**Phase-3:Development Part 1**

# Loading and preprocessing of IoT traffic monitoring system

Loading and preprocessing data in an IoT traffic monitoring system typically involves collecting data from sensors, cleaning the data, handling missing values, and preparing it for further analysis or storage. Below is a simplified example in Python that demonstrates loading and preprocessing data for an IoT traffic monitoring system.

**Program:**

import pandas as pd

from datetime import datetime

# Function to load raw sensor data

def load\_sensor\_data(file\_path):

try:

# Assuming the data is in a CSV file with columns: timestamp, road\_id, vehicle\_count, speed

df = pd.read\_csv(file\_path)

df['timestamp'] = pd.to\_datetime(df['timestamp'])

return df

except Exception as e:

print(f"Error loading sensor data: {e}")

return None

# Function to preprocess sensor data

def preprocess\_sensor\_data(df):

try:

# Handle missing values

df = df.dropna()

# Convert timestamp to a meaningful format

df['formatted\_timestamp'] = df['timestamp'].dt.strftime('%Y-%m-%d %H:%M:%S')

# Additional preprocessing steps based on your specific requirements

return df

except Exception as e:

print(f"Error preprocessing sensor data: {e}")

return None

# Example usage

if \_\_name\_\_ == '\_\_main\_\_':

# Replace 'your\_sensor\_data.csv' with the actual file path

sensor\_data\_file = 'your\_sensor\_data.csv'

# Load raw sensor data

raw\_data = load\_sensor\_data(sensor\_data\_file)

if raw\_data is not None:

# Preprocess sensor data

preprocessed\_data = preprocess\_sensor\_data(raw\_data)

if preprocessed\_data is not None:

# Print the preprocessed data

print(preprocessed\_data.head())

else:

print("Preprocessing failed.")

else:

print("Data loading failed.")