Report on CNN training

Ricardo Nez Prieto
Pablo Correa Gmez

March 22, 2018

Abstract

Explanation of progress with neural network

1 Training in our CPUs

1.1 Before data augmentation

We worked on several trainings to get to understand the different parameters and optimize them for our net.
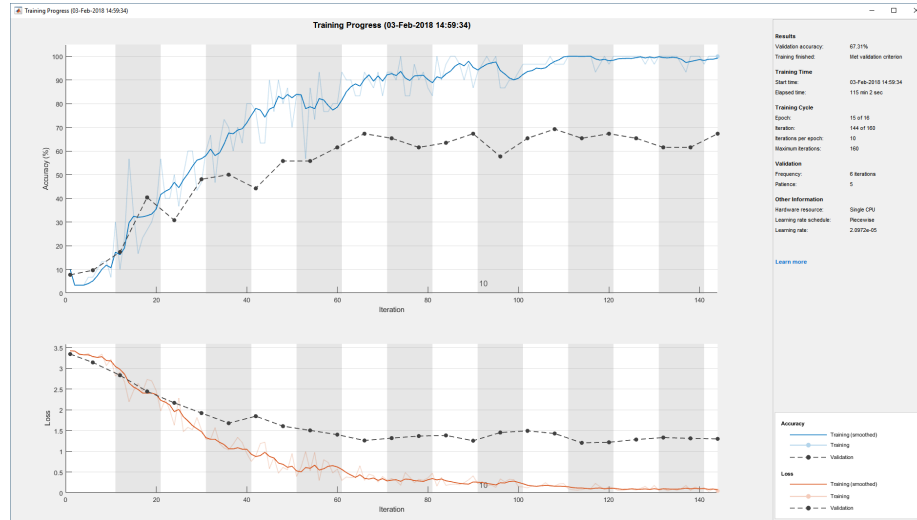We had 1500 images.

Figure 1: Example of training before data augmentation

1.2 Data augmentation

Proceed to data augmentation. As it had been done with a script, we proceeded to do some cleaning. We compared similar images in smaller groups: AOG, MN, UVW and then removed the conflicting images that were out of the frame, a bit blurry, etc.

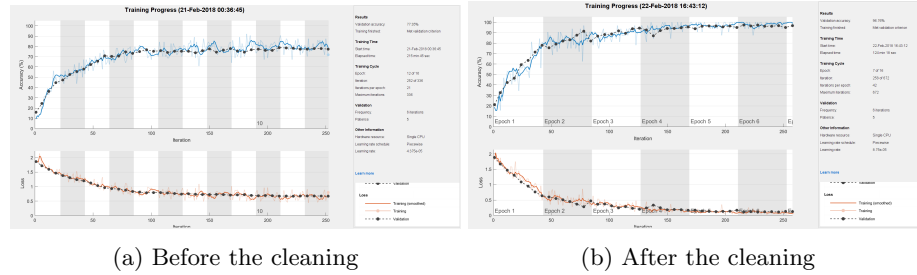(a) Before the cleaning (b) After the cleaning

Figure 2: ILRTXZ trained together

After the cleaning procedure we had around 6500 images.

Then we trained all the images together and again spent some time hand-tuning the learning parameters.
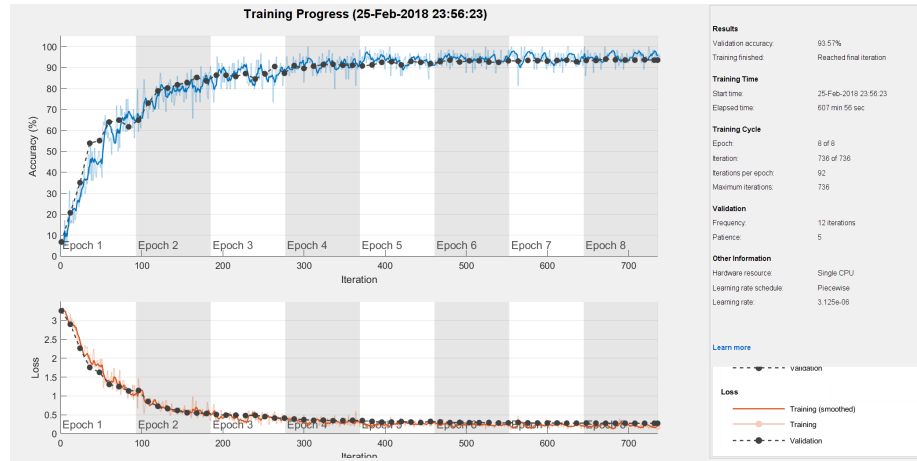

