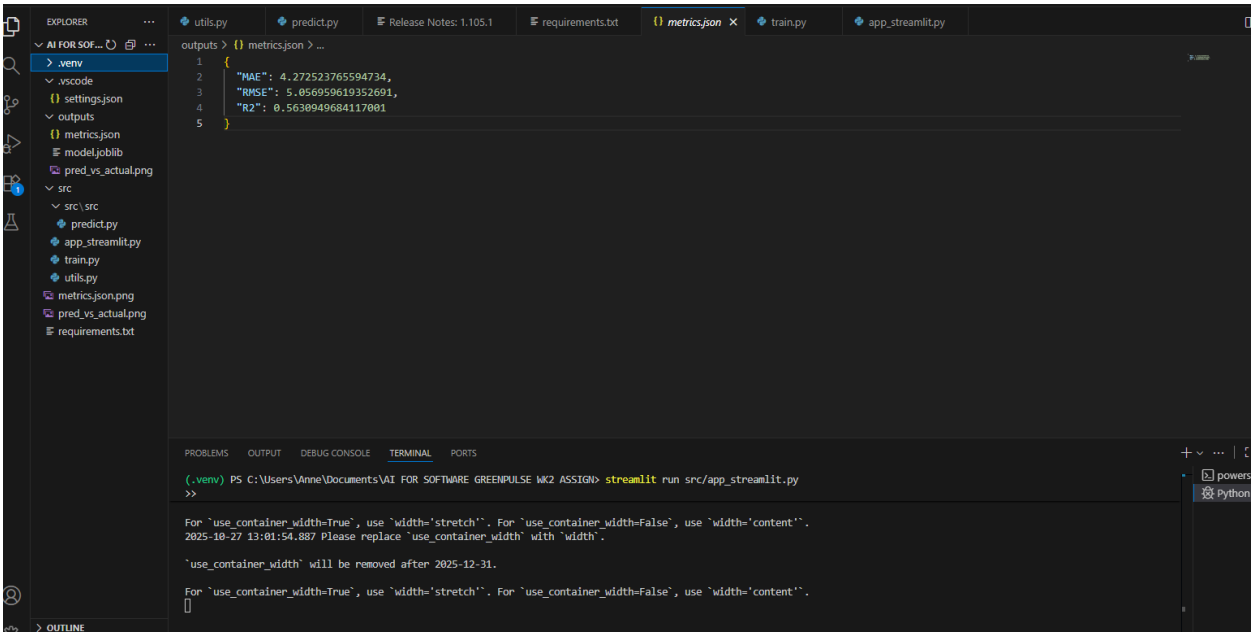
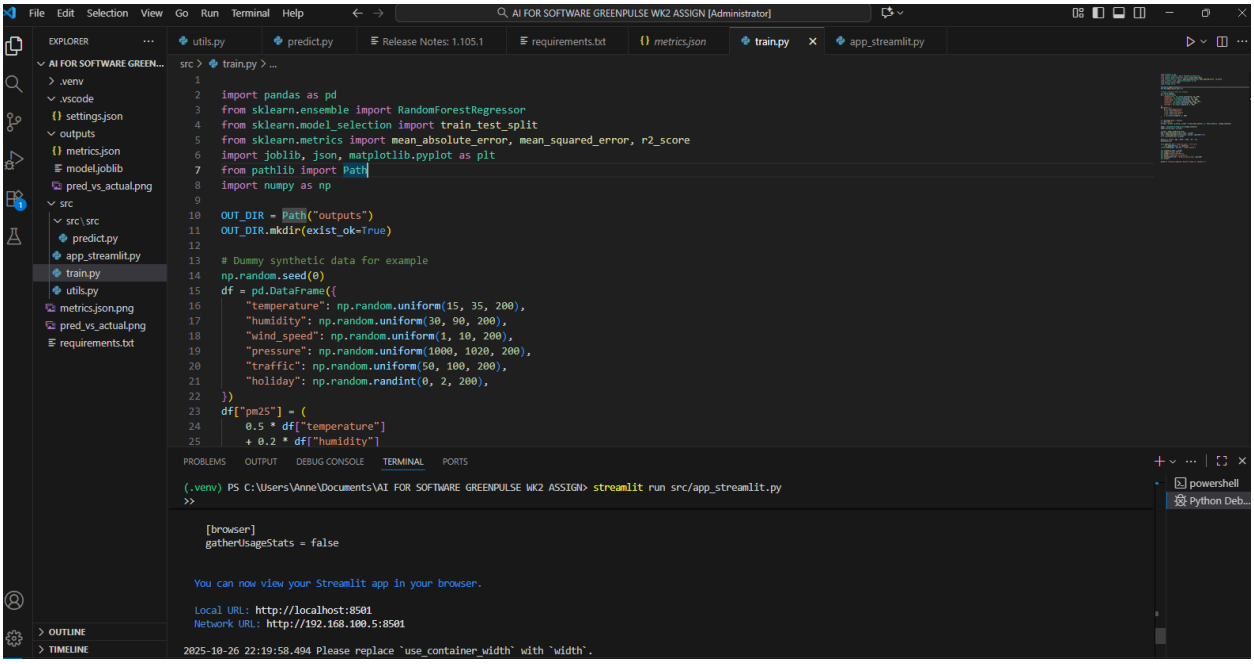

