	Results								
Letter : A	1	Hidden Units: 4		Learning Rate: 0.0625	T	Momentum: 0.05	1		
Training Run	Epoch Reached	Training Accuracy	Validation Accuracy	Generalization Accuracy	· · · · · · · · · · · · · · · · · · ·	Desired Accuracy	Overfitting		
			98.8501	99			0		
	2 22		98.925	99.0825			0		
	15	98.5083	98.625	99.0245	0	1	0	)	
	_	98.775	98.925	99	0	1	0		
	5 23	99.1	99.2	98.95		0	0		
(		98.8583	98.7	99		1	0		
-	7 33	98.8	98.675	99	0	1	0	1	
8	77	98.95	98.625	99.05	0	1	0	1	
ę	21	99.15	98.775	99	0	1	0		
10	79	99.0083	98.9	99	0	1	0		
	35.1	98.89499	98.82001	99.0107	1	9	0		
Hidden Unit	Avg. Epoch Reached	Training Accuracy	Validation Accuracy	Generalization Acuracy	Max Epoch	Desired Accuracy	Overfitting		
8	61.4	98.90831	98.9475	98.96	3	7	0		
4									
	38.4	98.89499	98.82001	99.0107	1	9	0		
12		98.89499 98.87247	98.82001 98.9125	99.0107 98.9925		9	_		
							_		
							_		
12	2 50.4 Training Accuracy	98.87247	98.9125	98.9925	1	9	0		
Epoch Number	2 50.4 Training Accuracy	98.87247 Validation Accuracy	98.9125 Generalization Accuracy	98.9925 Training Ac	1		0		
Epoch Number	2 50.4  Training Accuracy 95.975 95.975	98.87247  Validation Accuracy  96 96	98.9125 Generalization Accuracy 96.35	98.9925	1	9	oncy and Gen	eralization	
Epoch Number	2 50.4  Training Accuracy 1 95.975 2 95.975 3 95.975	98.87247  Validation Accuracy  96 96 96	98.9125 Generalization Accuracy 96.35 96.35	Training Ac Accuracy	1	9	oncy and Gen		
Epoch Number	2 50.4  Training Accuracy 95.975 95.975 95.975 95.975	98.87247  Validation Accuracy  96  96  96  96	98.9125  Generalization Accuracy 96.35 96.35	98.9925 Training Ac	1	9	acy and Gen	eralization	Sy.
Epoch Number	2 50.4  Training Accuracy 1 95.975 2 95.975 3 95.975 4 95.975 5 95.975	98.87247  Validation Accuracy  96  96  96  96	98.9125  Generalization Accuracy 96.35 96.35 96.35 96.35	Training Ac Accuracy	1	9	acy and Gen	eralization  Training Accuracy Validation Accuracy	cy
Epoch Number	2 50.4  Training Accuracy 95.975 95.975 95.975 95.975 95.975	98.87247  Validation Accuracy  96  96  96  96  96	98.9125  Generalization Accuracy 96.35 96.35 96.35 96.35 96.35	Training Ac Accuracy	1	9	acy and Gen	eralization  Training Accuracy	Cy
Epoch Number	Training Accuracy 95.975 95.975 95.975 95.975 95.975 95.975	98.87247  Validation Accuracy  96  96  96  96  96  96  95.8	98.9125  Generalization Accuracy 96.35 96.35 96.35 96.35 96.35 96.35	Training Ac Accuracy	1	9	acy and Gen	eralization  Training Accuracy Validation Accurac	cy
Epoch Number	Training Accuracy 95.975 95.975 95.975 95.975 95.975 95.975 95.975 95.975	98.87247  Validation Accuracy  96 96 96 96 96 95.8 93.975	98.9125  Generalization Accuracy 96.35 96.35 96.35 96.35 96.35 96.35 96.125 94.05	Training Ac Accuracy  99  99  99  99  97	1	9	acy and Gen	eralization  Training Accuracy Validation Accurac	Cy
