Week 6

Mining Asset Detection (MAD)

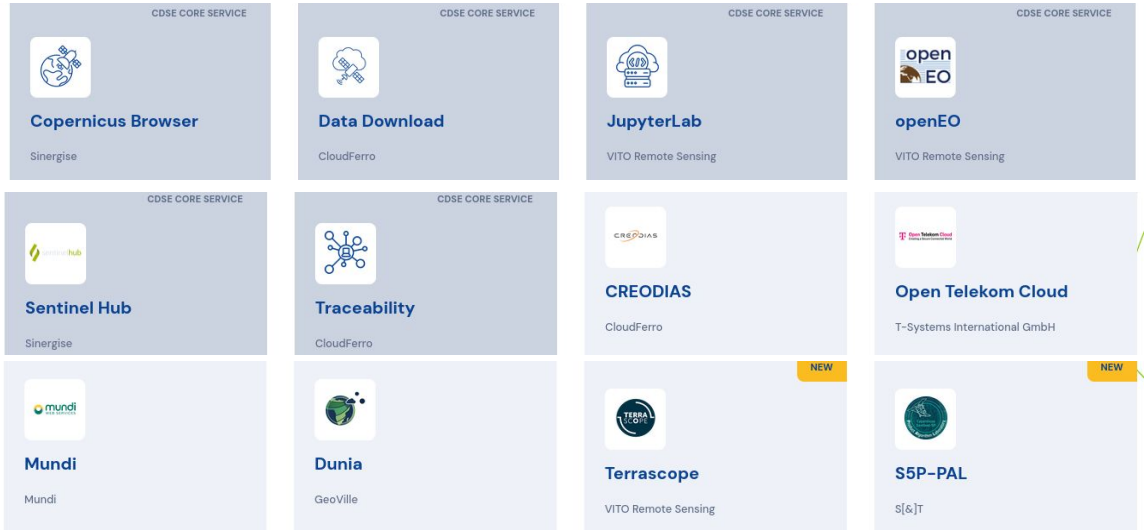
Satellite imagery pipeline

- General idea:
  - For a baseline YOLO model we need normal image inputs (JPG)
  - After discussion with James, clear path for good data collection
    - Try not to use Google
    - Try to speed up the data fetching
    - Be content with minor projection issues

=> Consequently: Another look at Copernicus Data Space Ecosystem (CDSP)

Satellite imagery pipeline - CDSP

- Should provide easy access to open satellite imagery
- Instead:

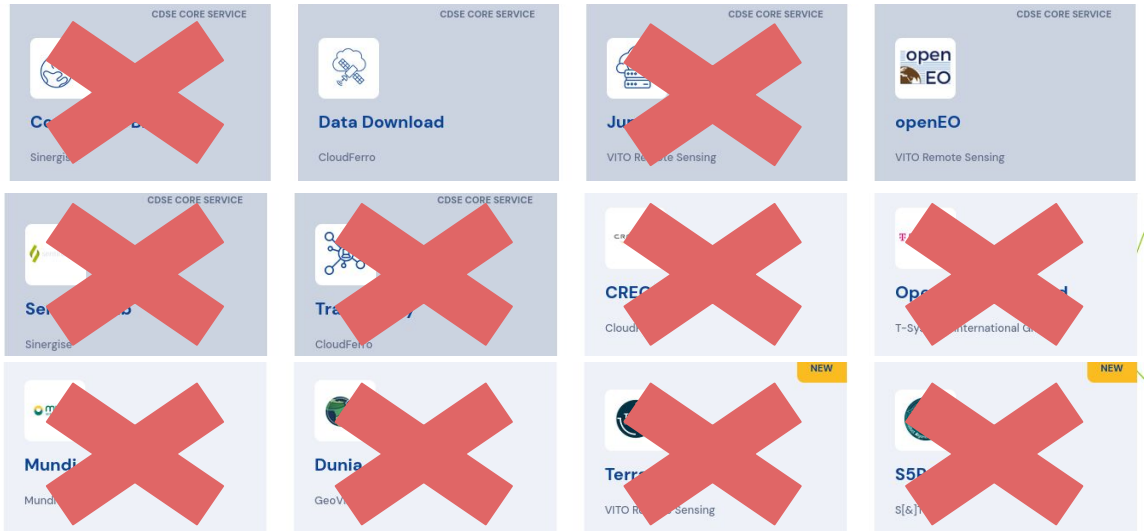


Satellite imagery pipeline - CDSP

- Commercialised and specialised solutions
- Instead:

Satellite imagery pipeline - CDSP

- Just a Interactive maps solution
- Instead:



Satellite imagery pipeline - CDSP

- Great idea, only works partially
- Instead:

Satellite imagery pipeline - OpenEO

- Probably a reaction to GEE
  - Offers a similar API
    - Can select bands
    - Apply filters
    - Well documented
- But sadly, abysmally slow (even slower than GEE)

Satellite imagery pipeline - Lesson learned

- At least for now, stick with the imagery we already have
- Minor change:
  - The downloaded images are still in EPSG:4236 => not square/equidistant
  - As a fix the images were reprojected to EPSG:3857 (square and equidistant)

YOLO test run

- Dataset:
  - Took all reprojected satellite images and converted them to .jpg
    - Shrinks down size of the dataset from 300G to 2G
  - Labelled all the occurring mines (Polygon => bounding box around the polygon)
- Training:
  - Using YOLO11 (just the newest)
  - Using their standard learning pipeline, only varied the batch size
- Results: ??

YOLO test run - Results

- Dataset:
  - Took all reprojected satellite images and converted them to .jpg
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- Training:
  - Using YOLO11 (just the newest)
  - Using their standard learning pipeline, only varied the batch size
- Results: Let’s look into the folder