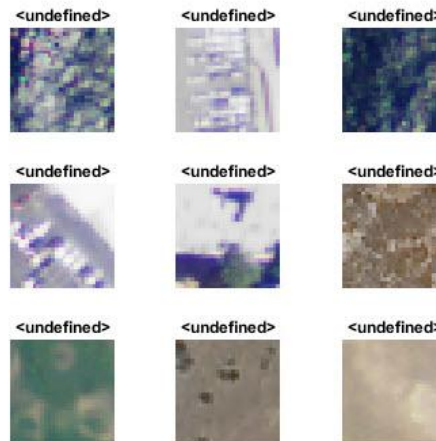


## Improving Performance of the Land Cover Classifier

Both accuracy and training time are part of a network's performance. There is always a balance between maintaining a high accuracy and decreasing training time.

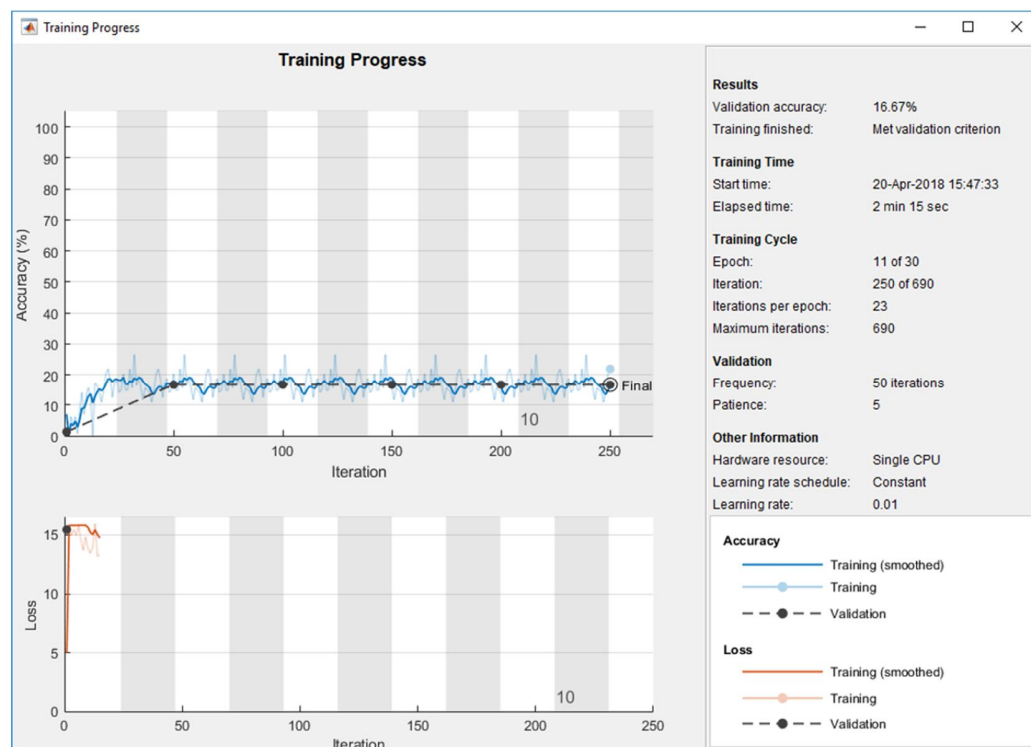
There is no single “right” way to set the training options for a deep neural network, but there are some recommended steps to improve your training.

1.