Epoch Number	2 50.4  Training Accuracy 95.975 95.975 95.975 95.975 95.975 95.975 95.975 95.975 95.975 95.975	98.87247  Validation Accuracy  96  96  96  96  96  95.8  93.975  96.3	98.9125  Generalization Accuracy 96.35 96.35 96.35 96.35 96.35 96.35 96.35 96.35 96.35	Training Ac Accuracy	1	9	acy and Gen	eralization  Training Accuracy Validation Accurac	Sy
Epoch Number	Training Accuracy  95.975 95.975 95.975 95.975 95.975 95.975 95.975 95.975 95.975 95.2333 95.0417	98.87247  Validation Accuracy  96 96 96 96 96 95.8 93.975	98.9125  Generalization Accuracy 96.35 96.35 96.35 96.35 96.35 96.35 96.125 94.05	Training Ac Accuracy  99  99  99  99  97	1	9	acy and Gen	eralization  Training Accuracy Validation Accurac	Cy

13	98.3166	98.475	98.25	
14	98.4916	98.55	98.3	93 10 20 30 40
15	98.5249	98.6	98.5249	10 20 30 40
16	98.6083	98.7	98.575	Epoch Number
17	98.6417	98.7	98.65	
18	98.6833	98.7	98.675	
19	98.7083	98.725	98.7	
20	98.7416	98.775	98.8	
21	98.775	98.8	98.85	
22	98.7916	98.825	98.85	
23	98.8	98.85	98.85	
24	98.8166	98.875	98.9	
25	98.8416	98.875	98.9	
26	98.8416	98.9	98.9	
27	98.8583	98.9	98.9	
28	98.875	98.975	98.9	
29	98.875	98.975	98.925	
30	98.9	99.0249	98.9	
31	98.9083	99.075	98.9	
32	98.9166	99.1	98.9	
33	98.9333	99.15	98.925	
34	98.925	99.15	98.925	
35	98.9333	99.175	98.95	
36	98.9416	99.175	98.95	
37	98.9333	99.175	98.95	
38	98.925	99.175	98.95	
39	98.925	99.175	98.95	
40	98.9416	99.175	98.95	
41	98.9416	99.175	98.95	
42	98.9416	99.175	99	

Experiment 1 R	esults						
Letter : V		Hidden Units: 8		Learning Rate: 0.5 / 0.5		Momentum: 0.05	
Training Run	Epoch Reached	Training Accuracy	Validation Accuracy	Generalization Accuracy	Max Epoch	Desired Accuracy	Overfitting
1	54	99.1667	99.075	99	0	1	0
2	49	99.05	99.25	99.05	0	1	0
3	45	98.975	99.05	99.025	0	1	0
4	100	99.375	98.8	98.875	1	0	0
5	71	99.2416	99.15	99.025	0	1	0
6	61	99.1916	99	99	0	1	0
7	100	99.325	99.025	98.85	1	0	0
8	87	99.2083	99.4	99	0	1	0
9	51	99.2167	99.05	99	0	1	0
10	45	99.0584	98.75	99	0	1	0
	66.3	99.18083	99.055	98.9825	2	8	0
Learning Rate	Epoch Reached	Training Accuracy	Validation Accuracy	Generalization Accuracy	Max Epoch	Desired Accuracy	Overfitting
1 / fanin	76.6	97.16298	96.885	96.7975	8	0	2
0.05	27.1	96.10497	96.02	95.9125	0	0	10
0.5	66.3	99.18083	99.055	98.9825	2	8	0

	Hidden Units: 8		Learning Rate:	0.5 / 0.5	Momentum: 0.5			
Epoch Reached	Training Accuracy	Validation Accuracy	Generalization A	Max Epoch	Desired Accurac	Overfitting		
100	97.7333	98.05	97.8999	1	0	0		
100	98.1166	98.1	97.975	1	0	0		
100	98.0544	97.5	96.85	1	0	0		
100	97.8666	98.425	97.8	1	0	0		
100	98.0167	97.55	97.2	1	0	0		
100	98.25	97.95	98.05	1	0	0		
100	97.7667	97.6	97.5	1	0	0		
100	97.725	97.1	96.975	1	0	0		
100	97.8999	97.45	98.125	1	0	0		
100	97.575	98.075	97.7	1	0	0		
100	97.90042	97.78	97.60749	10	0	0		
Training Accuracy	Validation Accuracy	Generalization Accuracy		I	1		l .	
