Link to dataset:

PDF of project report that includes the following elements:

- **Description of your dataset, how you have collected it, and how you have split it into train/validation/test sets. (Note, some of the material here can be repeated from your Assignment 3 report; think of this Assignment 4 report as a standalone document, and include enough information that a new reader unfamiliar with your project would understand what you are doing, and why.)**

Our dataset includes 675 images from artsy.net, a site dedicated to providing information and famous content from all styles of visual art. We are specifically interested in Surrealist and Impressionist paintings, so our images are about half surrealist and half impressionist. They all come from the most famous artists from those movements. We download these with a simple web-scraper that scrapes the top images from each artist's page that we specify to the scraper. Thus we can add more URLs for more artists' pages to download additional instances easily.

For each trial, we fixed the number of hidden layers, the number of units in the hidden layers, the mini batch size, and the learning rate. Then we trained the network three time with these parameters – once using the training data as the test data, once using the validation data as test data, and once using the test data as test data.
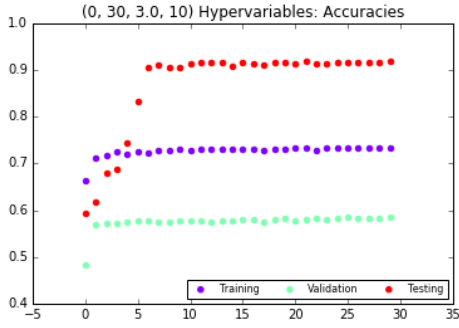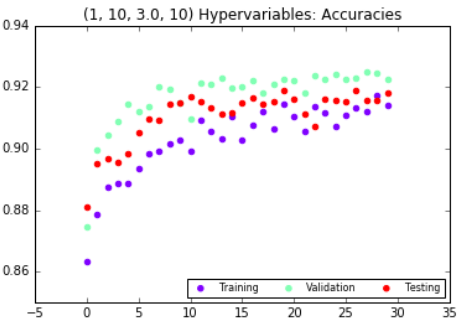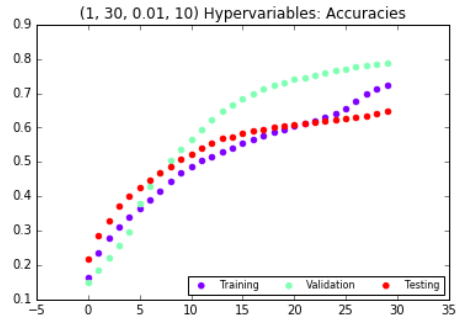
On the following pages are the results of our trials. Each row represents a trial, and shows the number of hidden layers in the network, the amount of nodes in each hidden layer, the mini batch size, and the learning rate followed by a plot of the accuracy of the network as a function of epoch and training set used, and our interpretation of the results.
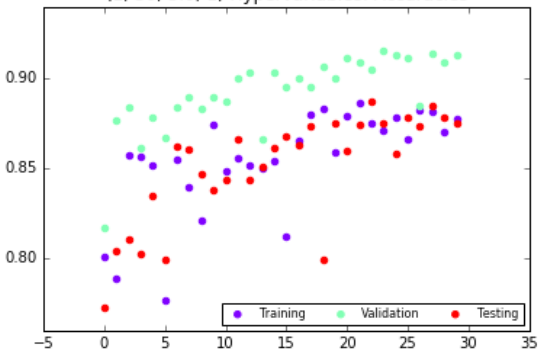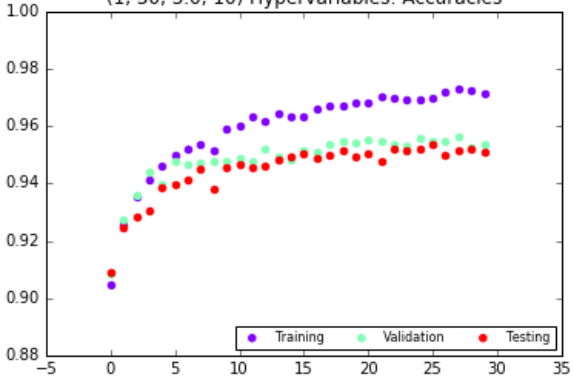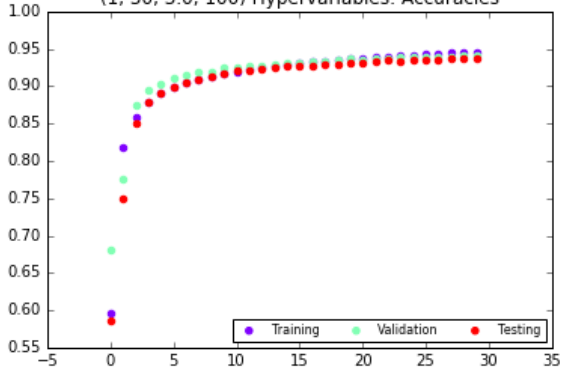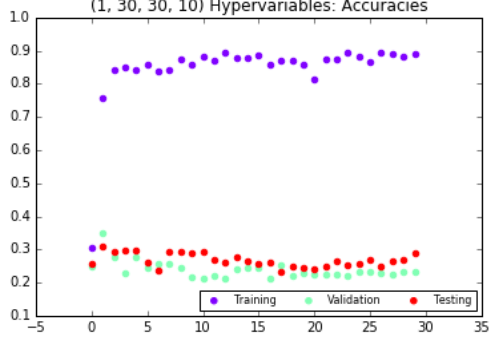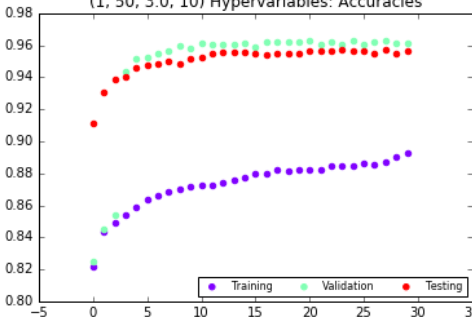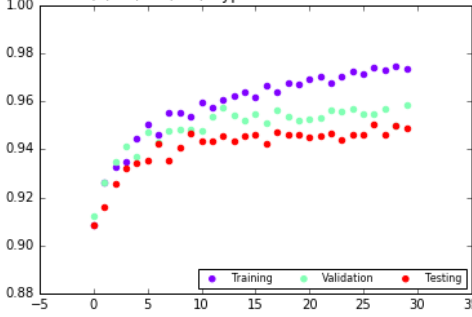
MNIST Dataset

