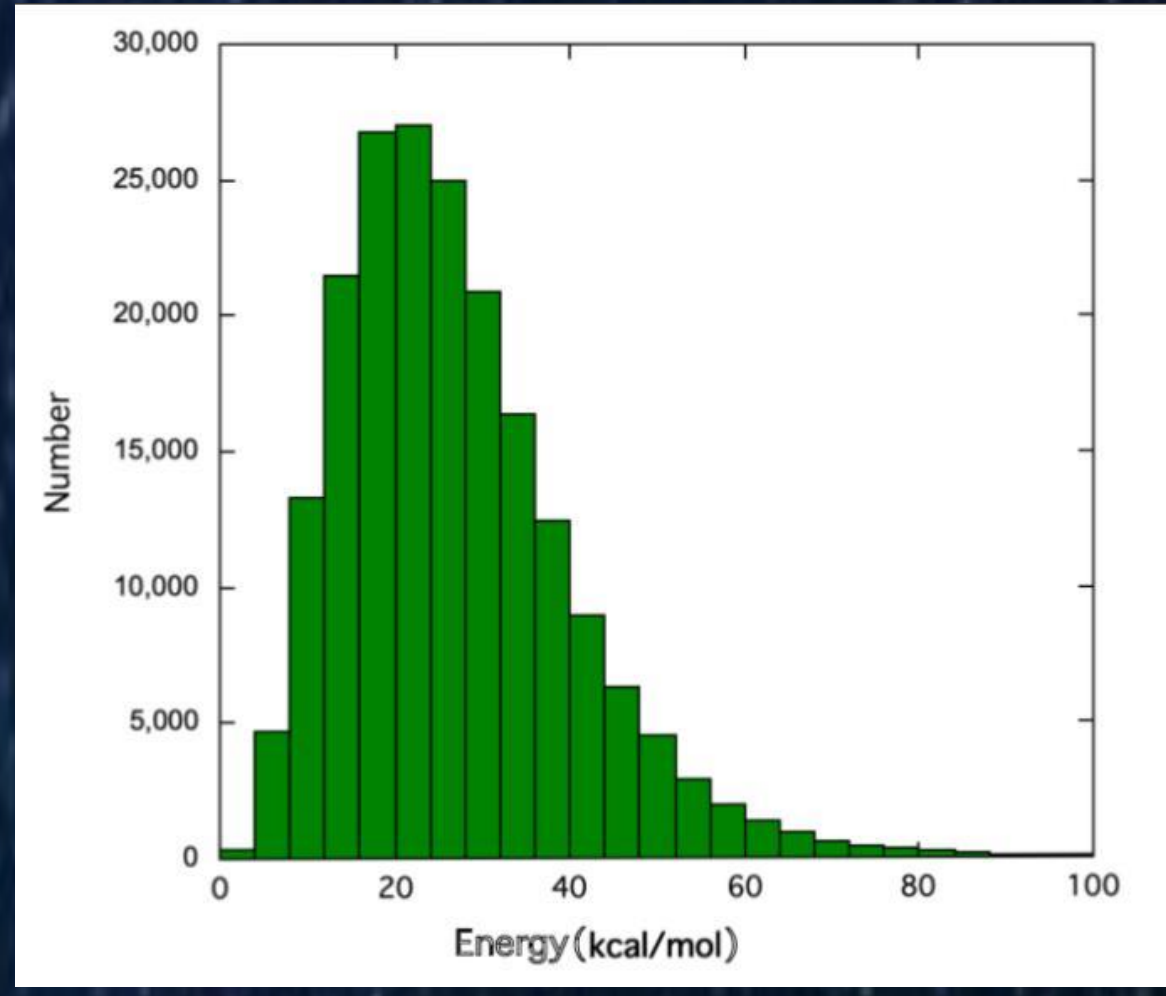
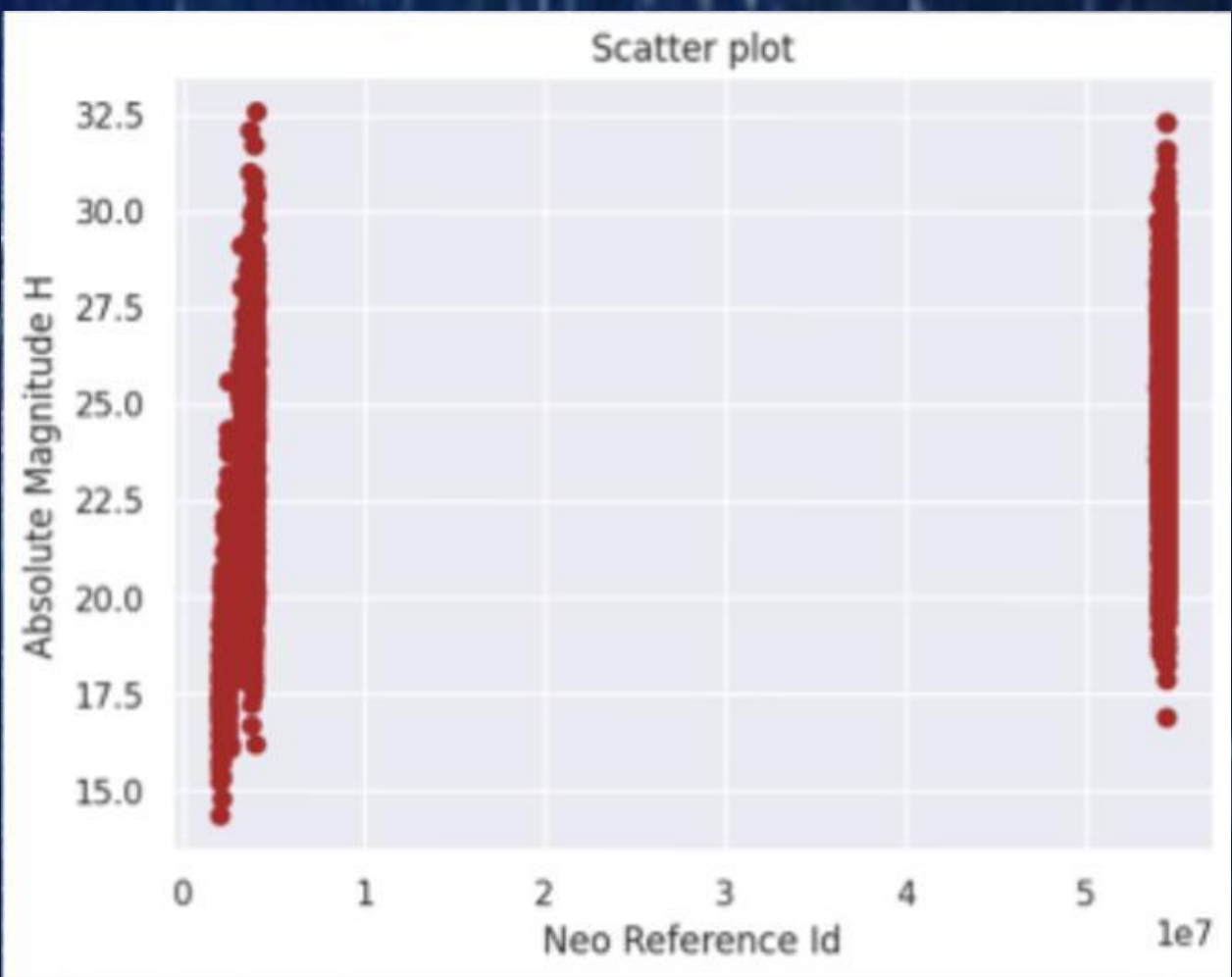
```
dtypes: bool(1), float64(6), int64(2), object(5)
```

```
memory usage: 725.2+ KB
```