EXPLORER
AI FOR SOF...
.venv
.vscode
settings.json
outputs
metrics.json
model.joblib
pred_vs_actual.png
src
src\src
predict.py
app_streamlit.py
train.py
utils.py
metrics.json.png
pred_vs_actual.png
requirements.txt
utils.py
predict.py
Release Notes: 1.105.1
requirements.txt
metrics.json
train.py
app_streamlit.py
outputs > metrics.json > ...
{
"MAE": 4.272523765594734,
"RMSE": 5.056959619352691,
"R2": 0.5630949684117001
}
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
(.venv) PS C:\Users\Anne\Documents\AI FOR SOFTWARE GREENPULSE WK2 ASSIGN> streamlit run src/app_streamlit.py
>>
For `use_container_width=True`, use `width='stretch'`. For `use_container_width=False`, use `width='content'`.
2025-10-27 13:01:54.887 Please replace `use_container_width` with `width`.
`use_container_width` will be removed after 2025-12-31.
For `use_container_width=True`, use `width='stretch'`. For `use_container_width=False`, use `width='content'`.
OUTLINE


File
Edit
Selection
View
Go
Run
Terminal
Help
AI FOR SOFTWARE GREENPULSE WK2 ASSIGN [Administrator]
EXPLORER
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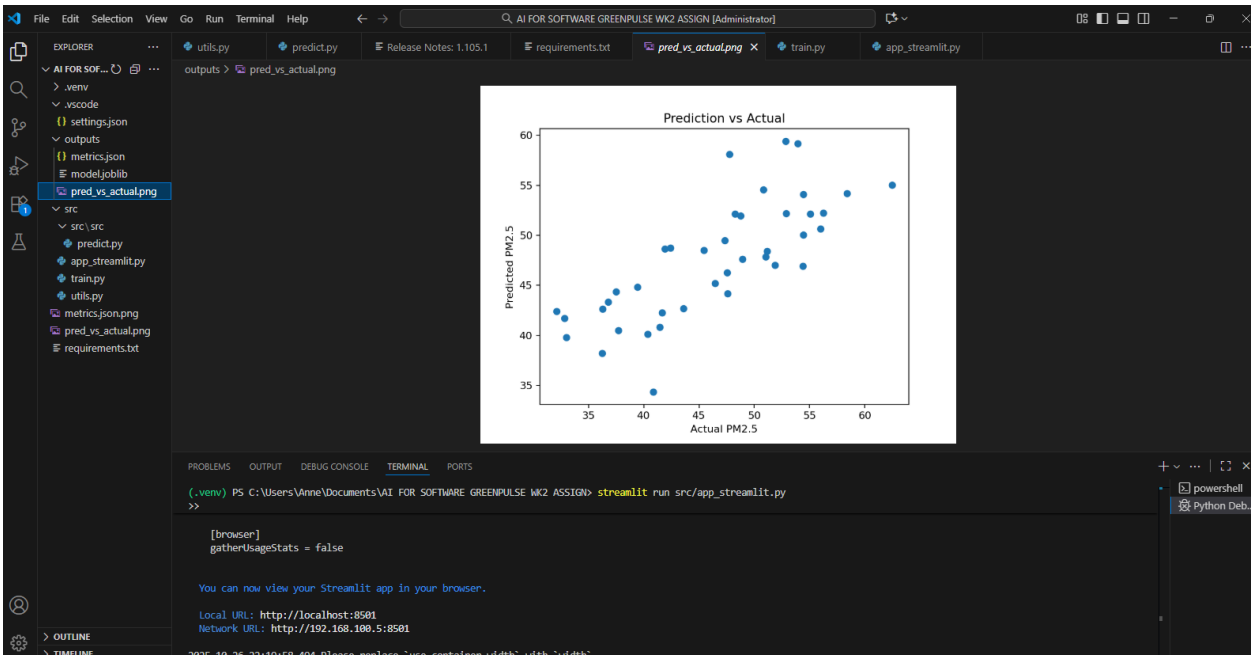
Release Notes: 1.105.1
requirements.txt
metrics.json
train.py
app_streamlit.py
src > train.py > ...
import pandas as pd
from sklearn.ensemble import RandomForestRegressor
from sklearn.model_selection import train_test_split
from sklearn.metrics import mean_absolute_error, mean_squared_error, r2_score
import joblib, json, matplotlib.pyplot as plt
from pathlib import Path
import numpy as np
OUT_DIR = Path("outputs")
OUT_DIR.mkdir(exist_ok=True)
# Dummy synthetic data for example
np.random.seed(0)
df = pd.DataFrame({
"temperature": np.random.uniform(15, 35, 200),
"humidity": np.random.uniform(30, 90, 200),
"wind_speed": np.random.uniform(1, 10, 200),
"pressure": np.random.uniform(1000, 1020, 200),
"traffic": np.random.uniform(50, 100, 200),
"holiday": np.random.randint(0, 2, 200),
})
df["pm25"] = (
0.5 * df["temperature"]
+ 0.2 * df["humidity"]
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
(.venv) PS C:\Users\Anne\Documents\AI FOR SOFTWARE GREENPULSE WK2 ASSIGN> streamlit run src/app_streamlit.py
>>
[browser]
gatherUsageStats = false
You can now view your Streamlit app in your browser.
Local URL: http://localhost:8501
Network URL: http://192.168.100.5:8501
2025-10-26 22:19:58.494 Please replace `use_container_width` with `width`.
OUTLINE
TIMELINE


