Pattern	Epoch	Learning rate	Loss	Accuracy
Centered Square	5000	.001	.1361	94.4
	5000	.01	.1374	94.8
	3000	.005	.1085	95.4
Circle	5000	.001	.1525	95.2
	5000	.01	.1314	94.6
	8000	.001	.1249	96.6
	10000	.001	.1139	97.0
Diamond	5000	.001	.1340	97.6
	5000	.01	.1175	95.0
	5000	.005	.0756	99.6
	2500	.005	.0951	99.4
Thick Right	5000	.001	.0832	97.4
	5000	.01	.0443	98.6
	3000	.01	.0488	98.4
Thin Right	5000	.001	.1124	98.6
	5000	.01	.0306	99.2
	3000	.01	.0364	99.0
	2000	.01	.0430	99.0

Which patterns was the neural network able to learn quickly and which took longer?

- Based on the results from the table above the neural network learned the Thin Right pattern the quickest with Thick Right behind it.

- The neural network had the hardest times learning the Circle pattern, unlike the rest of the patterns that performed well with a learning rate of .01, when trying to use .01 for the Circle pattern their was a significant level of volatility in loss and accuracy values between iterations. Furthermore, unlike the other patterns, we had to increase the number of epochs for the algorithm to fit the Circle pattern.

What learning rates and numbers of iterations worked well?

- Centered Squared: A learning rate of .005 and 3000 iterations seemed to perform the best based on the lowest loss and highest accuracy.
- Circle: We had to increase the number of iterations to 10,000, doubling the original epoch value, to see the loss and accuracy converge. Any attempt to increase the learning rate resulted in high volatility in loss and accuracy scores.
- Diamond: While the algorithm performed the best with 500 iterations and a learning rate of .005, I believe using 2500 iterations instead is better since the training time is cut in half with only a slight increase in loss and decrease of accuracy.
- Thick Right: By dropping the number of iterations to 3000 and pushing the learning rate up to .01 converged to a loss value of .0488 and an accuracy of ~98%.
- Thin Right: Like the Thick Right and Diamond pattern, we cut the training time down by reducing the epoch from the initial 5000 to 2000 – and having a learning rate of .01.