Figure 3: Nice CPU training on our computers

2 GPU arrives

2.1 Training augmented dataset

We had some mistake or something wasn't working that we can still not figure out which made the trainings useless. On Saturday Ricardo tried again and the problem was fixed.
We have done two kind of trainings:

- Splitting the dataset randomly and using 85% of the images for training and 15% for validation.

- Taking all the dataset for training and validating with some other images that the Neural Network has never seen before.
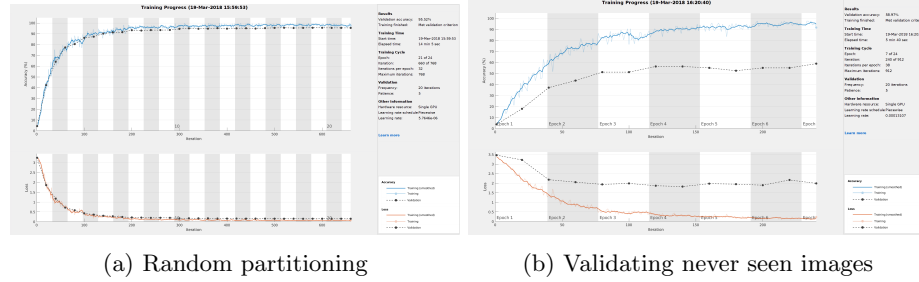

(a) Random partitioning   (b) Validating never seen images

Figure 4: Trainings with GPU

2.2 Training original dataset

We tried to train the original dataset again to check that the data augmentation has really made a difference.

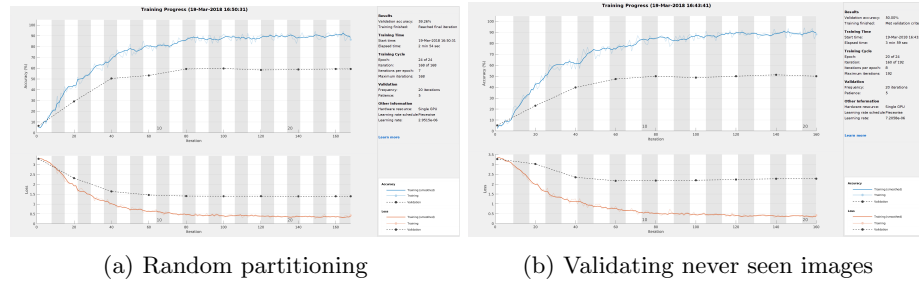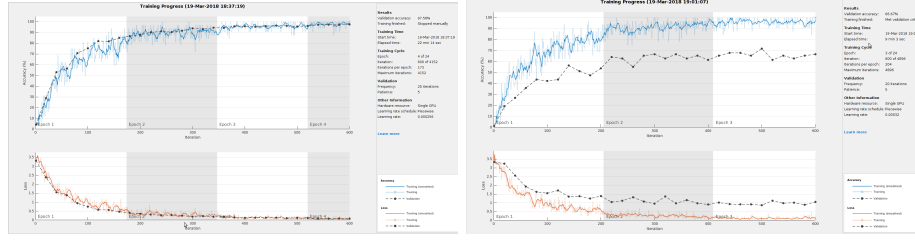(a) Random partitioning   (b) Validating never seen images

Figure 5: Trainings with GPU original dataset

2.3 Training with googlenet

As suggested by Liang, we have tried training with a different net to check if the problem identified is due to our topology. After training with googlenet we can conclude that it is not.

(a) Random partitioning

(b) Validating never seen images

Figure 6: Trainings original dataset