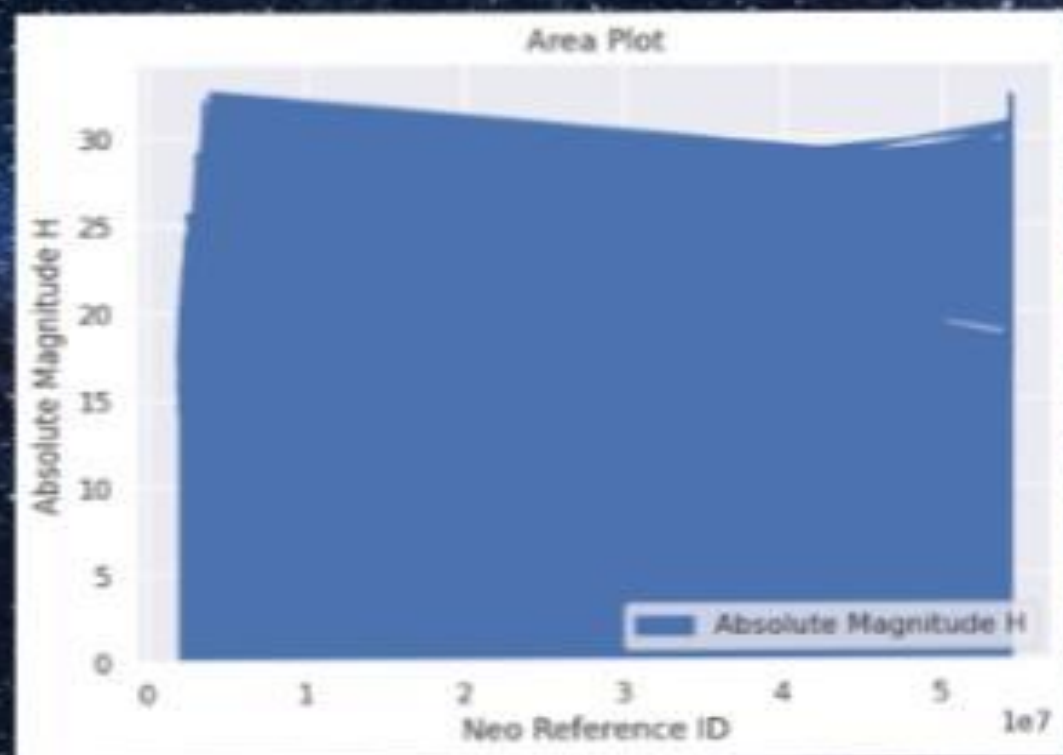
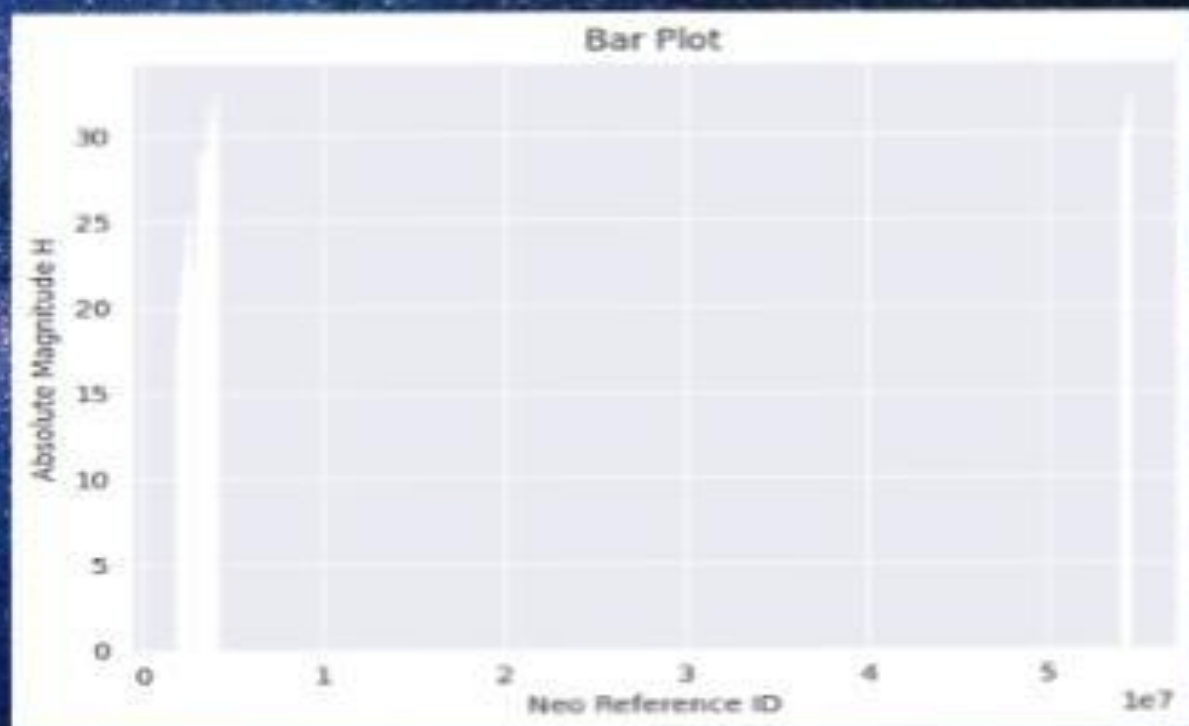
```
[4]: df.head()
```

```
ID
```

