মেট্রোপলিটন ইউনিভার্সিটি
Metropolitan University

DIGITAL SKILLS FOR STUDENT TRAINING PROGRAM

Institute of Information and Communication Technology, Sylhet

Course Title

PYTHON PROGRAMMING AND BASIC DATA SCIENCE

Assignment on Data Science and ML

Mobile Device Usage and User Behavior

Submitted To

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Mobile Device Usage and User Behavior

Task 1: Dataset Selection and Description

For this project, I chose the Mobile Device Usage and User Behavior Dataset dataset,

available on Kaggle, which provides a comprehensive overview how people behave based on their daily interaction with mobile devices.

1.1. Dataset Overview

The dataset includes:

- User ID: Unique identifier for each user.
- Device Model: Model of the user's smartphone.
- Operating System: The OS of the device (iOS or Android).
- App Usage Time: Daily time spent on mobile applications, measured in minutes.
- Screen On Time: Average hours per day the screen is active.
- Battery Drain: Daily battery consumption in mAh.
- Number of Apps Installed: Total apps available on the device.
- Data Usage: Daily mobile data consumption in megabytes.
- Age: Age of the user.
- Gender: Gender of the user (Male or Female).
- User Behavior Class: Classification of user behavior based on usage patterns (1 to 5).

This dataset is ideal for researchers, data scientists, and analysts interested in understanding mobile user behavior and developing predictive models in the realm of mobile technology and applications. This Dataset was primarily designed to implement machine learning algorithms and is not a reliable source for a paper or article.

1.2. Source of the Dataset

The dataset is available in Kaggle under this link https://www.kaggle.com/datasets/valakhorasani/mobile-device-usage-and-user-behavior-dataset

1.3. Dataset description using Pandas

Using the Pandas library, I performed an initial exploration of the dataset to understand its structure:

```
import pandas as pd
# Load the dataset
data = pd.read_csv("dataset.csv")
# Get basic dataset info and descriptive statistics
data.info()
data.describe(include='all')
```

Task 2: Objective Identification

The objective of this project is to develop a machine learning model that can predict User Behaviour based on their mobile device usage pattern. This recommendation system will allow users to enter the usage pattern and classify the user's behaviour based on the trained data.

Task 3: Selecting a Suitable Machine Learning Algorithms

To achieve my objective of predicting a model which can predict user behaviour, I have chosen and applied the following machine learning algorithms:

3.1 Selected Algorithms

1. K-Nearest Neighbours

- **Description:** K-Nearest Neighbors (KNN), compares the similarity between different variables based on multiple attributes. KNN can recommend which behaviour class the user belongs.

- **Why Suitable:** KNN works well for smaller datasets and can predict and classify the users by measuring distance between few neighbours, which made it perfect for my objective.

Summary

Nowadays, people are more influenced by their mobile devices than anything. From communication to entertainment, leisure to business, mobile devices has become an essential part of our life and daily usage of mobile phone has a great impact on our daily life and it is actively making impact to our behaviour. So, predicting a user's behaviour is essential for business to know about their customers.