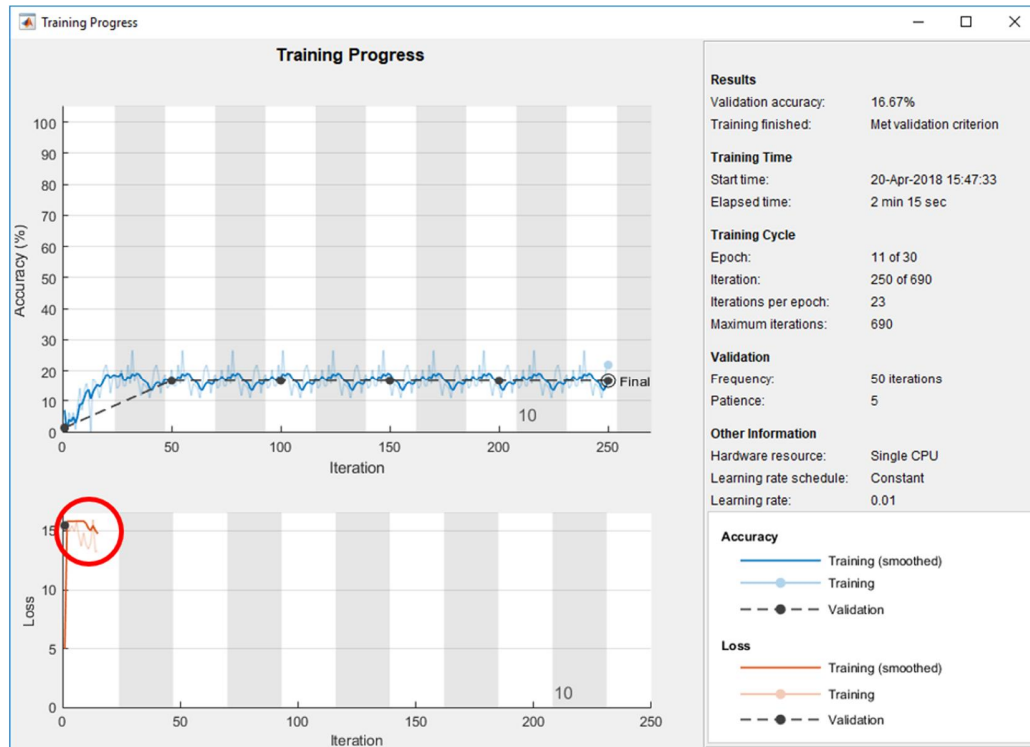
*If your network encounters problem during training, all the predictions will be undefined. The training progress plot can help debug this issue.*

2.



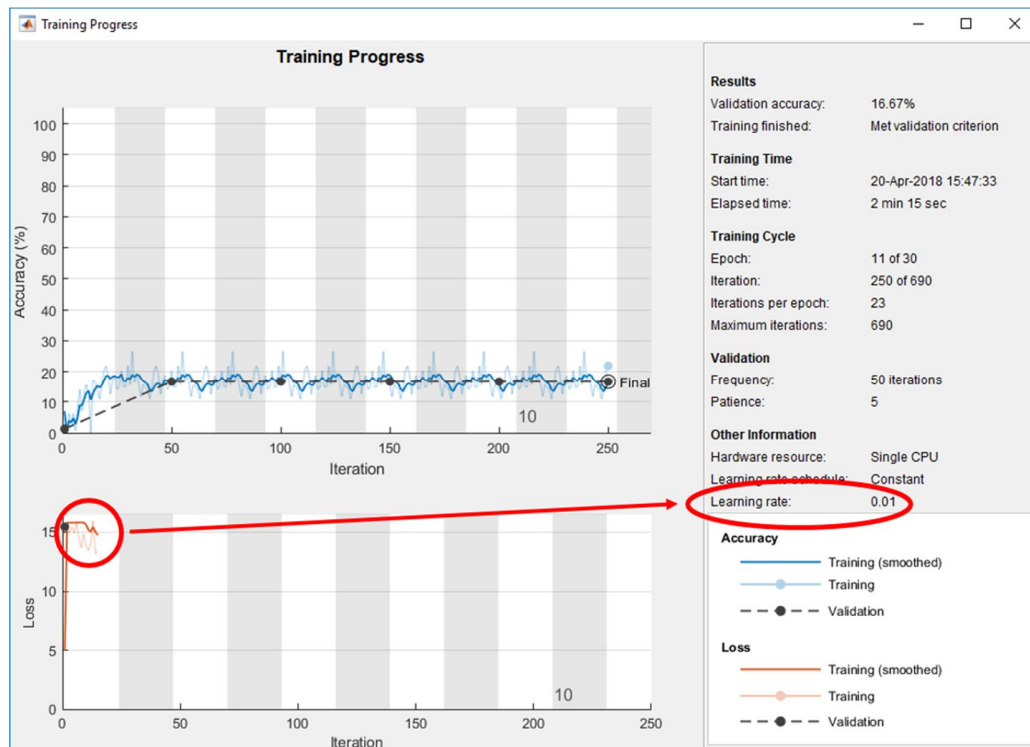
*This is the training progress plot for training a network that classifies land cover. The default settings have poor accuracy. How could you improve your accuracy?*

3.