Size: 10,000 instances

Average training duration: 259 seconds

Epochs: 30

Hidden Layers	Hidden Layer Size	Mini Batch Size	Learning Rate	Plot	Interpretation
0	N/A	10	3.0		
1	10	10	3.0		
1	30	10	0.1		

1	30	1	3.0	(1, 30, 3.0, 1) Hypervariables: Accuracies	
1	30	10	3.0	(1, 30, 3.0, 10) Hypervariables: Accuracies	
1	30	100	3.0	(1, 30, 3.0, 100) Hypervariables: Accuracies	
1	30	10	30	(1, 30, 30, 10) Hypervariables: Accuracies	

1	50	10	3.0		
2	30	10	30		

(1, 50, 3.0, 10) Hypervariables: Accuracies

(2, 30, 3.0, 10) Hypervariables: Accuracies

Our dataset

Size: 675 instances

Average training duration: 2.19 seconds

Epochs: 30

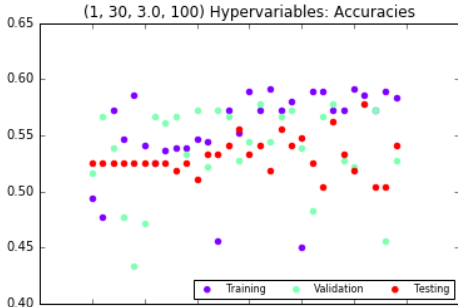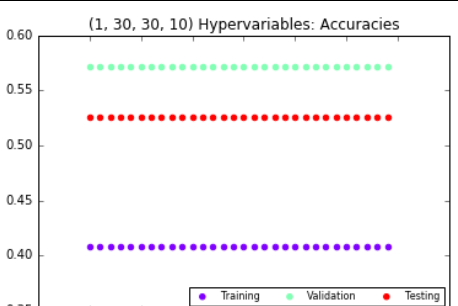| Hidden Layers	Hidden Layer Size	Mini Batch Size	Learning Rate	Plot	Interpretation
0	N/A	10	3.0	(0, 30, 3.0, 10) Hypervariables: Accuracies	
1	10	10	3.0	(1, 10, 3.0, 10) Hypervariables: Accuracies	
1	30	10	0.1	(1, 30, 0.01, 10) Hypervariables: Accuracies	
1	30	1	3.0	(1, 30, 3.0, 1) Hypervariables: Accuracies	