File Edit Selection View Go Run Terminal Help
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requirements.txt
pred_vs_actual.png
train.py
app_streamlit.py
outputs > pred_vs_actual.png
Prediction vs Actual
Predicted PM2.5
Actual PM2.5
35
40
45
50
55
60
PROBLEMS
OUTPUT
DEBUG CONSOLE
TERMINAL
PORTS
(.venv) PS C:\Users\Anne\Documents\AI FOR SOFTWARE GREENPULSE WK2 ASSIGN> streamlit run src/app_streamlit.py
>>
[browser]
gatherUsageStats = false
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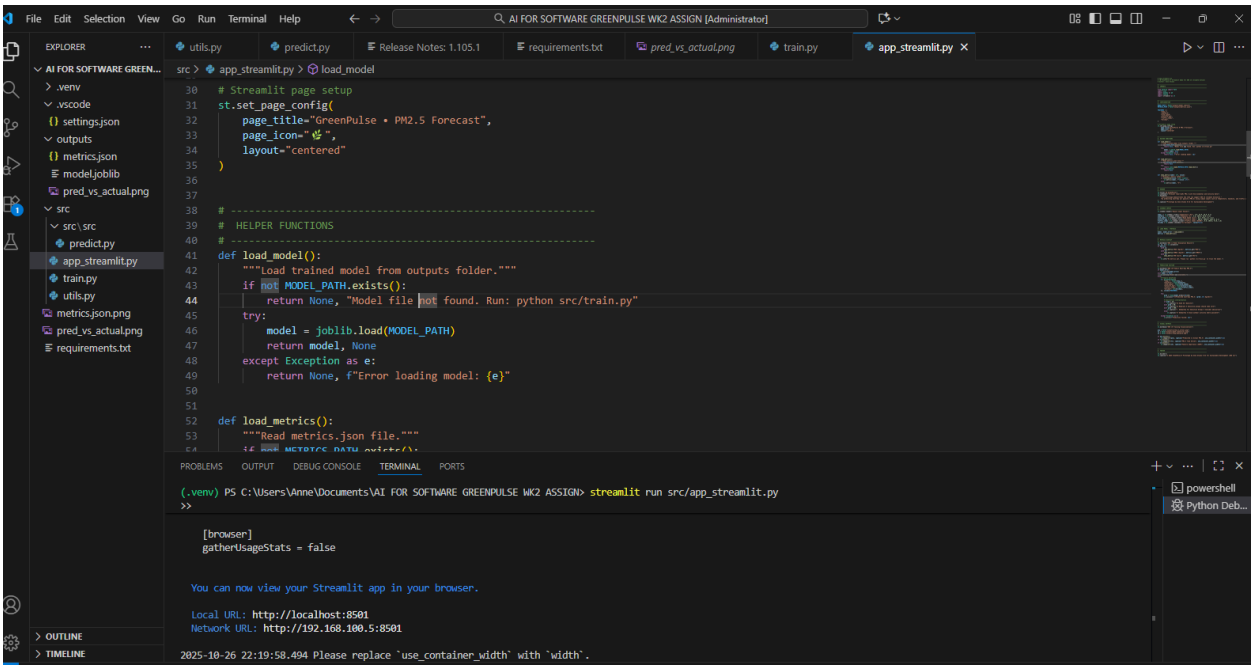
Network URL: http://192.168.100.5:8501
powershell
Python Deb...
OUTLINE
TIMELINE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Release Notes: 1.105.1
requirements.txt
pred_vs_actual.png
train.py
app_streamlit.py
src > app_streamlit.py > load_model
30 # Streamlit page setup
31 st.set_page_config(
32 page_title="GreenPulse • PM2.5 Forecast",
33 page_icon="🌿",
34 layout="centered"
35)
38 # --
39 # HELPER FUNCTIONS
40 # --
41 def load_model():
42 """Load trained model from outputs folder."""
43 if not MODEL_PATH.exists():
44 return None, "Model file not found. Run: python src/train.py"
45 try:
46 model = joblib.load(MODEL_PATH)
47 return model, None
48 except Exception as e:
49 return None, f"Error loading model: {e}"
52 def load_metrics():
53 """Read metrics.json file."""
