

Andrea Rapuzzi

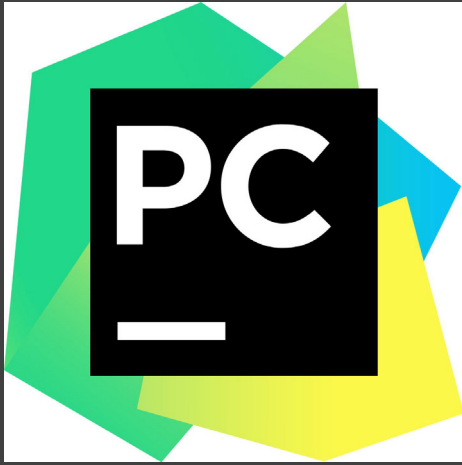
DataScienceSeed Online Meetup #2

17 giugno 2020

Environment



Andrea Panizza
Docker per Machine Learning



Experiments

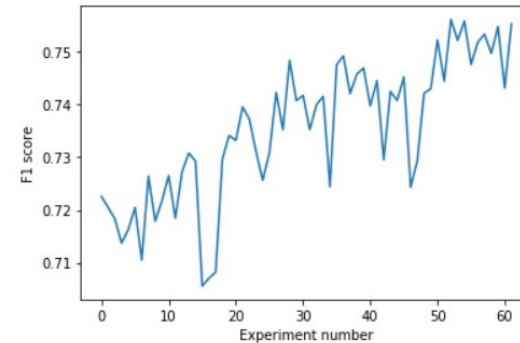
```
unosat.run_experiment(out_path, experimenti_name='experiment_this_and_that',  
                     NORMALIZE=False,  
                     CNN_BACKBONE='resnet50',  
                     HFLIP=True,  
                     TILE_WIDTH = 512, TILE_HEIGHT = 512,  
                     BATCH_SIZE=4,  
                     EPOCHS=40  
                     UNFREEZE_FROM_EPOCH=25  
                     )
```

- Repeatability/Reproducibility
- Traceability
- Measurability
- Configurability

```
[26]: pd.options.display.max_rows = 150  
pd.options.display.max_colwidth = 150  
stats_df.sort_values('best_validation_score_iou', ascending=False)
```

[26]:	experiment	best_validation_score_iou	threshold	best_val_losses	run	best_train_losses	date
10	test_512_e80u40	0.914308	0.5	0.123205	2020-02-21 222805714234	0.054967	2020-02-21 22:00:00
8	test_512_e40u20	0.913611	0.5	0.118699	2020-02-18 025818183386	0.054330	2020-02-18 02:00:00
5	test_512_hsum_e120u80	0.912302	0.5	0.126511	2020-02-28 112320663696	0.068337	2020-02-28 11:00:00
3	test_512_hsum_e80u40	0.911521	0.5	0.124183	2020-02-22 153438778703	0.074107	2020-02-22 15:00:00
6	test_512_e20u10	0.911038	0.5	0.121057	2020-02-14 174218616678	0.095433	2020-02-14 17:00:00
11	test_512_vhflip_hsum_e120u80	0.910888	0.5	0.125127	2020-03-02 133025973595	0.068088	2020-03-02 13:00:00
2	test_512_e20u10_r3em3	0.908655	0.5	0.120310	2020-02-15 025151219801	0.097308	2020-02-15 02:00:00
7	test_256_e20u10	0.907592	0.5	0.128714	2020-02-14 114335720237	0.077751	2020-02-14 11:00:00
4	test_512_e20u10_r3em5	0.903816	0.5	0.135959	2020-02-14 222057385308	0.119684	2020-02-14 22:00:00
0	test_768_e20u10	0.896374	0.5	0.121052	2020-02-17 162410017875	0.031575	2020-02-17 16:00:00
12	test_512_resnet50_vhflip_hsum_e45u35	0.702922	0.5	0.121261	2020-03-05 171150214572	0.064143	2020-03-05 17:00:00
9	test_512_resnet50_vhflip_hsum_e50u20	0.701636	0.5	0.122060	2020-03-04 170922093526	0.061573	2020-03-04 17:00:00
1	cor1_512_resnet50_vhflip_hsum_e50u25	0.699029	0.5	0.121292	2020-03-09 142240756336	0.063623	2020-03-09 14:00:00
13	test_512_hsum_e40u20	0.699556	0.5	0.124573	2020-02-21 161641780487	0.088385	2020-02-21 16:00:00

```
[52]: plt  
plt  
plt.ylabel('F1 score')  
plt.savefig('scores.jpg')
```



