Frame Extraction Guidelines

What is needed to extract the frames?

- time_synchronization.json file: results of the synchronization (more details below)
- clips_config.json file: time windows for which frames should be extracted
- extract_clips_as_png.py: script to extract the synchronized frames
- raw video data

Results of the synchronization: time_synchronization.json

- To use the frame extraction script, make sure that the path to the videos, i.e., the key of the dictionary, is adjusted to where they are actually stored
- The temporal synchronization follows the relation y = mx + b where x is the frame number, y is the aligned timestamp, b is the temporal offset and m is the temporal drift (including the compensation for different fps)
- The most important quantities in the file are "n_frames" (number of frames in the recording), "measured_fps" (actual fps from the recording), "first_frame" corresponds to the offset b and is in ms, and "last_frame" which is used to calculate the slope m as m = (last_frame-first_frame)/n_frames
- All other quantities are simply there for debugging and statistics of the temporal synchronization to check how well it worked
- This file should be stored within the calibration folder

One step before frames can be extracted:

- Choose one camera recording and identify the time window during which you want to extract the frames.
- Add this time window to the clips_config.json file

How to extract synchronized frames?

- For this exists a standalone script called "extract_clips_as_png.py"
- Verify in line 27 that the path is correct and especially that the name of the temporal synchronization .json file matches as well
- The general command to use the script is as follows:
  python path/to/extract_clips_as_png.py --dataset_folder path/to/dataset_folder --clips_to_extract_json path/to/clips_config.json --target_fps desired_fps --from_raw_camera_time_of_camera cameraX
- The dataset folder is the location where the calibration folder is located. CameraX should be replaced by the name of the actual recording used to choose the time windows of which frames should be extracted.
- Running this script creates a new folder "synced_clips_pngs" in the same location as the dataset folder that contains a single folder for each time window (folder name corresponds to the aligned timestamp) which also contains a single folder for each camera with all extracted frames
- If you want to look at the light switch to verify the synchronization you need to keep in mind that the light source we used is not ideal. It turns on gradually

and also increases gradually in brightness. So, what I did is to look at the last large increase in brightness.