PROBLEMS
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(.venv) PS C:\Users\Anne\Documents\AI FOR SOFTWARE GREENPULSE WK2 ASSIGN> streamlit run src/app_streamlit.py
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powershell
Python Deb...
OUTLINE
TIMELINE

Adjust Input Values

Temperature (°C)
26.00

Humidity (%)
58.00

Wind Speed (m/s)
3.20

Pressure (hPa)
1011.00

Traffic Index (0–100)
72.00

Is Holiday?

GreenPulse

Forecast Tomorrow's PM2.5 with Environmental and Activity Data

This prototype demonstrates how **AI can support SDG 13 (Climate Action)** by predicting next-day air quality (PM2.5) using simple inputs such as temperature, humidity, and traffic index.

Prototype by Anne Atieno • AI for Sustainable Development

Model Evaluation Results

MAE (µg/m³)	RMSE (µg/m³)	R^2 Score
4.27	5.06	0.56

Predict Next-Day PM2.5

Prediction failed: The feature names should match those that were passed during fit. Feature names unseen at fit time:

- pressure_hpa
- temp_c
- traffic_index Feature names seen at fit time, yet now missing:

Adjust Input Values

Temperature (°C)
26.00

Humidity (%)
58.00

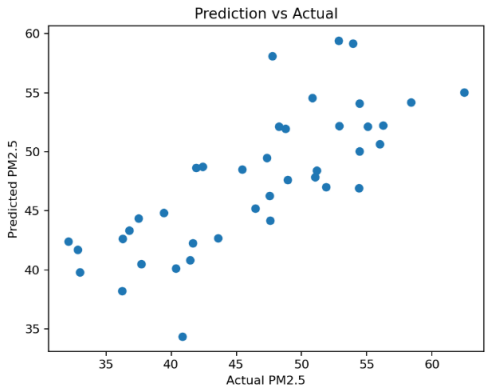
Wind Speed (m/s)
3.20

Pressure (hPa)
1011.00

Traffic Index (0–100)
72.00

Is Holiday?

Training Visualisations



Predicted vs Actual PM2.5