Experiments

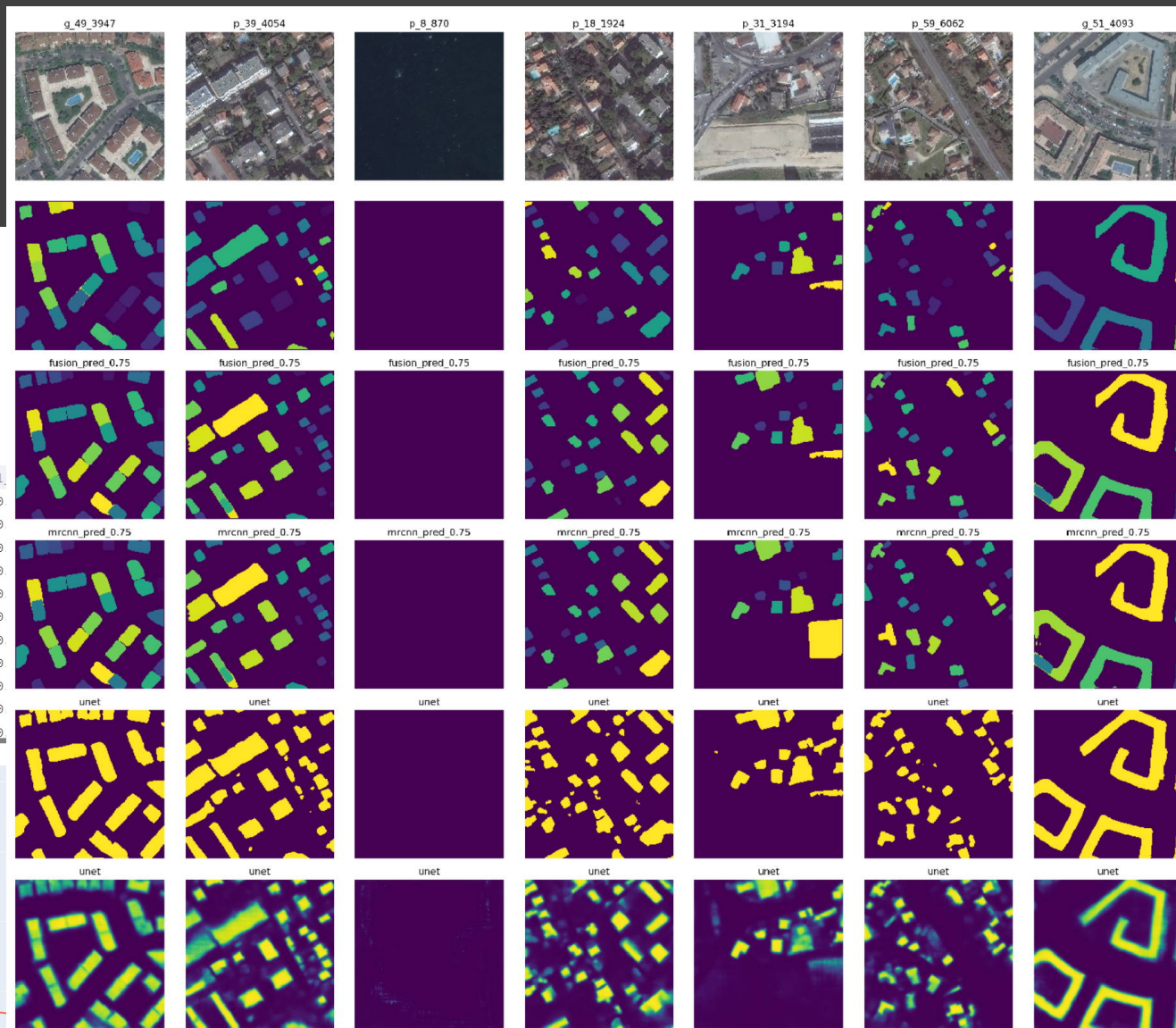
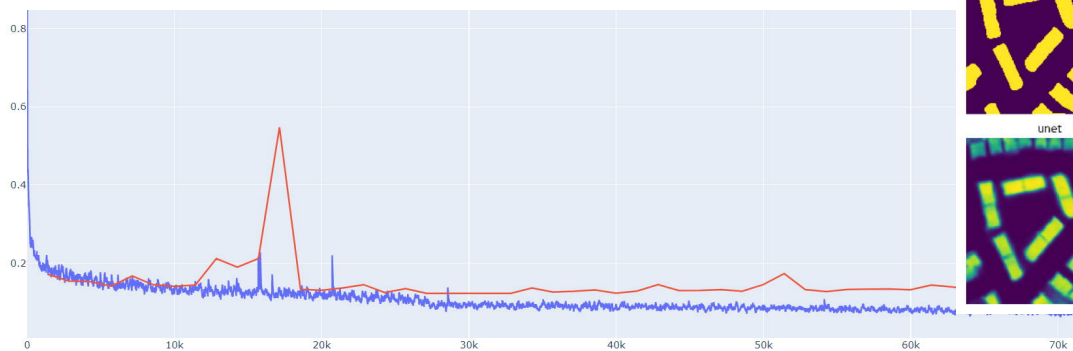


