MONASH University

School Of Information Technology

FIT - 3162

Computer Science Project

Semester 2

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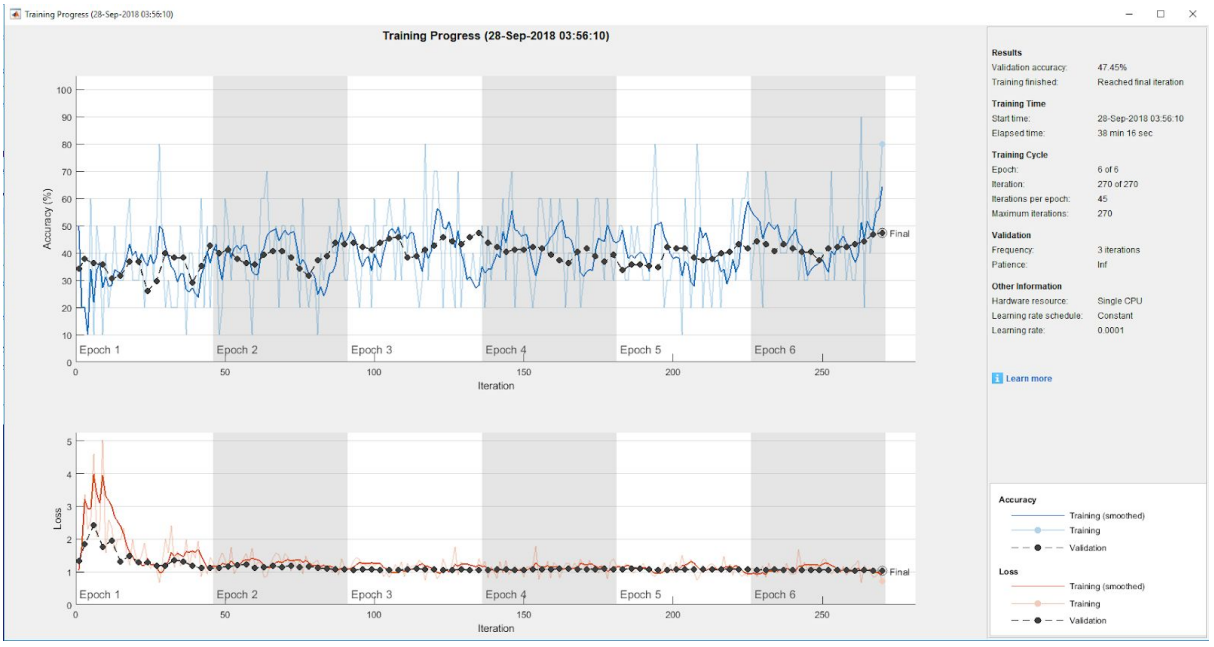
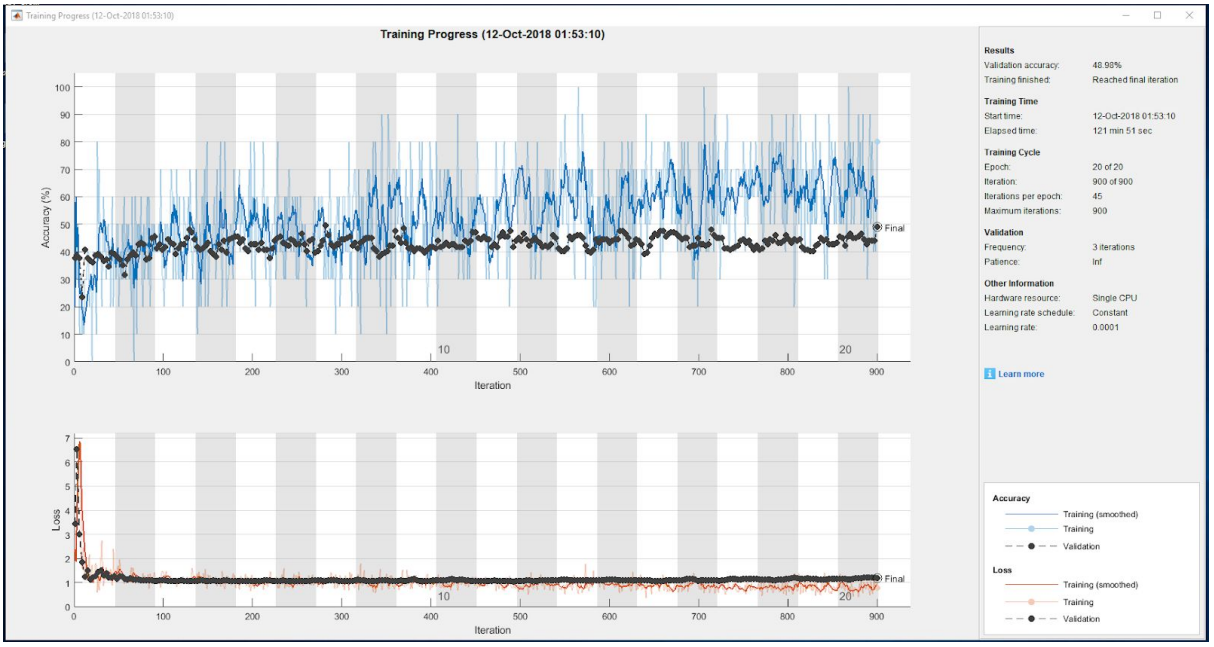
Evaluation Report

