

Traffic Intelligence: Advanced Traffic Volume Estimation with Machine Learning

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MY TASKS:

TSK-338839:

Splitting the Dataset into Dependent and Independent variable

```
[24]: # Target variable
y = df['traffic_volume']

# Feature set (drop traffic_volume)
x = df.drop(columns=['traffic_volume'], axis=1)
```

TSK-338840:

Feature Scaling

```
[24]: # Target variable
y = df['traffic_volume']

# Feature set (drop traffic_volume)
x = df.drop(columns=['traffic_volume'], axis=1)
```

```
[25]: import pandas as pd
from sklearn.preprocessing import scale

# Step 1: Separate target variable
y = df['traffic_volume']

# Step 2: Drop target from features
x = df.drop(columns=['traffic_volume'], axis=1)

# Step 3: Save column names before scaling
names = x.columns
```

```
# Step 4: Apply scaling (Z-score normalization)
x = scale(x) # This returns a NumPy array

# Step 5: Convert scaled data back to DataFrame with original column names
x = pd.DataFrame(x, columns=names)

# Step 6: Preview the result
x.head()
```

```
[25]: holiday    temp    rain    snow    weather    year    month \
0         0.0  0.530485 -0.007463 -0.027235 -0.566452 -1.855294  1.02758
1         0.0  0.611467 -0.007463 -0.027235 -0.566452 -1.855294  1.02758
2         0.0  0.627964 -0.007463 -0.027235 -0.566452 -1.855294  1.02758
3         0.0  0.669205 -0.007463 -0.027235 -0.566452 -1.855294  1.02758
4         0.0  0.744939 -0.007463 -0.027235 -0.566452 -1.855294  1.02758

      day    hours  minutes  seconds
0 -1.574903 -0.345548      0.0      0.0
1 -1.574903 -0.201459      0.0      0.0
2 -1.574903 -0.057371      0.0      0.0
3 -1.574903  0.086718      0.0      0.0
4 -1.574903  0.230807      0.0      0.0
```

TSK-338841:

Splitting the data into Train and Test

```
[26]: from sklearn.model_selection import train_test_split

# Split the dataset into training and testing sets
x_train, x_test, y_train, y_test = train_test_split(
    x, y, test_size=0.2, random_state=0
)
```