

Equipo 3

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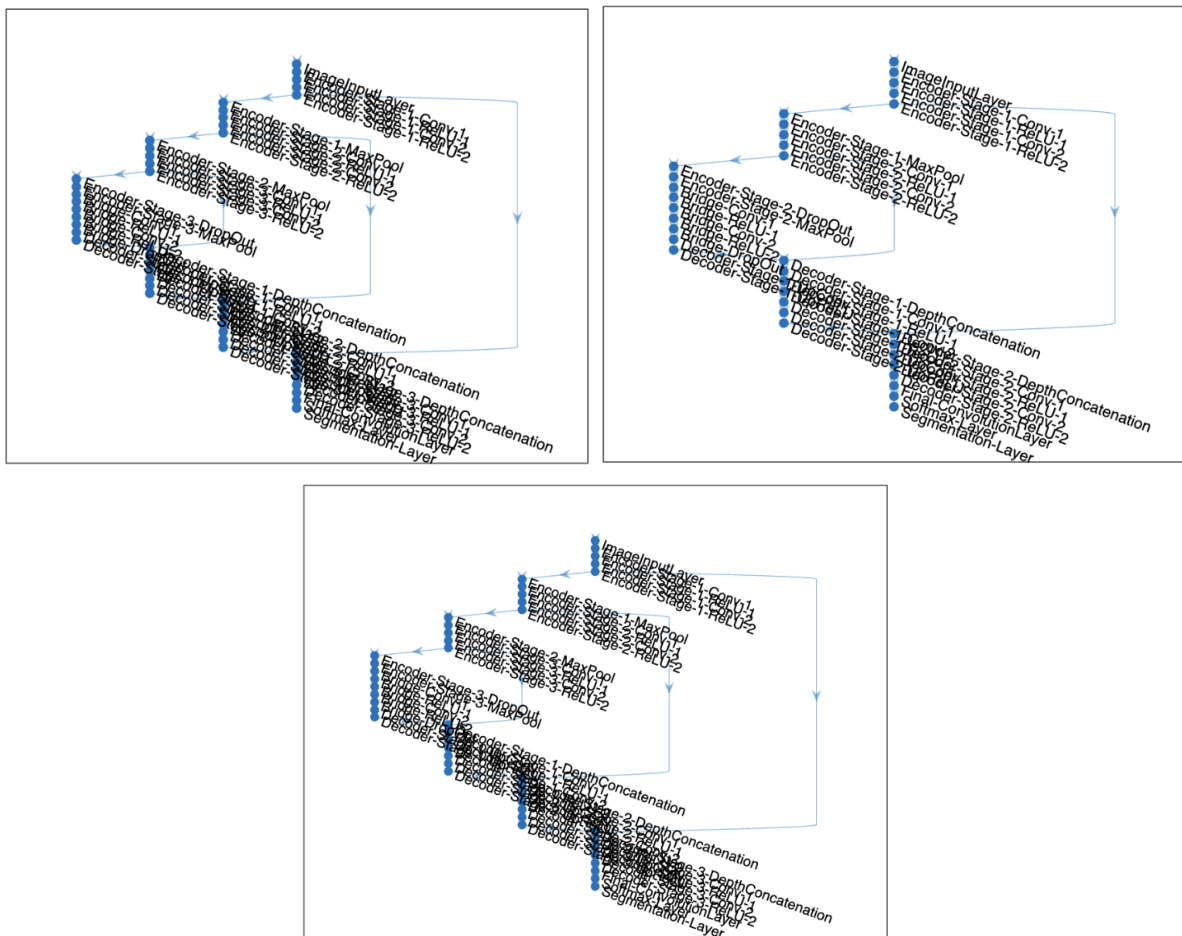
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Segmentation U-Net

1. Use different image size, number of classes, and depth of the encoder-decoder and observe how the plot (unetLayers) change.



2. Now that you know how to create a U-Net network, you are going to learn how to train this type of network for semantic segmentation.

Training on single CPU.

Initializing input data normalization.

Epoch	Iteration	Time Elapsed (hh:mm:ss)	Mini-batch Accuracy	Mini-batch Loss	Base Learning Rate
1	1	00:00:02	79.83%	1.7735	0.0010
10	10	00:00:27	97.73%	0.2761	0.0010
20	20	00:00:54	98.62%	0.1465	0.0010

Training finished: Max epochs completed.

Training on single CPU.

Initializing input data normalization.

