<u>STEPS TO RUN THE SCRIPTS:</u>

1. Transform the Train.csv and Test.csv files to SHAPEFILES discriminated by country with the GEO_AI_Challenge_POINTS_ASSIGN_COUNTRY.ipynb script. This is done in GOOGLE COLAB.

2. Upload the SHAPEFILES to the GOOGLE EARTH ENGINE (GEE) account. In GEE (code.earthengine.google.com) the SHAPEFILES are uploaded to the ASSETS tab as NEW SHAPEFILES into a specified folder.

3. In GEE, in the SCRIPTS tab, a new FILE must be created (S2_MULTI_INDICES_EXTRACTION_GEE) where the content of the file S2_MULTI_INDICES_EXTRACTION_GEE.txt is copied. Once created, the script is executed in GEE to extract time series for six spectral indices (DATT1, IRECI, NBR2, NDRE, NDVI, NDWI) for each point in each shapefile for defined periods. The defined periods are:

   • Afghanistan: 2019-07-01 to 2020-07-01
   • Iran – Sudan: 2022-07-01 to 2023-07-01

4. In GOOGLE COLAB run the script GEO_AI_Challenge_TRAINING_PREDICTING.ipynb. This script performs the model training and final prediction (Submission_MULTI_INDICES_LGBM_SKF_FUSIONADO.csv).

CLARIFICATIONS:

The submissions I made were without seeds. I now send the code with seeds for reproducibility. I am also attaching the trained model that gave me the best result (best_model_multi_indice_fusionado_lgbm_skf.pkl) in the competition with the best submission (Submission_MULTI_INDICES_LGBM_SKF_FUSIONADO.csv) so that you can get the same result that I got in the leaderboard.

WORKFLOW

Google colab

| Train.csv | | Test.csv |

TRANSFORM TO SHAPEFILES (SCRIPT: GEO_AI_Challenge_POINTS_ASSIGN_COUNTRY.ipynb):
- Train_Afghanistan.shp, Test_Afghanistan.shp
- Train_Iran_Sudan.shp, Test_Iran_Sudan.shp

Google Earth Engine

UPLOAD SHAPEFILES TO GEE.

FOR EACH POINT IN EACH SHAPEFILE EXTRACTING TIME SIRES FOR EACH SPECTRAL INDEX FOR DEFINED PERIODS (SCRIPT: S2_MULTI_INDICES_EXTRACTION_GEE)

Google colab

TRAINING AND PREDICTING WITH SCRIPT: GEO_AI_Challenge_TRAINING_PREDICTING.ipynb.

FINAL PREDICTION: Submission_MULTI_INDICES_LGBM_SKF.csv