For the assignment you should submit the following: Codes for training and evaluation. And a short summary (1-2 pages) of results as outlined in the tasks.

## Task 1: Implement Learned Primal Dual:

- Start from the provided Learned Gradient Scheme codes (LGS)
- Extend the class function for LPD to include both networks for primal and dual. Remember that these are different networks.
- Report your results on the test data for the three networks U-Net, LGS, LPD. Report PSNR in table for each method and compare the reconstructed images qualitatively, that means show a reconstruction in the report and discuss the visual: Did the network do a good job, or are there residual artefacts? Note that you should aim for similar performance of all methods.
- Report also the amount of parameters and choices you made for LPD and LGS in terms of unrolled iterates. Did you need to change the training parameters?

Potential difficulties: Astra kernel may crash after many iterations. It is advised to save intermediate iterates every few thousand training iterations.

## Task 2: Noise2Inverse with U-Net

- Modify the supervised U-Net training into an unsupervised (self supervised) setting using Noise2Inverse as follows.
- Create two disjoint subsets of the sinogram and corresponding FBP reconstructions. You can either pre-compute these or do it "on-the-fly" within the training loop.
- Use the two reconstructions as training pairs.
- Report again on the performance of Noise2Inverse compared to supervised training in terms of PSNR (table) and qualitative appearance (images).