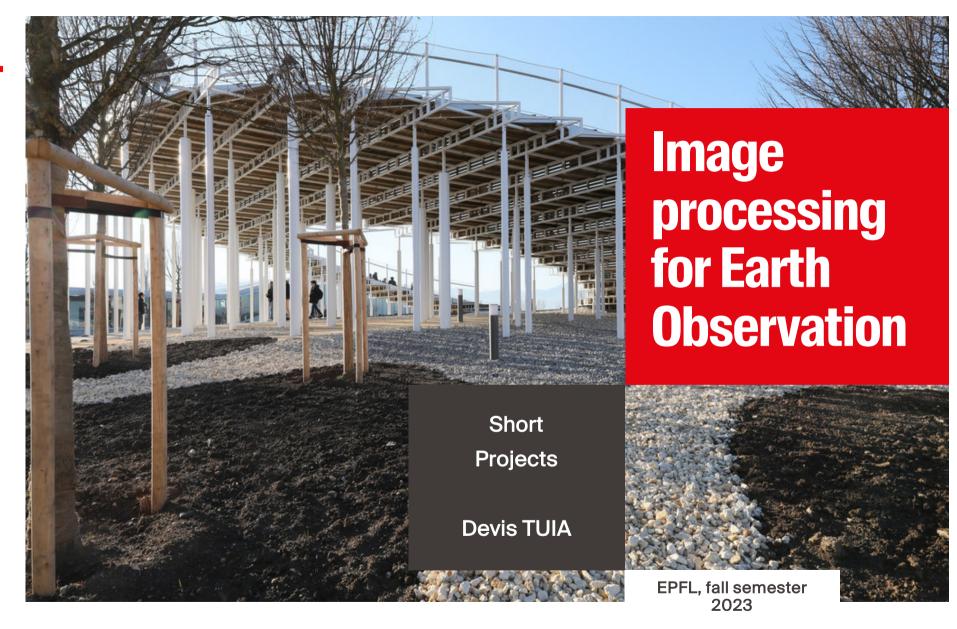
EPFL



 École polytechnique fédérale de Lausanne

Project types 1 – open topic

- You choose a relevant problem requiring image processing (ex: landcover change, temporal monitoring, land planning),
- You find the necessary data, create or find the labels
- You design a processing chain that makes sense with the ML methods seen in the class (or others, to be discussed)
- We expect that you are critical about what you are doing, discuss what works and what not, discuss in terms of scientific (domain) output

Project types 2 – deep learning

- We choose a relevant problem (examples on Moodle)
- We provide the necessary data
- You design a processing pipeline in Pytorch.
- We expect that you test several approaches and are critical about what you are doing. Discuss in terms of accuracy, training time, etc.

What we expect

- Groups 4 students
- Deadline: January 12th, midnight*.
- Submission on Moodle.
- The project will consist of
 - a .pdf document (15 pages max we wont' read further) with
 - Topic and challenges, short literature review;
 - Proposed processing routine (typically a flowchart);
 - Results (a few maps, assessment of metrics);
 - Discussion → being critical about what has been done.
 - your code in python, fully executable, creating the maps for a part of your data.

^{*} NB: our advise is to hand in before December 31st, so that you have two full weeks to study for your exams. But we leave it up to you.

IDEO course - Projects 13 October 2023

Schedule

| | 1 st hour | 2 nd hour | 3 rd hour | Deliverable | |
|-------------|---------------------------------|--------------------------------|---------------------------------|--|--|
| 13 October | Classification courses | | Introduction about the projects | | |
| 19 October | Reading club | Brain storm ideas with the TAs | | Idea! | |
| 10 November | Course on semantic segmentation | | | Topic chosen, groups ready | |
| 17 November | Reading club 2 | | Discuss with groups | Filled google form for topics and groups | |
| 24 November | Project | | | First processing chain | |
| 01 December | Mid term Q&A | Project | | | |
| 08 December | Mid term | | Project | First results | |
| 15 December | Project | | | | |
| 22 December | Project | | | Improved results, start writing report | |

EVALUATION Criteria

| Criterion | Explanation | Pts. on open topic | Pts. on deep learning topic |
|------------------------|--|--------------------|--------------------------------|
| Data (open topic only) | Choice of relevant data (resolution, bands,) Data preparation (including dataset splits) | 3 | 0 |
| Method | Relevant choice of methods Several parameter sets / methods are compared | 3 | 5 |
| Reproducibility, code | Code can be run easily Code is readable Computational efficiency is reasonable A readme file with instructions in provided | 1 | 2 |
| Evaluation of results | Several relevant metrics are computer over train / val splits Computational complexity (e.g. training time, inference time) is assessed | 3 | 3 |
| Report | Report is clearly written Graphics are readable and complete (e.g. axis titles) Results are analysed Discussion in terms of scientific (domain) output Limitations are clearly discussed | 2 | 2 |
| | TOTAL | 12 | 12 |

Some advice

- Timing is short, so work well, don't go for over complicated topics.
- Discuss with the assistants to ensure you have a doable idea, so that you can start straight away
- Take a deep learning project only if you are very at ease in Python programming
- Create a slack channel for your group, so you can reach the assistants easily