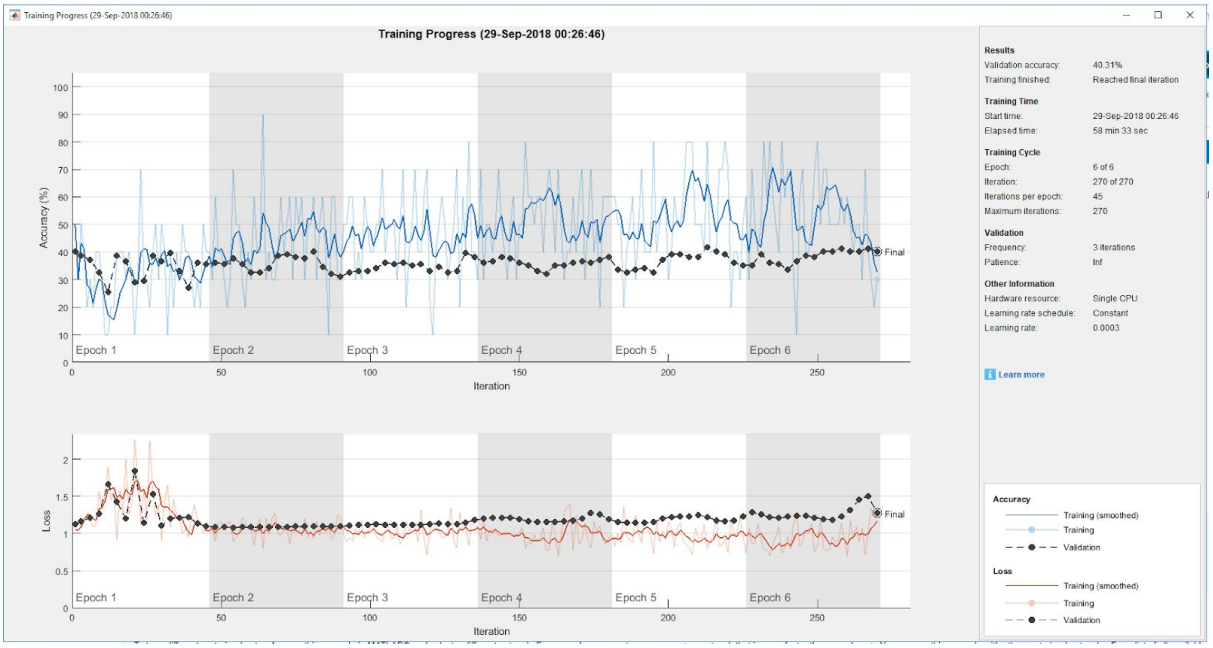
Classification of Diabetic Retinopathy using Retinal Images (Convolutional Neural Network with MATLAB + Fusion Techniques)

