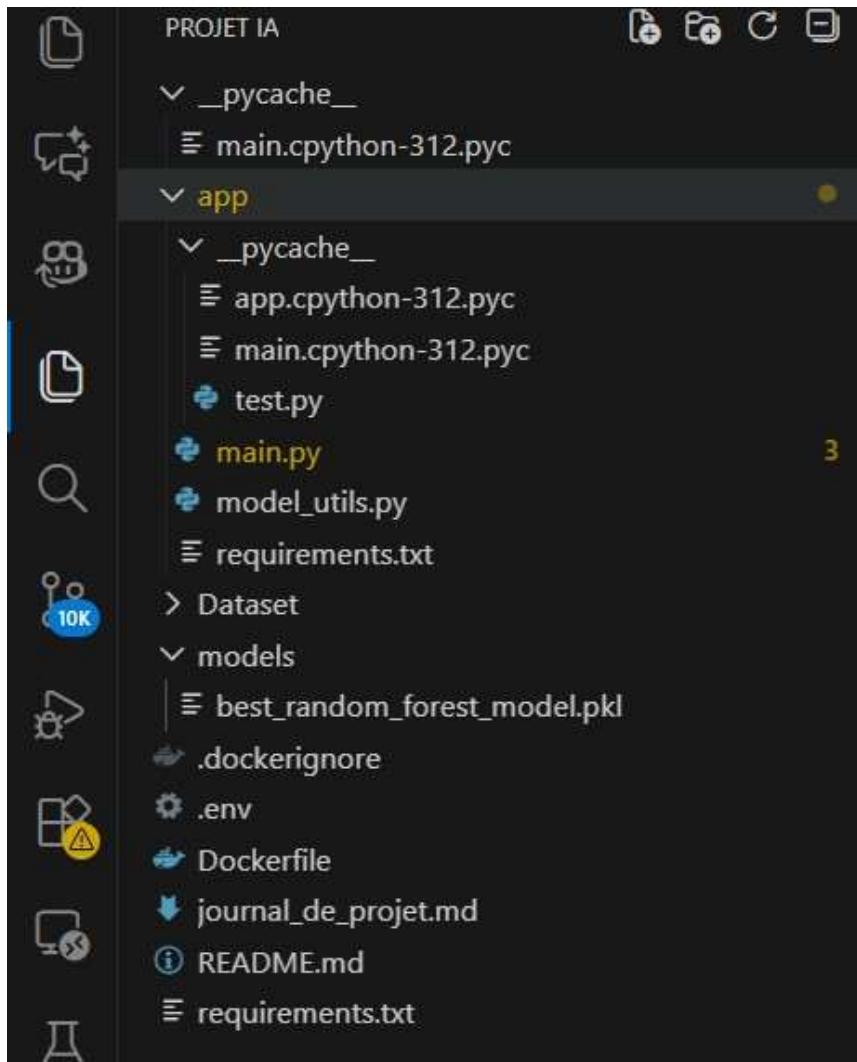


1) La structure du projet



2) Aperçu du démarrage de l'API (Fast API)

```
PROBLÈMES 3 SORTIE CONSOLE DE DÉBOGAGE TERMINAL ... uvicorn + × Live Share
PS C:\Users\IBRAHIM TRAORE\Downloads\Projet IA> uvicorn app.main:app --reload
INFO: Will watch for changes in these directories: [ 'C:\\\\Users\\\\IBRAHIM TRAORE\\\\Downloads\\\\Projet IA' ]
INFO: Uvicorn running on http://127.0.0.1:8000 (Press CTRL+C to quit)
INFO: Started reloader process [32484] using WatchFiles
INFO: Started server process [7796]
INFO: Waiting for application startup.
C:\Users\IBRAHIM TRAORE\anaconda3\Lib\site-packages\sklearn\base.py:376: InconsistentVersionWarning: https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
    warnings.warn(
C:\Users\IBRAHIM TRAORE\anaconda3\Lib\site-packages\sklearn\base.py:376: InconsistentVersionWarning: Trying to unpickle estimator RandomForestClassifier from version 1.7.2 when using version
    https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
    warnings.warn(
C:\Users\IBRAHIM TRAORE\anaconda3\Lib\site-packages\sklearn\base.py:376: InconsistentVersionWarning: https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
    warnings.warn(
    https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
    https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
    https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
    warnings.warn(
C:\Users\IBRAHIM TRAORE\anaconda3\Lib\site-packages\sklearn\base.py:376: InconsistentVersionWarning: Trying to unpickle estimator RandomForestClassifier from version 1.7.2 when using version
    1.5.1. This might lead to breaking code or invalid results. Use at your own risk. For more information please refer to:
    https://scikit-learn.org/stable/model_persistence.html#security-maintainability-limitations
    warnings.warn(
INFO: Application startup complete.
```

