**PHASE-4 ASSIGNMENT**

**TITLE**: **measure energy consumption**

**GITHUBLINK**: https://github.com/adhi26/AI\_Phase1.git

**Dataset Link:**[**https://www.kaggle.com/datasets/robikscube/hourly-energy-consumption**](https://www.kaggle.com/datasets/robikscube/hourly-energy-consumption)

**Problem Statement**:

The current methods and technologies for measuring energy consumption face several critical challenges, which hinder the effective control and optimization of energy use

**Step 1: Import necessary libraries**

import pandas as pd

import matplotlib.pyplot as plt

import seaborn as sns

**Step 2: Load the data**

* Assuming you have your energy consumption data in a CSV file, you can load it using Pandas

data = pd.read\_csv('energy\_consumption\_data.csv')

**Step 3: Explore the data**

* Before creating visualizations, it's a good practice to explore your data to understand its structure. You can use functions like **head()**, **info()**, and **describe()** to get an overview of your data

print(data.head())

print(data.info())

print(data.describe())

**Step 4: Create Visualizations**

* Line Chart

A line chart is useful for visualizing trends over time. Let's say you want to plot energy consumption over a period

plt.figure(figsize=(12, 6))

plt.plot(data['Date'], data['EnergyConsumption'])

plt.xlabel('Date')

plt.ylabel('Energy Consumption')

plt.title('Energy Consumption Over Time')

plt.xticks(rotation=45)

plt.show()

* **Bar Chart**

A bar chart can be used to compare energy consumption across different categories or periods. For example, you can plot monthly energy consumption

monthly\_data = data.groupby('Month')['EnergyConsumption'].sum().reset\_index()

plt.figure(figsize=(12, 6))

sns.barplot(x='Month', y='EnergyConsumption', data=monthly\_data)

plt.xlabel('Month')

plt.ylabel('Energy Consumption')

plt.title('Monthly Energy Consumption')

plt.xticks(rotation=45)

plt.show()

* **Histogram**

A histogram can help you understand the distribution of energy consumption values

plt.figure(figsize=(12, 6))

sns.histplot(data['EnergyConsumption'], kde=True)

plt.xlabel('Energy Consumption')

plt.ylabel('Frequency')

plt.title('Energy Consumption Distribution')

plt.show()

**submitted by**

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