IPL4EO 2025: Miniproject, Task Description

RSiM

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1 Setup

Download the miniproject files from the following link:
`https://tubcloud.tu-berlin.de/s/wjYBx7PTTJaG4ab`.

2 General Description

The goal of the Miniproject is to predict forest loss in the Amazon region of Brazil. The Miniproject is divided into three tasks that can be solved independently of one another. We provide these tasks in three Jupyter notebooks:

1. `Task_1.ipynb`

2. `Task_2.ipynb`

3. `Task_3.ipynb`

The notebooks can be found under `src/ipl4eo_miniproject_2025`. The detailed task descriptions can be found in the notebooks themselves.

Additionally, we provide data and checkpoints that you can use. You will find all additional data in the `data` folder. The data includes:

- Task 1

  - None

- Task 2

  - lmdb files for finetuning images and masks (`images.lmdb`, `mask.lmdb`)
  - Checkpoint path for ResNet18 pretrained on BigEarthNet V2 (`pretrained_model.ckpt`)

- Task 3

  - Two Sentinel 2 tiles (if you were not able to download in Task 1) (`2018.SAFE`, `2024.SAFE`)
  - Pretrained model file (`backup_model.pt`) (if you were not able to obtain a finetuned model in Task 2)

Finally, we provide a uv managed Python environment for you.

3   Setup

1. Download and unzip Miniproject.zip from ISIS

2. Initialise environment using

   ```
   uv sync --python 3.12 --extra cpu
   ```

3. Run Jupyter notebooks using

   ```
   uv run --with jupyter jupyter lab
   ```

4. Edit the notebooks under `src/ipl4eo_miniproject_2025`

4   Deliverables

For each task you should submit the completed Jupyter notebook. In the end you should upload a zip file including `Task_1.ipynb`, `Task_2.ipynb`, and `Task_3.ipynb`. This must include all code necessary to solve the task.

Important: If you could not solve something, leave it blank. Notebooks that do not run completely will get 0 points! Ensure that you restart the kernel and run everything from scratch before you submit.

All code must run using the provided environment, so please refrain from installing additional libraries not in the environment file. Additionally, add comments and descriptions to your code so we can clearly understand your thought process. In several tasks you will have to describe your results, which should be added as text blocks. Submission deadline is August 1st at 23:55.

In total the Miniproject will be graded with up to 100 points (50% of the final grade):

- Task 1: 30 points

- Task 2: 30 points

- Task 3: 40 points