unosat

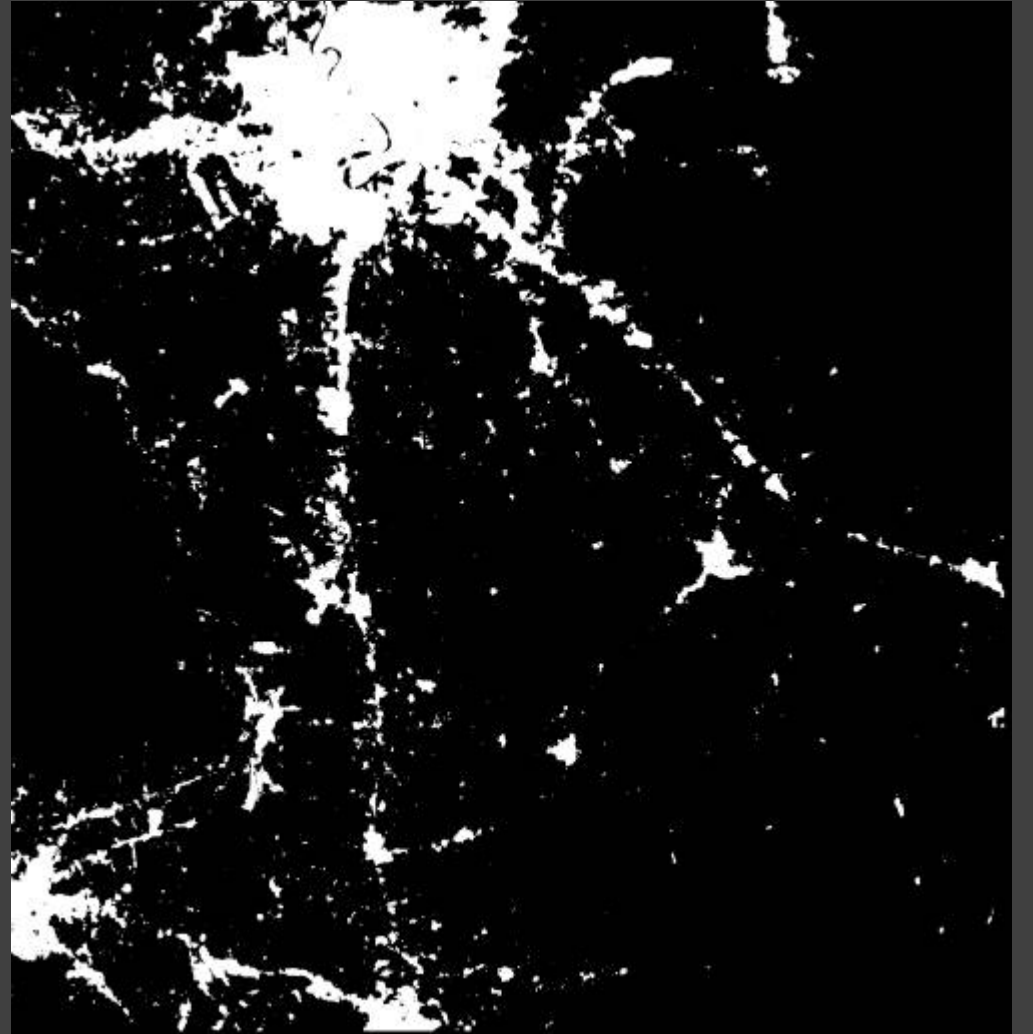
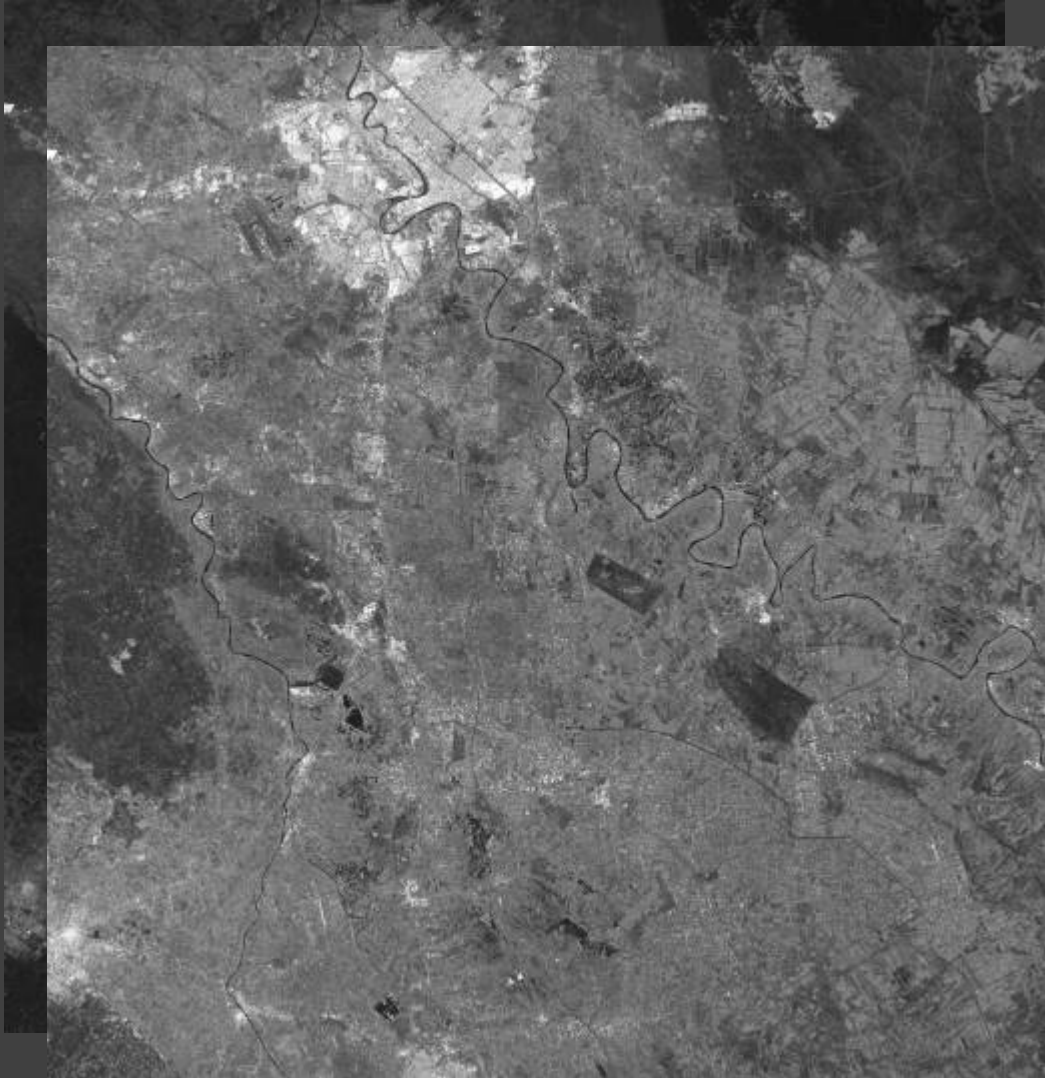
- Submissions tests
- Submissions
- Experiments