Epoch	Iteration	Time Elapsed (hh:mm:ss)	Mini-batch Accuracy	Mini-batch Loss	Base Learning Rate
1	1	00:00:02	65.89%	3.0441	1.0000e-04
10	10	00:00:28	95.74%	0.6022	1.0000e-04
20	20	00:00:57	96.96%	0.4169	1.0000e-04
30	30	00:01:25	97.27%	0.3508	1.0000e-04

Training finished: Max epochs completed.

Training on single CPU.

Initializing input data normalization.

Epoch	Iteration	Time Elapsed (hh:mm:ss)	Mini-batch Accuracy	Mini-batch Loss	Base Learning Rate
1	1	00:00:03	75.57%	2.4341	0.0010
10	10	00:00:29	96.01%	0.4518	0.0010
20	20	00:00:58	97.62%	0.2324	0.0010
30	30	00:01:26	98.17%	0.1259	0.0010

Training finished: Max epochs completed.

- What is the most appropriate number of max epochs you can use? Why?

The most appropriate maximum number is 90. Because it is the number closest to 100, talking about precision without making the program slower.

- How did the learning rate affect the accuracy? At this point you should obtain something similar to this (include that output in your report)

Evaluating semantic segmentation results

* Selected metrics: global accuracy, class accuracy, IoU, weighted IoU, BF score.
 * Processed 100 images.
 * Finalizing... Done.
 * Data set metrics:

GlobalAccuracy	MeanAccuracy	MeanIoU	WeightedIoU	MeanBFScore
0.95866	0.70352	0.63925	0.92841	0.63203

Accuracy is decreased by increasing the learning rate

- This result is the same you obtained previously but specified by class.

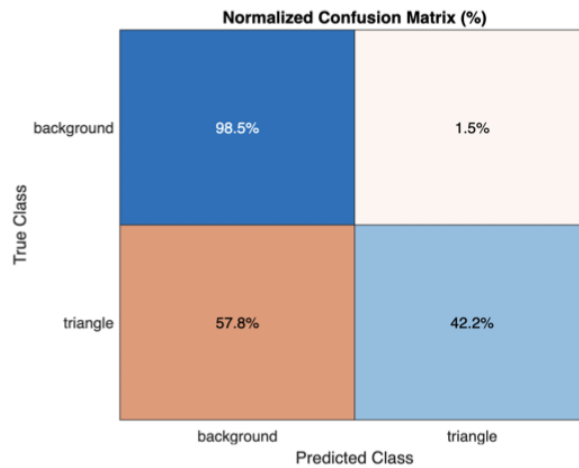
ans = 2x3 table

		Accuracy	IoU	MeanBFScore
1	triangle	0.4224	0.3207	0.4303
2	background	0.9846	0.9578	0.8337

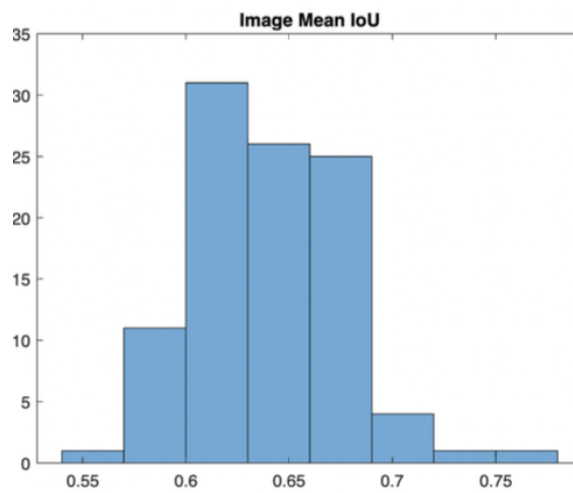
6. This result is the confusion matrix, that tells you:

ans = 2x2 table

		triangle	background
1	triangle	1998	2732
2	background	1501	96169



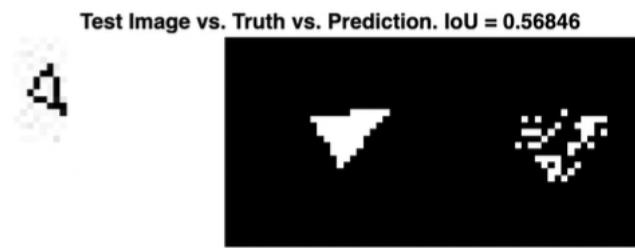
7. Include your histogram



8. What was the most common mean IoU through the images?

[0.6 0.63]

9. Image with the lowest IoU



10. Image with the highest IoU