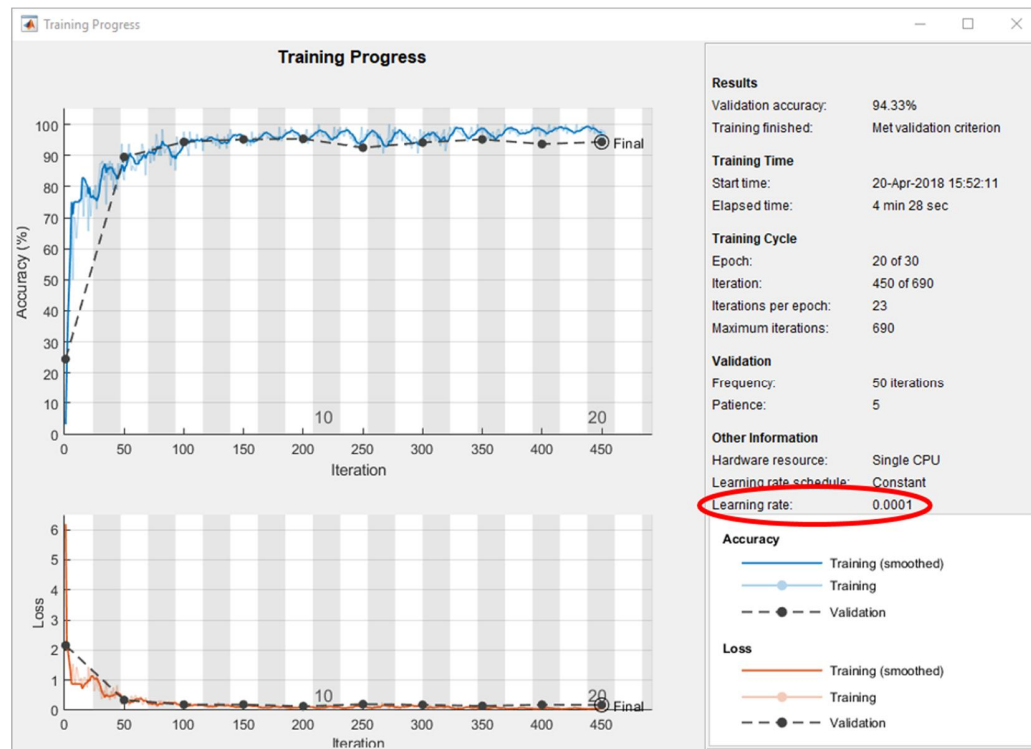
The training loss shows a problem early in the training. The line stops displaying because the training loss evaluates to NaN during the first epoch.

4.



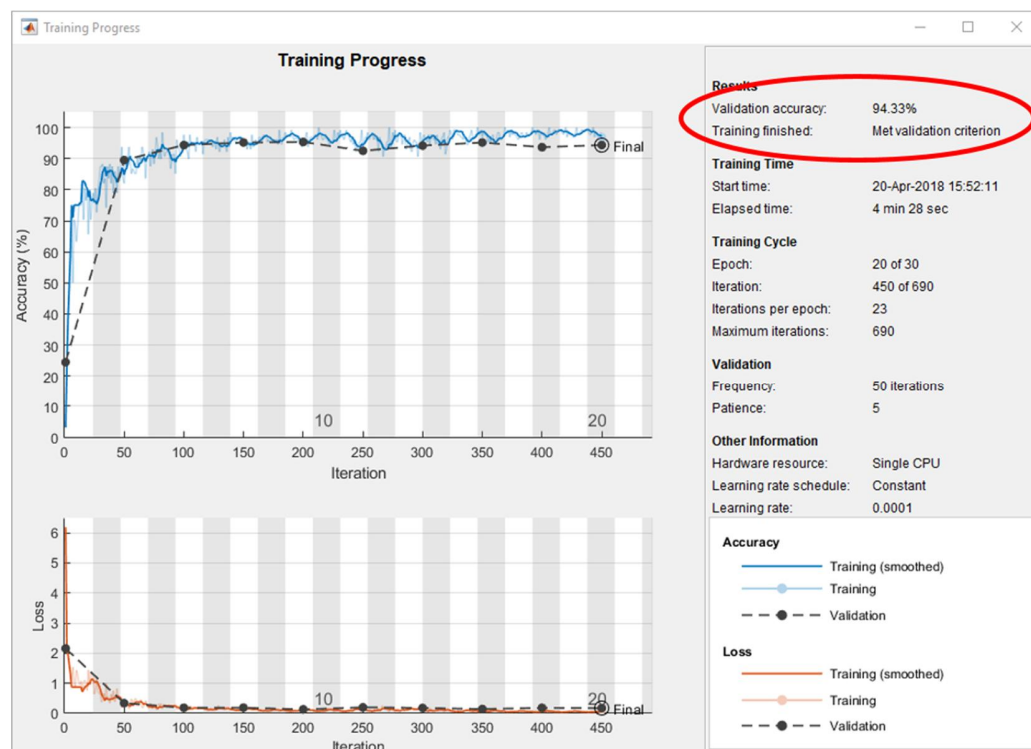
If there is a large spike in loss, or loss values are no longer being plotted, your initial learning rate is probably too high. Decrease the learning rate by a power of ten until your loss decreases.