3) Test de API (/predict)

```
Curl
curl -X 'POST' \
  'http://127.0.0.1:8000/predict' \
  -H 'accept: application/json' \
  -H 'Content-Type: application/json' \
  -d '{
    "delai_livraison": 5,
    "retard_livraison": 3,
    "nb_versements": 3,
    "valeur_paiement": 293.00,
    "prix_total": 345.00,
    "nb_articles": 3,
    "longueur_commentaire": 12,
    "product_category_encoded": 4
}'

Request URL
http://127.0.0.1:8000/predict

Server response
Code Details

200 Response body
[{"prediction": 0, "proba": [0.7420933000000001, 0.25790676139647112]}]
```

4) Structure du Docker

```
● Dockerfile > ...
1  FROM python:3.10-slim (last pushed 1 week ago)
2  1
3  ENV PYTHONDONTWRITEBYTECODE=1
4  ENV PYTHONUNBUFFERED=1
5
6  WORKDIR /app
7
8  # Installer dépendances depuis la racine
9  COPY requirements.txt /app/requirements.txt
10 RUN pip install --upgrade pip
11 RUN pip install fastapi uvicorn
12 RUN pip install --no-cache-dir -r requirements.txt
13
14 # Copier le code
15 COPY app /app/app
16 COPY models /app/models
17
18 # Lancer l'API
19 CMD ["sh", "-c", "uvicorn app.main:app --host 0.0.0.0 --port ${PORT}"]
20
21
```

5) Run du docker

```
PROBLÈMES 3 SORTIE CONSOLE DE DÉBOGAGE TERMINAL PORTS JUPYTER
● PS C:\Users\IBRAHIM TRAORE\Downloads\Projet IA> docker ps
CONTAINER ID IMAGE COMMAND CREATED STATUS PORTS NAMES
f0e464c17419 shopnow-api:latest "uvicorn app.main:ap..." 10 hours ago Up 49 seconds 0.0.0.0:8000->8000/tcp stupefied_wilson
144c914f6d25 shopnow-api:1 "uvicorn app.main:ap..." 10 hours ago up 10 hours 0.0.0.0:8000->8000/tcp shopnow-api
○ PS C:\Users\IBRAHIM TRAORE\Downloads\Projet IA>
```

6) Extrait du journal de projet.md

```
❶ journal_de_projet.md > **= # journal_de_projet.md > **= ## Date / version
1 ✓ # journal_de_projet.md
2
3 ✓ ## Objectif
4. Préparer et dockeriser l'API de prédiction de la satisfaction client (ShopNow).
5
6 ✓ ## Date / Version
7 2025-11-26 - Version 1.0
8
9 ✓ ## Étapes réalisées
10 1. Nettoyage et fusion des tables (notebook)
11 2. Entraînement RandomForest, optimisation RandomizedSearchCV
12 3. Export du modèle : models/best_random_forest_model.pkl
13 4. Conception de l'API FastAPI (app/app.py)
14 5. Dockerfile et .dockerignore créés
15 6. Tests locaux : uvicorn app:app --reload + endpoints /health et /predict ok
16 7. Construction et test du conteneur Docker (docker build, docker run)
17
18 ✓ ## Problèmes rencontrés
19 - MemoryError lors des merges + solution : Dask / lecture chunkée et sélection de colonnes
20 - Multiple errors Mlflow 403 + solution : configuration token DAGSHub
21 - Gestion de l'encodage des catégories : j'ai sauvégarde LabelEncoder et intégré son chargement dans l'API.
22
23 ## Commandes clés
24 ✓ # build
25 docker build -t shopnow-api:latest .
26 ✓ # run
27 docker run -d --name shopnow-api -p 8000:8000 shopnow-api:latest
28 ✓ # test
29 curl http://127.0.0.1:8000/health
30 curl -X POST http://127.0.0.1:8000/predict -H "Content-Type: application/json" -d '{"delai_livraison":3,"retard_livraison":0,
"nb_versements":1,"valeur_paiement":120.5,"prix_total":120.5,"nb_articles":1,"longueur_commentaire":50,
"product_category_name":"electronics"}'
```