Experiments

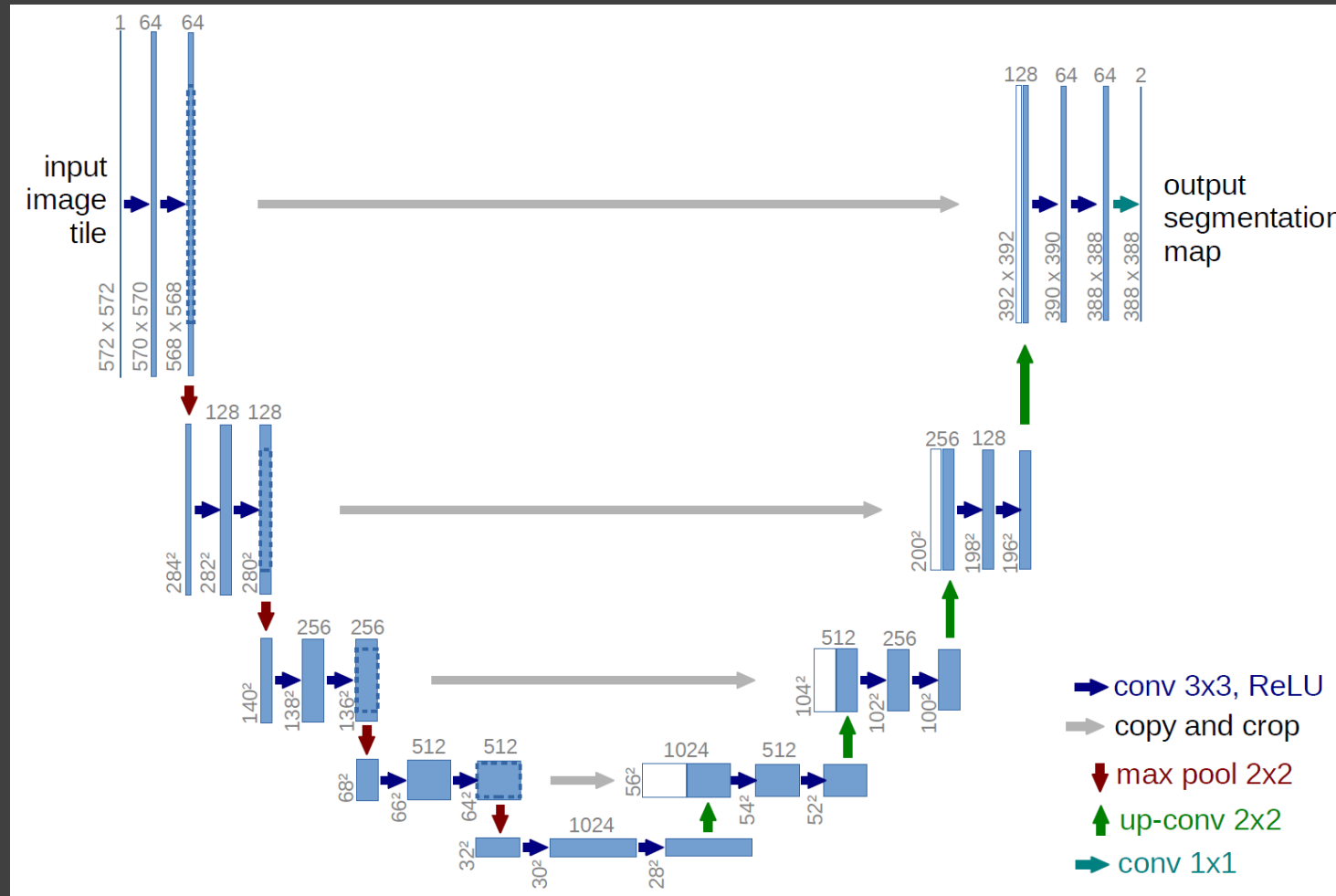
	experiment	val_avg	val_jc	val_iou	lb	jc	iou	threshold	val
5	test_512_resnet50_vhfl...	0.7953	0.8869699835777283	0.5815554208812309				0.5000	0
7	test_256_resnet50_vhfl...	0.7743	0.8505241274833679	0.5962940315062305				0.5000	0
1	cor1_512_resnet50_vhfl...	0.6998	0.901689887046814	0.22882119460210992				0.5000	0
14	test_512_resnet50_vhfl...	0.7029	0.899634599685669	0.24392753861834007				0.5000	0
11	test_512_resnet50_vhfl...	0.7016	0.9019235372543335	0.2342975613377667	0.750601	0.907844	0.383702	0.5000	0
13	test_512_vhflip_hsum_e...	0.9109						0.5000	0
6	test_512_hsum_e120u80	0.9123						0.5000	0
3	test_512_hsum_e80u40	0.9115						0.5000	0
12	test_512_e80u40	0.9143						0.5000	0
15	test_512_hsum_e40u20	0.6996	0.8964400291442871	0.24015948549971666	0.748666	0.904325	0.385463	0.5000	0
10	test_512_e40u20	0.9136						0.5000	0