5.

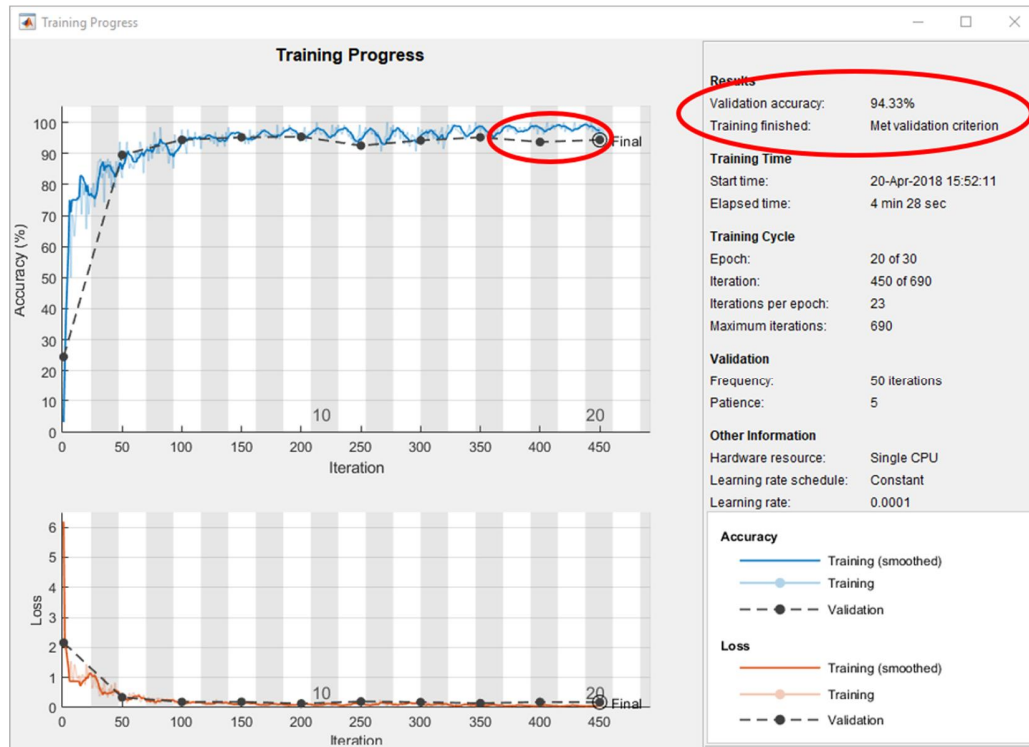


With the learning rate set to 0.0001, the loss and accuracy look much better.

6.