	Date	ID	Name	Neo Reference ID	NASA JPL URL	Absolute Magnitude H	Estimated Diameter Min (km)	Estimated Diameter Max (km)	Is Potentially Hazardous Asteroid	Close Approach Date Full	Relative Velocity (km/h)
0	2021-02-15	1866270	20210215AB	20210215AB	https://neo.jpl.nasa.gov/asteroids/	12.90	0.176024	0.176024	False	2021-02-15 00:00:00	20210215AB
1	2021-02-15	1866271	20210215AC	20210215AC	https://neo.jpl.nasa.gov/asteroids/	15.46	0.165007	0.165007	False	2021-02-15 00:00:00	20210215AC
2	2021-02-15	1866272	20210215AD	20210215AD	https://neo.jpl.nasa.gov/asteroids/	12.46	0.165147	0.165147	False	2021-02-15 00:00:00	20210215AD
3	2021-02-15	1866273	20210215AE	20210215AE	https://neo.jpl.nasa.gov/asteroids/	12.46	0.165147	0.165147	False	2021-02-15 00:00:00	20210215AE



Results:



CONCLUSION

- In conclusion, data visualization serves as a powerful tool for comprehensively understanding the complexities of cell phone prices. Through the systematic analysis of price trends, brand comparisons, feature correlations, and regional variations, stakeholders can make informed decisions in the dynamic cell phone market.