96.3333	96.05	96.15	Trainin	a Accuracy.	Validation /	Accuracy and	d Generalization	
96.325	96.05	96.125		_				
95.9916	97	97.375		C y				
97.8166	98.075	98.45	99 —				Training Accuracy	
98.4	98.45	98.675					<ul> <li>Validation Accuracy</li> </ul>	
98.6333	98.6	98.8	98	//			Generalization	
98.7333	98.675	98.85					Accuracy	
98.8	98.725	98.9		///				
98.8	98.85	99	97	_///				
			96	<b>*</b>				
			90					
			95					
				2 2	4 6	8		
					Epoch Number			
	100 100 100 100 100 100 100 100 100 100	100 97.7333 100 98.1166 100 98.0544 100 97.8666 100 98.0167 100 98.25 100 97.7667 100 97.725 100 97.8999 100 97.575 100 97.90042  Training Accuracy Validation Accuracy 96.3333 96.05 96.325 96.05 95.9916 97 97.8166 98.075 98.4 98.45 98.6333 98.675 98.8 98.725	100       97.7333       98.05         100       98.1166       98.1         100       98.0544       97.5         100       97.8666       98.425         100       98.0167       97.55         100       97.7667       97.6         100       97.8999       97.45         100       97.8999       97.45         100       97.90042       97.78         Training Accuracy       Validation Accuracy       Generalization Accuracy         96.3333       96.05       96.15         96.325       96.05       96.15         95.9916       97       97.375         97.8166       98.075       98.45         98.4       98.45       98.675         98.6333       98.6       98.8         98.7333       98.675       98.85         98.7333       98.675       98.85         98.8       98.725       98.9	100 97.7333 98.05 97.8999 100 98.1166 98.1 97.975 100 98.0544 97.5 96.85 100 97.8666 98.425 97.8 100 98.0167 97.55 97.2 100 98.25 97.95 98.05 100 97.7667 97.6 97.5 100 97.8999 97.45 98.125 100 97.8999 97.45 98.125 100 97.90042 97.78 97.60749  Training Accuracy Validation Accuracy Generalization Accuracy 96.325 96.05 96.125 97.8166 98.075 98.45 98.45 98.633 98.66 98.8 98.733 98.675 98.85 98.8 98.85 98.85 99.88	100 97.7333 98.05 97.8999 1 100 98.1166 98.1 97.975 1 100 98.0544 97.5 96.85 1 100 97.8666 98.425 97.8 1 100 98.0167 97.55 97.2 1 100 98.25 97.95 98.05 1 100 97.7667 97.6 97.5 1 100 97.725 97.1 96.975 1 100 97.8999 97.45 98.125 1 100 97.8999 97.45 98.125 1 100 97.575 98.075 97.7 1 100 97.90042 97.78 97.60749 10  Training Accuracy Validation Accuracy 96.3333 96.05 96.15 96.15 95.9916 97 97.375 98.45 98.45 98.6333 98.6 98.8 98.733 98.675 98.85 98.8 98.725 98.9 98.8 98.8 98.725 98.9 99 97	100 97.7333 98.05 97.8999 1 0 0 0 100 98.1166 98.1 97.975 1 0 0 100 98.0544 97.5 96.85 1 0 0 100 97.6666 98.425 97.8 1 0 0 100 98.0167 97.55 97.2 1 0 0 100 98.25 97.95 98.05 1 0 0 100 97.7667 97.6 97.5 1 0 0 100 97.725 97.1 96.975 1 0 0 100 97.899 97.45 98.125 1 0 0 100 97.575 98.075 97.7 1 0 0 100 97.575 98.075 97.7 1 0 0 100 97.575 98.075 97.7 1 0 0 100 97.90042 97.78 97.60749 10 0 0 100 97.90042 97.78 97.60749 10 0 0 100 97.9066 98.125 96.05 96.125 96.05 96.125 99.916 97 97.375 97.8166 98.075 98.45 98.4 98.45 98.675 98.45 98.6333 98.6 98.8 98.7333 98.675 98.85 98.8 98.7333 98.675 98.85 99.8 98.8 98.725 98.9 98.8 98.725 99.9 98.8 98.725 99.9 98.8 98.85 99.8 98.8 98.85 99.8 98.8 98	100 97.7333 98.05 97.8999 1 0 0 