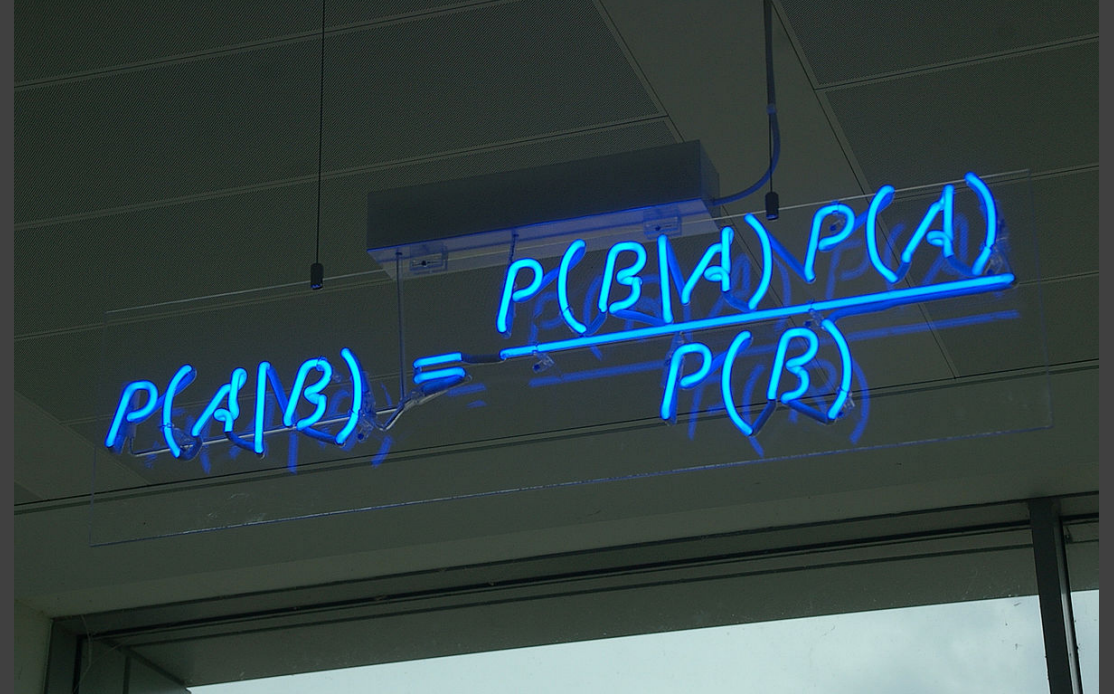
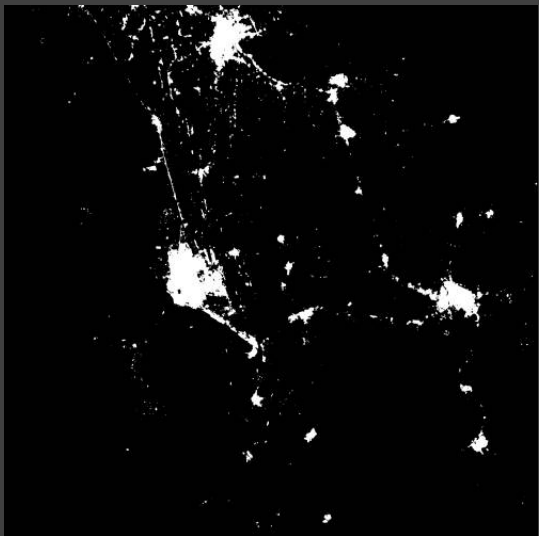
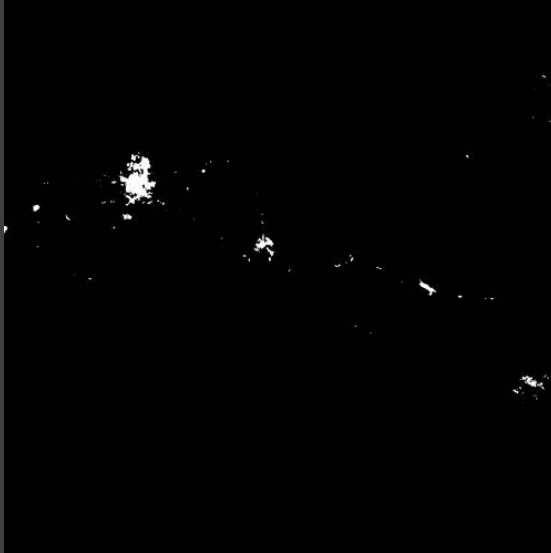
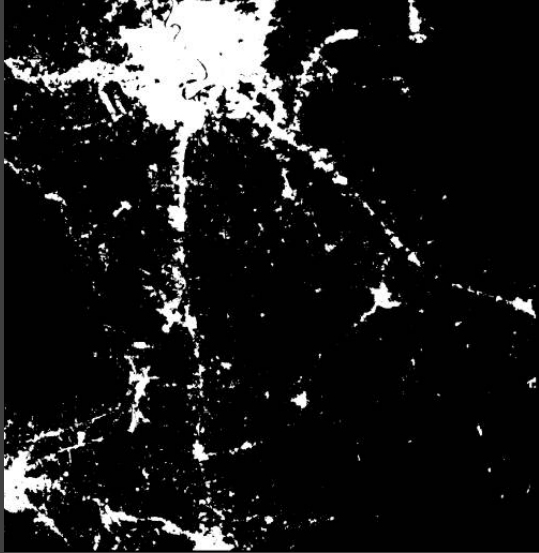
Fase 1 – Semantic Segmentation - SAR