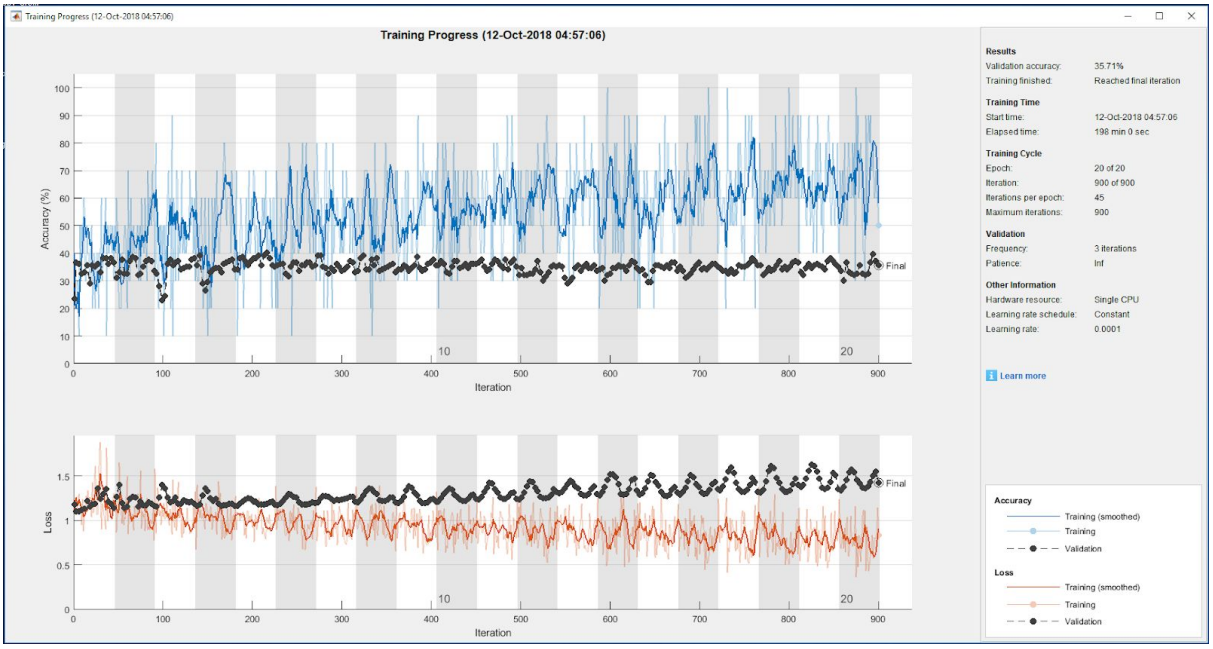
Using Alexnet





Using GoogLeNet





Evaluation

The above training was done using only the retinal images. No test images from others domains were passed into the networks. For example, the network does not evaluate what happens if we were to pass it the images of a dog or a cat. It does not predict that yet.

From the initial experiments we can see that Alexnet is performing better than the GoogleNet. By keeping all the training options almost identical both the networks performed the classifications on the exact same dataset. The results are shown on the table above.

	Epochs	Validation	Epochs	Validation
Alexnet	6	47.45	20	48.98
Googlenet	6	40.31	20	35.71

From the above table and graphs we can assess a few things.

- Increasing epoch number does not increase the validation accuracy.
- Both the models over fits by a great amount and thus we cannot verify that the models are being trained accurately. So, these model cannot be used to efficiently detect the level of DR in the patient's retina.
- The validation accuracy that we do get is far less than what was proposed in our project proposal.
- Especially for the GoogleNet the training severely overfits than the validating.

From some experimental research it is seen that the dropout layer plays a severe role when it comes to overfitting and underfitting between the training and validation. So, this was our new approach for improving our already fine-tuned model. We added a dropout layer and trained our network again.