0 0 100 98.1166 98.1 97.975 1 0 0 0 100 98.0544 97.5 96.85 1 0 0 0 0 100 97.8666 98.425 97.8 1 0 0 0 0 100 98.0167 97.55 97.2 1 0 0 0 0 100 98.25 97.95 98.05 1 0 0 0 0 100 97.7667 97.6 97.6 97.5 1 0 0 0 100 97.7667 97.6 97.5 1 0 0 0 0 100 97.755 97.1 0 0 0 0 100 97.8999 97.45 98.125 1 0 0 0 0 100 97.8999 97.45 98.125 1 0 0 0 0 100 97.575 98.075 97.7 1 0 0 0 0 100 97.575 98.075 97.7 1 0 0 0 0 100 97.90042 97.78 97.60749 10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	100 97.7333 98.05 97.8999 1 0 0 0 0 1 100 98.1166 98.1 97.975 1 0 0 0 1 100 98.0544 97.5 96.85 1 0 0 0 0 1 100 98.0566 98.425 97.8 1 0 0 0 0 1 100 98.0567 97.55 97.2 1 0 0 0 0 1 100 98.25 97.95 98.05 1 0 0 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1

Experiment 2	Results							
		Hidden Units: 12		Learning Rate: 0.5		Momentum: 0.05		
Training Run	Epoch Reached	Training Accuracy	Validation Accuracy	_	Max Epoch	Desired Accuracy	Overfitting	
	1 500		•	91.525	· · · · · · · · · · · · · · · · · · ·	-		
	2 500			92.7				
	3 500			92.975				
	4 500		93.175	93.325		C	0	
	5 500	93.6166	93	93.15	1	C	0	
	6 500		93.8	93.05		C	0	
	7 500	93.3083	92.925	92.475	1	C	0	
	8 500	94.5916	94.225	93.8	1	C	0	
	500	93.8739125	93.134375	92.875	8	3 (	0	
Hidden Unit	Avg. Epoch Reached	Training Accuracy	Validation Accuracy	Generalization Acuracy	Max Epoch	Desired Accuracy	Overfitting	
	4 500	87.00515	86.009375	85.5999875	8	3 (	0	
	8 500	89.7519625	90.159375	89.8812375	8	C	0	
1	2 500	93.8739125	93.134375	92.875	8	C	0	
Epoch Number	Training Accuracy	Validation Accuracy	Generalization Accurac	у				
	1 75.4499	76.1499	76.6499					
	2 70.9916	75.05	75.1499	Tr	raining Acci	uracy. Validati	on Accuracy	and Generalization
	3 71.875	74.775	75.425		ccuracy	,,	,	
	4 73.0083	75.175	74.4		ccuracy			
	5 74.0416	75.6	74.3	9:	5 ———			<ul> <li>Training Accuracy</li> </ul>
1	0 81.7083	84.325	83.65					<ul> <li>Validation Accuracy</li> </ul>
2	5 85.8166	85.45	85.25	9(	0			Generalization
5	0 90.0333	90.375	89.85					Accuracy
7	5 91.4	91.35	90.425	8	5			
10	92.0416	92.1	91.25		/			
					_			
12	5 92.325	92.35	91.725	80	0			
12 15				86	0			
	0 92.625	91.85	91.525	7:				
15	0 92.625 5 93.283	91.85 92.525	91.525 91.8					
15 17	0 92.625 5 93.283 0 93.2583	91.85 92.525 91.875	91.525 91.8 91.45		5			
15 17 20	0 92.625 5 93.283 0 93.2583 5 93.3916	91.85 92.525 91.875 91.325	91.525 91.8 91.45 91	7!	5	00 200	300	400
15 17 20 22	0 92.625 5 93.283 0 93.2583 5 93.3916 0 93.375	91.85 92.525 91.875 91.325 90.8	91.525 91.8 91.45 91 90.7	7!	5			400
15 17 20 22 25	0 92.625 5 93.283 0 93.2583 5 93.3916 0 93.375 5 93.4416	91.85 92.525 91.875 91.325 90.8 92.675	91.525 91.8 91.45 91 90.7 92.15	7!	5	00 200 Epoch Numl		400

350	93.5416	91.35	91.9				
375	93.7749	91.35	91.5749				
400	93.7916	92.325	92				
425	98.6417	98.7	98.65				
450	98.6833	98.7	98.675				
475	98.7083	98.725	98.7				
500	98.7416	98.775	98.8				

Experiment 2	Results						
		Hidden Units: 12		Learning Rate: 1/fanin		Momentum: 0.05	
Training Run	Epoch Reached	Training Accuracy	Validation Accuracy	Generalization Accuracy	Max Epoch	Desired Accuracy	Overfitting
1	500	90.7749	89.8	89.625	1	0	0
2	500	91.8083	91.925	91.9	1	0	0