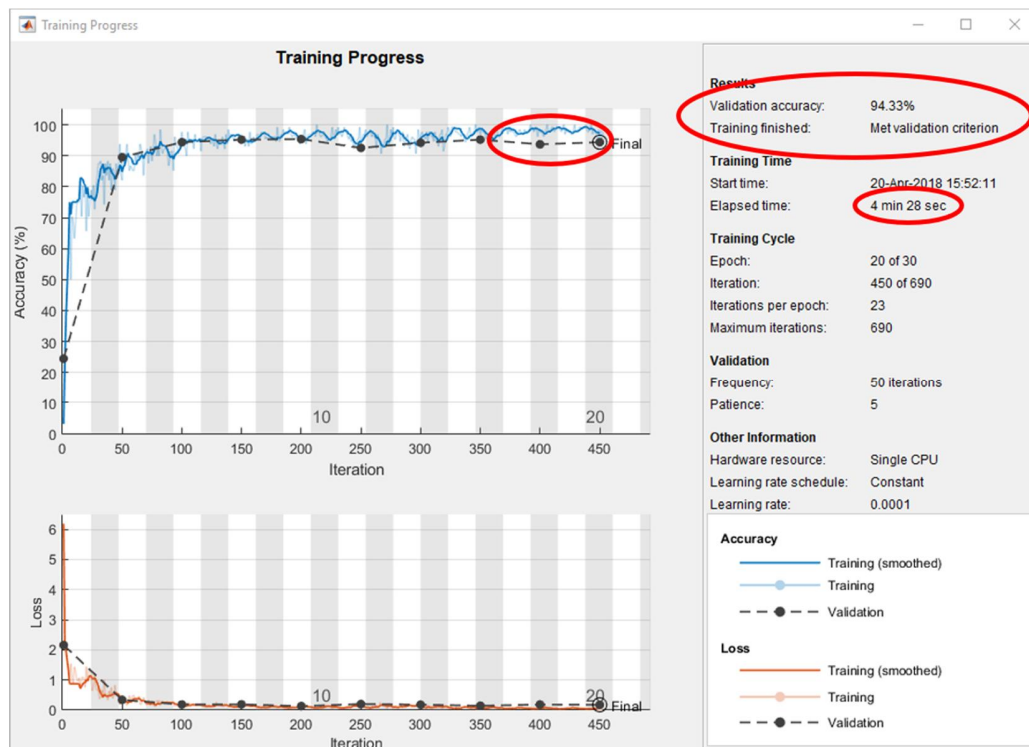


7.



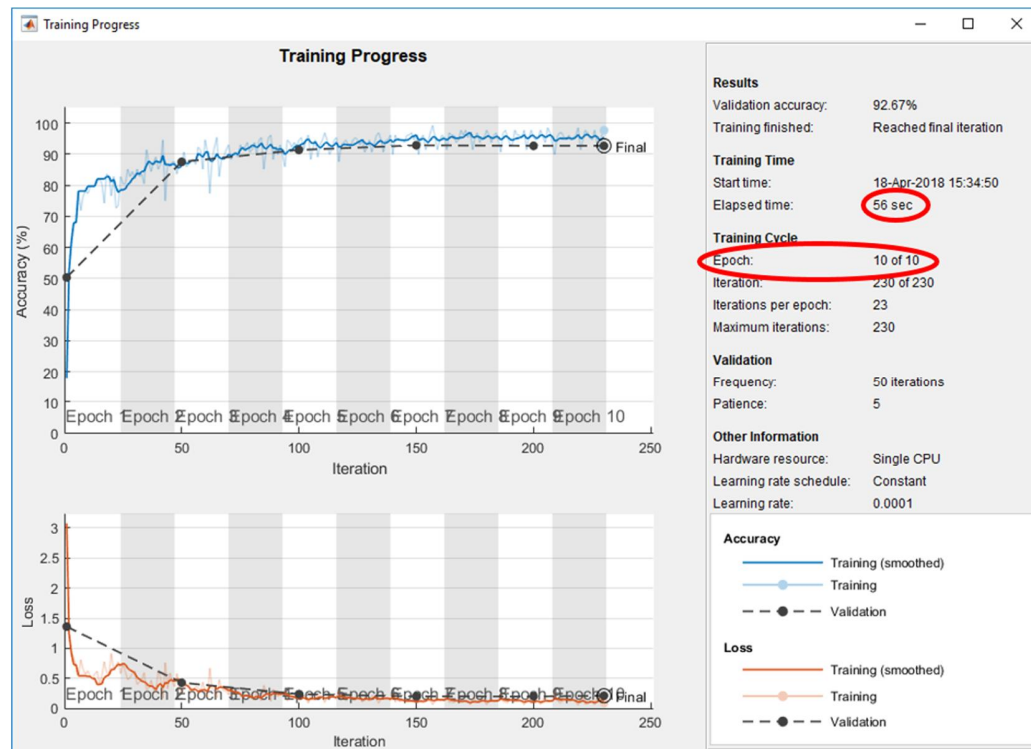
Validation criterion exists to prevent overfitting in your network. You can see a difference between training accuracy and validation accuracy. This indicates that the network was beginning to overfit.

8.



If you are satisfied with this network, you could stop here. However, for such a simple network, the training time of 5 minutes is quite long. The validation accuracy begins to plateau around 10 epochs, so you could limit the training time by reducing the maximum number of epochs.

9.



With the maximum epochs set to 10, the training time is much faster. The accuracy is comparable to the network that trained longer. When you train a network, there is always a trade-off between accuracy and training time.