Fase 1 – Unet, PreNet, Residual Expansion, Tiling, TTA

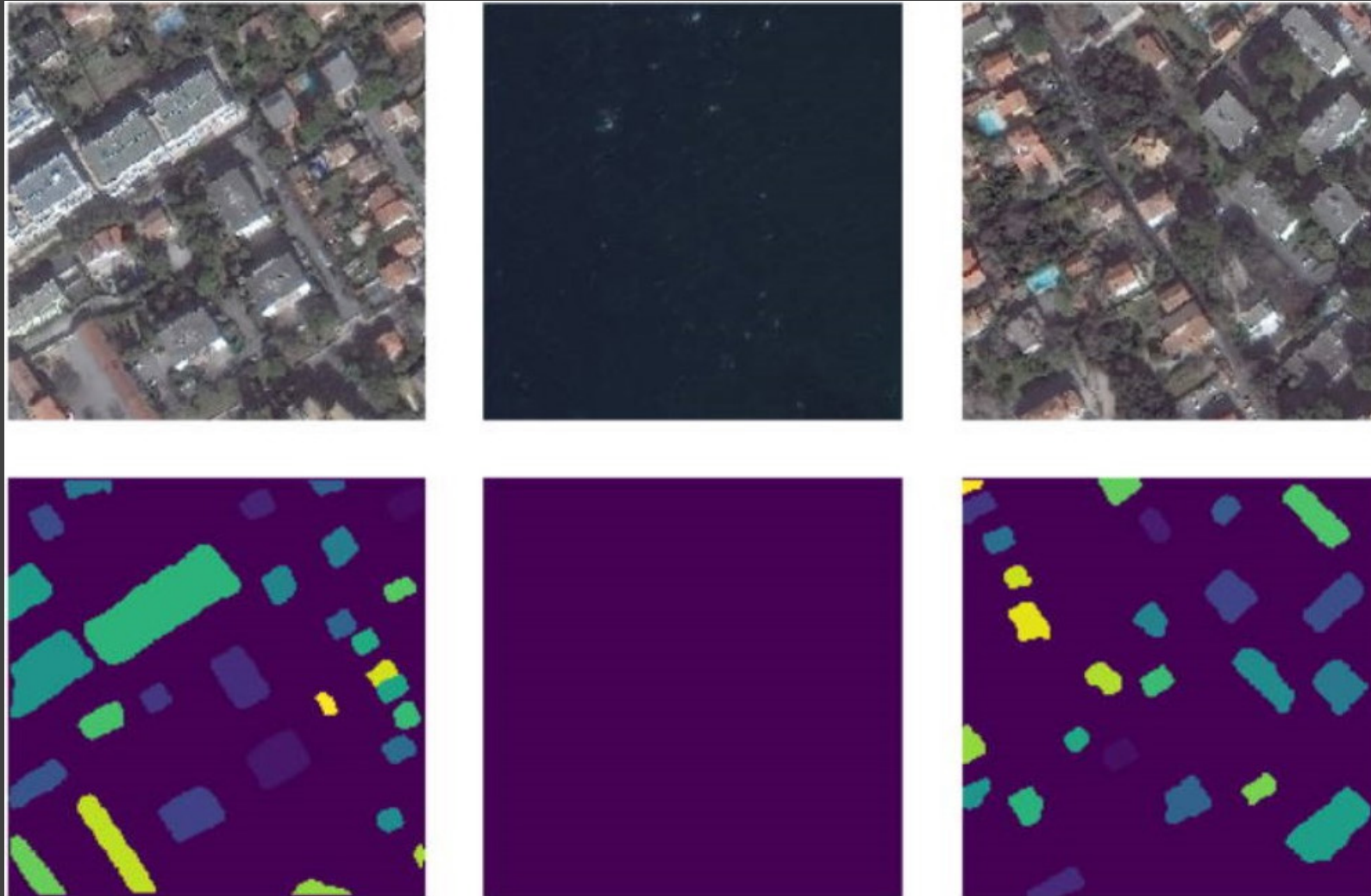


Fase 1 - Likelihood and prior

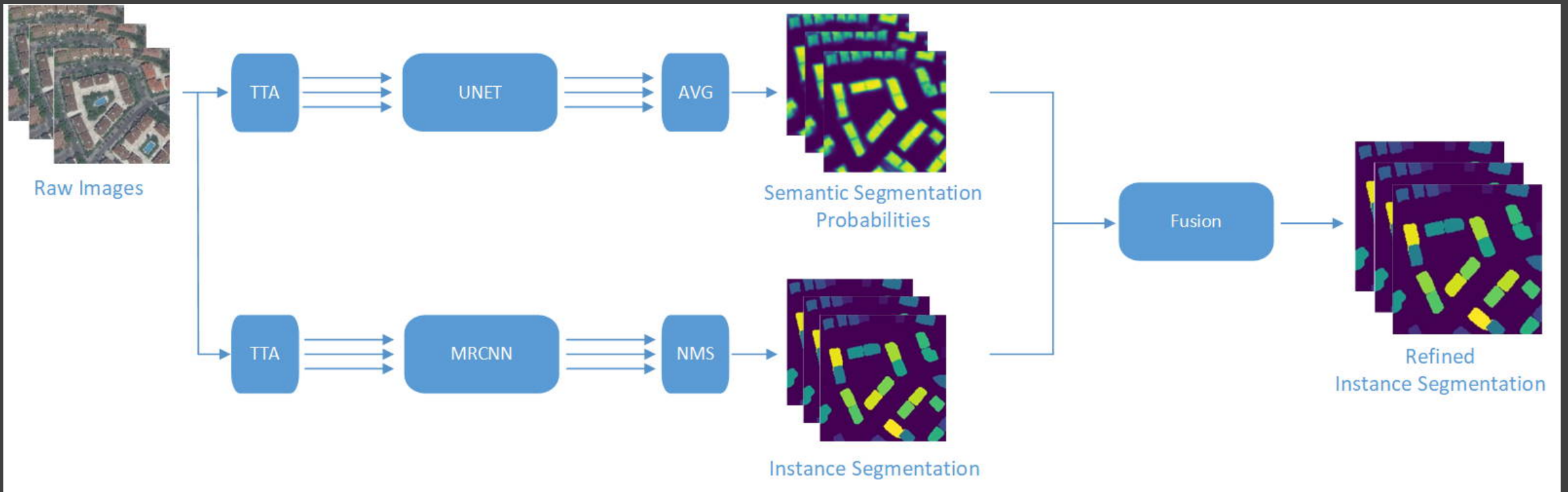
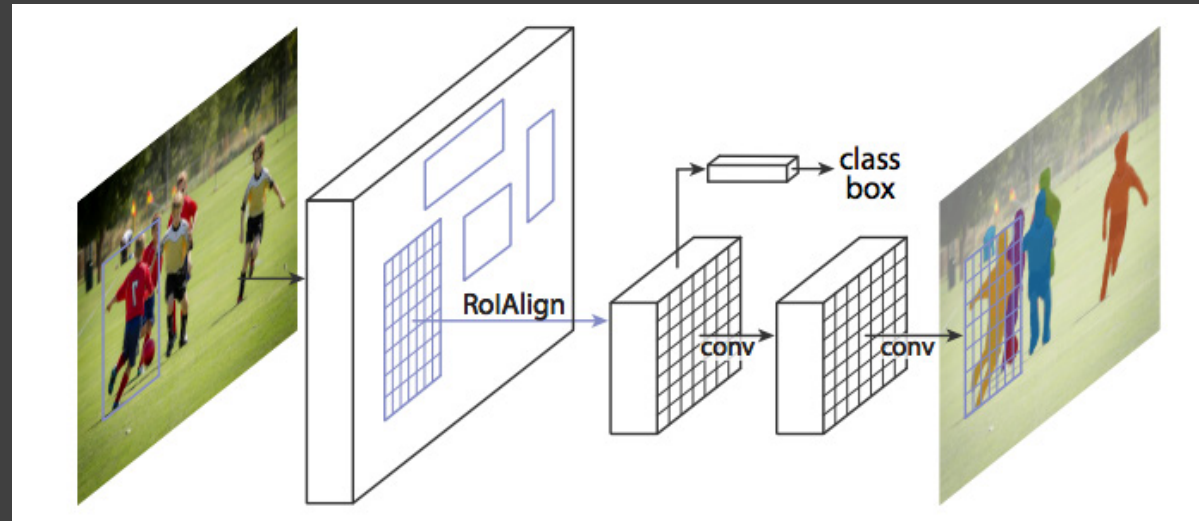


$$F_1 = 2 * \frac{\textit{precision} * \textit{recall}}{\textit{precision} + \textit{recall}}$$

Fase 2 – Instance Segmentation - Ottiche



Fase 2: MRCNN



Fase 2: $0.7 * \text{Jaccard Score} + 0.3 * \text{IoU}$



Fine

Fine

Fine

Fine