1	30	10	3.0	(1, 30, 3.0, 10) Hypervariables: Accuracies	
1	30	100	3.0	(1, 30, 3.0, 100) Hypervariables: Accuracies	
1	30	10	30	(1, 30, 30, 10) Hypervariables: Accuracies	
1	50	10	3.0	(1, 50, 3.0, 10) Hypervariables: Accuracies	

| 2 | 30 | 10 | 30 | | |

(2, 30, 3.0, 10) Hypervariables: Accuracies
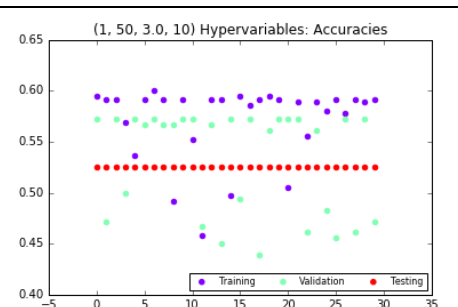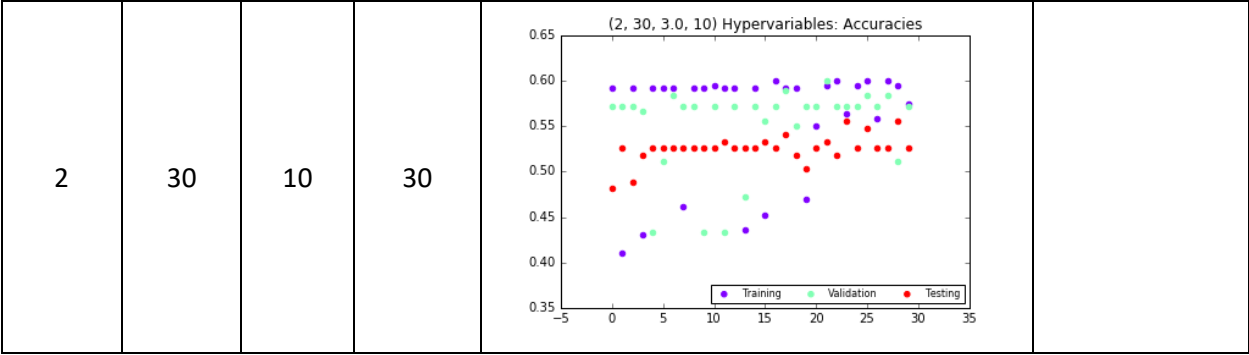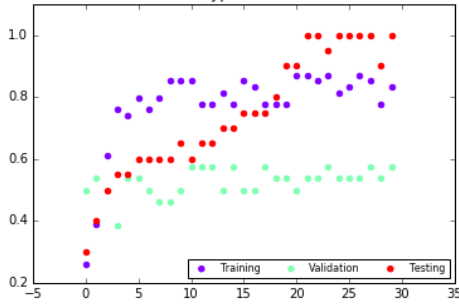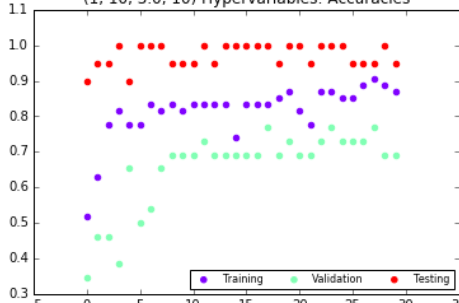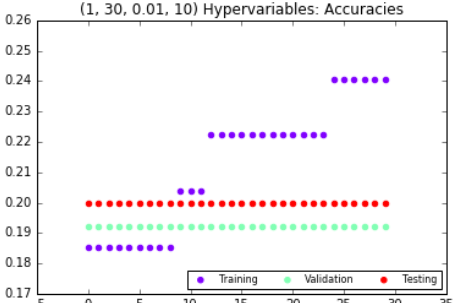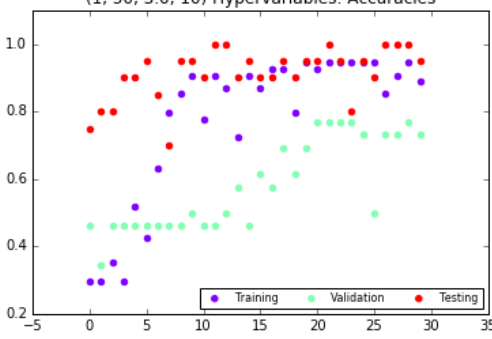
Assignment 3 dataset

Instances: 100

Average training duration: 0.138 seconds

Epochs: 30

Hidden Layers	Hidden Layer Size	Mini Batch Size	Learning Rate	Plot	Interpretation
0	N/A	10	3.0	(0, 30, 3.0, 10) Hypervariables: Accuracies	
1	10	10	3.0	(1, 10, 3.0, 10) Hypervariables: Accuracies	
1	30	10	0.1	(1, 30, 0.01, 10) Hypervariables: Accuracies	

1	30	1	3.0		
1	30	10	3.0		
1	30	100	3.0		
1	30	10	30		

1	50	10	3.0	(1, 50, 3.0, 10) Hypervariables: Accuracies	
2	30	10	30	(2, 30, 3.0, 10) Hypervariables: Accuracies	