3	500	91.9833	91.2	89.925	1	0	0
4	500	90.7166	89.925	89.05	1	0	0
5	500	91.0416	89.475	90.125	1	0	0
6	500	90.1	89.925	90.4	1	0	0
7	500	90.5166	90.35	89.8	1	0	0
8	500	90.1916	89.725	89.925	1	0	0
	500	90.8916125	90.290625	90.09375	8	0	0
Learning Rate	Avg. Epoch Reached	Training Accuracy	Validation Accuracy	Generalization Acuracy	Max Epoch	Desired Accuracy	Overfitting
0.5	500	93.8739125	93.134375	92.875	8	0	0
0.05	500	90.627025	89.959375	89.68125	8	0	0

Experiment 2 R	esults						
		Hidden Units: 12		Learning Rate: 0.5		Momentum: 0.5	
Training Run	Epoch Reached	Training Accuracy	Validation Accuracy	Generalization Accuracy	Max Epoch	Desired Accuracy	Overfitting
1	500	93.9833	92.5	92.2	1	0	0
2	500	93.4	91.6499	91.375	1	0	0
3	500	94.666	93.925	93.875	1	0	0
4	500	94.7916	93.4	92.9	1	0	0
5	500	93.4083	92.125	92.75	1	0	0
6	500	93.9333	93	93.025	1	0	0
7	500	94.3	93.75	93.675	1	0	0
8	500	94.1333	94.2749	93.825	1	0	0
	500	94.076975	93.0781	92.953125	8	0	0

	esults							
		Hidden Units: 24		Learning Rate: 0.5		Momentum: 0.05		
raining Run	Epoch Reached	Training Accuracy	Validation Accuracy	Generalization Accuracy	Max Epoch	Desired Accuracy	Overfitting	
1	1000	74.1666	70.425	69.325	1	0	0	
2	1000	68.475	66.4	66.725	1	0	0	
3	1000	70.2416	66.4			0	0	
4	1000	70.1	66.025	66.375	1	0	0	
5	1000	69.6583	66.2	65.3	1	0	0	)
	1000	70.5283	67.09	66.82	5	0	0	)
poch Number	Training Accuracy	Validation Accuracy	Generalization Accuracy					
10	44.5916	42.4499	41.05					
100	68.23333333	66.77499	66.2					
200	70.39166	68.7	67.325	Training	Accuracy, \	/alidation Acc	curacy and G	Generalization
300	71.2	68.975	67.8	Accurac	У			
400	71.8	00.005						
		69.325	67.9	80				Training Accuracy
500	72.4083	69.325 68.6	67.9 67.85	80				<ul> <li>Training Accuracy</li> </ul>
				80 —				<ul> <li>Validation Accuracy</li> </ul>
500	72.4083 73.00833 72.975	68.6 69.85 69.8	67.85	80				<ul><li>Validation Accuracy</li><li>Generalization</li></ul>
500 600	72.4083 73.00833	68.6 69.85 69.8	67.85 70.15	70				<ul> <li>Validation Accuracy</li> </ul>
500 600 700	72.4083 73.00833 72.975	68.6 69.85 69.8	67.85 70.15 68.925	70				<ul><li>Validation Accuracy</li><li>Generalization</li></ul>
500 600 700 800	72.4083 73.00833 72.975 73.3916	68.6 69.85 69.8 69.175	67.85 70.15 68.925 68.65	70				<ul><li>Validation Accuracy</li><li>Generalization</li></ul>
500 600 700 800 900	72.4083 73.00833 72.975 73.3916 74.05	68.6 69.85 69.8 69.175 70.5	67.85 70.15 68.925 68.65 69.875	70				<ul><li>Validation Accuracy</li><li>Generalization</li></ul>
500 600 700 800 900	72.4083 73.00833 72.975 73.3916 74.05	68.6 69.85 69.8 69.175 70.5	67.85 70.15 68.925 68.65 69.875	70				<ul><li>Validation Accuracy</li><li>Generalization</li></ul>
500 600 700 800 900	72.4083 73.00833 72.975 73.3916 74.05	68.6 69.85 69.8 69.175 70.5	67.85 70.15 68.925 68.65 69.875	70	200 40	0 600	900 300	<ul> <li>Validation Accuracy</li> <li>Generalization Accuracy</li> </ul>
500 600 700 800 900	72.4083 73.00833 72.975 73.3916 74.05	68.6 69.85 69.8 69.175 70.5	67.85 70.15 68.925 68.65 69.875	70 60 50	200 40	0 600 Epoch Number	800 100	<ul> <li>Validation Accuracy</li> <li>Generalization Accuracy</li> </ul>