A How to run the network

(1) Install like Isonet (https://github.com/IsoNet-cryoET/IsoNet). Meaning install Tensorflow, then the other dependencies:

```
pip install -r requirements.txt
```

Then add environment variables:

```
source source-env.sh
```

Ultimately check that it is properly installed by running:

```
isocare.py check
```

(2) Now we create the folder for our project. In there, create 2 more folder: "tomoset_odd" and "tomoset_even" and copy the odd and even tomograms into the respective folder (Make sure to rename both tomograms to have the same name).

(3) Now we want to create the star files of the odd and even tomograms, for that, we run

```
isocare.py prepare_star tomoset_odd
--output_star tomo_odd.star --pixel_size 10.8
```

and

```
isocare.py prepare_star tomoset_even
--output_star tomo_even.star --pixel_size 10.8
```

(4) We now extract the odd and even subtomograms respectively by running

```
isocare.py extract tomo_odd.star
--subtomo_star subtomo_odd.star
--subtomo_folder subtomo_odd
```

and

```
isocare.py extract tomo_even.star
--subtomo_star subtomo_even.star
--subtomo_folder subtomo_even
```

(5) Now to start the refine step using the odd and even subtomograms, we run the following command:

```
isocare.py refine subtomo_odd.star
--subtomo_star_even subtomo_even.star
--gpuID 0 --iterations 15
--epochs 13
--steps_per_epoch 200
```

– you can change the number of iterations to what you want. in our testing, the network usually finished between 5 and 12 iterations, depending on the tomogram and difficulty to learn. Main optimisation happens in the choice of epochs and steps per epoch, just like in cryoCARE.

(6) After comparing the different outputs of each iteration we can now predict using our favourite prediction by running:

```
isocare.py predict tomo_odd.star
—star_file_even tomo_even.star
—model ./results/model_iter05.h5 —gpuID 0
```

– We suggest checking the real space and fourier space of the subtomogram predictions. they are a good indicator of how the final prediction will go