**Device Price Classification System Documentation**

**Introduction:**

Based on their features, mobile phones' price category is predicted by the Device Price Classification System. The system divides gadgets into several price categories using machine learning models. An overview of the system, its features, and how to use it are provided in this manual.

**Features:**

1. \*\*Prediction based on Features:\*\* The system predicts the price category of a mobile phone based on three crucial features: RAM, battery power, and the product of pixel height and width.

2. \*\*Machine Learning Models:\*\* Three machine learning models were trained to classify the devices:

- Naive Bayes

- Random Forest

- K Nearest Neighbors

3. \*\*Accuracy Evaluation:\*\* The accuracy of the models was evaluated using various metrics, with the Random Forest model achieving the highest accuracy of 91%.

4. \*\*Classification Report and Confusion Matrix:\*\* A detailed classification report and confusion matrix were generated for the Random Forest model, providing insights into its performance.

5. \*\*API Endpoint:\*\* The system provides a RESTful API endpoint `/predict` where users can send device specifications as JSON data and receive the predicted price range as a response.

6. \*\*Live Demo:\*\* A live demo of the system is available at [sitemks.com/price\_prediction.html](sitemks.com/price\_prediction.html). Users can input device specifications and receive the predicted price range interactively.

**How to Use:**

1. \*\*Accessing the Live Demo:\*\*

- Open your web browser and navigate to [sitemks.com/price\_prediction.html](sitemks.com/price\_prediction.html).

- Fill in the required device specifications: Battery Power, RAM, Pixel Height, and Pixel Width.

- Click on the "Predict Price" button to see the predicted price range for the device.

2. \*\*Interacting with the API Endpoint:\*\*

- Send a POST request to the `/predict` endpoint with the following JSON data:

```json

{

"battery\_power": <battery\_power>,

"ram": <ram>,

"px\_height": <px\_height>,

"px\_width": <px\_width>

}

```

- Replace `<battery\_power>`, `<ram>`, `<px\_height>`, and `<px\_width>` with the corresponding device specifications.

- Receive the predicted price range as a JSON response.

\*\*API Endpoints:\*\*

- [https://shahrin.pythonanywhere.com/api/devices/](https://shahrin.pythonanywhere.com/api/devices/): Retrieve a list of all devices.

- [https://shahrin.pythonanywhere.com/api/devices/{id}](https://shahrin.pythonanywhere.com/api/devices/{id}): Retrieve details of a specific device by ID.

- [https://shahrin.pythonanywhere.com/api/devices](https://shahrin.pythonanywhere.com/api/devices): Add a new device.

- [https://shahrin.pythonanywhere.com/api/predict/{deviceId}](https://shahrin.pythonanywhere.com/api/predict/{deviceId}): Predict the price category for a device with the given ID.

**Conclusion:**

The Device Price Classification System provides a convenient way to predict the price category of mobile phones based on their features. With its accurate machine learning models and user-friendly interface, it serves as a valuable tool for both consumers and sellers in the mobile phone market.