Deep Learning
Assignment 1

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הקדמה

בעבודה זו התבקשנו לממש רשת נוירונים עמוקה.
סדר הפעולות לפיו פעלנו:

1. אתחול פרמטרים – השתמשנו ב- He initialization על מנת למנוע exploding gradient המותאמת לפונקציית האקטיבציה ReLU.

2. הזנה קדימה (Feedforward) עם שכבות בגודל [784,20,7,5,10], בין כל שכבה לינארית לשכבה שבאה אחריה שימוש בפונקציית אקטיבציה ReLU, למעט בשכבה האחרונה ששם יש שימוש ב- Softmax המבטאת הסתברויות לסיווג ובוחרת בהסתברות הגבוהה ביותר.

3. חישוב הגרדינאטים על מנת לעדכן את הפרמטרים (Backpropagation).

4. לבסוף, חישוב ה- cost וביצוע ניבוי על סט הוולידציה.

בהרצת המודלים בחנו batch_size שונים (512 / 256 / 128) על מנת לראות אם אנו רואים שיפור בתוצאות בהתאם לגודל ה- Batch.בחרנו בגודל עברו התוצאות הניבו ביצועים טובים יותר מהשאר (batch_size = 256).
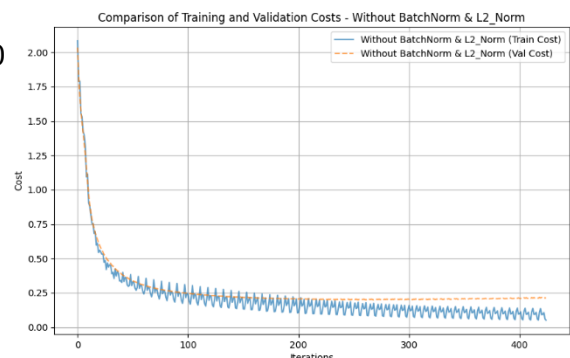הרצנו את המודלים עם הפרמטרים הבאים:

1. קצב למידה: 0.009
2. גודל batch: 256
3. מס' איטרציות: 100,000
4. ממדי השכבות: [784, 20, 7, 5, 10]

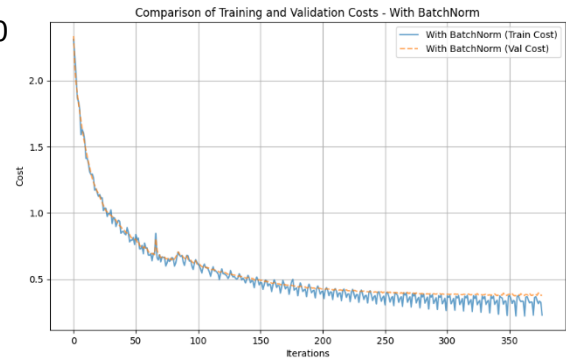** **batchnorm ו- L2_norm שונו בהתאם למודל הספציפי**

תוצאות המודלים:

1. <u>מודל ללא Batchnorm וללא L2_norm:</u>

- Total epochs completed: 243 from 100000
- Total batches completed: 42674 from 17500000
- Best validation accuracy: 94.5536%
- Cost value every 100 steps – ('נספח א)

- Training Time: 97.56 seconds (1.63 minutes)
- Final Training Accuracy: 97.34%
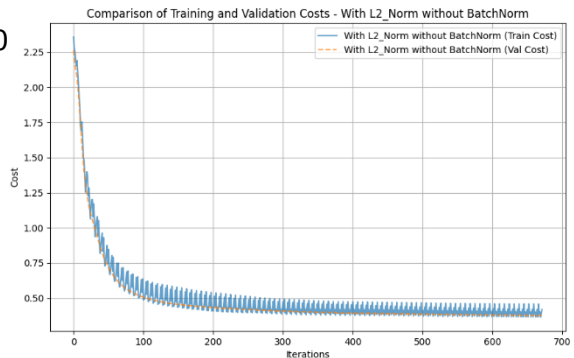- Final Validation Accuracy: 94.43%
- Final Test Accuracy: 94.31%

Comparison of Training and Validation Costs - Without BatchNorm & L2_Norm

2. <u>מודל עם Batchnorm וללא L2_norm</u>

- Total epochs completed: 216 from 100000
- Total batches completed: 37874 from 17500000
- Best validation accuracy: 90.5625%
- Cost value every 100 steps – ('נספח ב)

- Training Time: 93.11 seconds (1.55 minutes)
- Final Training Accuracy: 91.38%
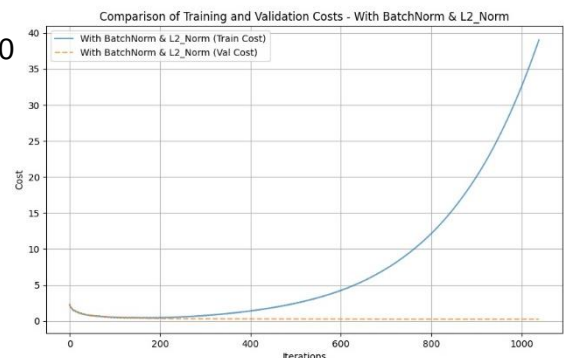- Final Validation Accuracy: 89.95%
- Final Test Accuracy: 89.86%

3. <u>מודל ללא Batchnorm ועם L2_norm</u>

- Total epochs completed: 416 from 100000
- Total batches completed: 72974 from 17500000
- Best validation accuracy: 92.3571%
- Cost value every 100 steps – ('נספח ג)

- Training Time: 170.19 seconds (2.84 minutes)
- Final Training Accuracy: 92.76%
- Final Validation Accuracy: 92.29%
- Final Test Accuracy: 91.92%

4. <u>מודל עם Batchnorm ועם L2_norm</u>

- Total epochs completed: 594 from 100000
- Total batches completed: 104074 from 17500000
- Best validation accuracy: 93.8393%
- Cost value every 100 steps – ('נספח ד)

- Training Time: 291.63 seconds (4.86 minutes)
- Final Training Accuracy: 96.65%
- Final Validation Accuracy: 93.49%
- Final Test Accuracy: 93.46%

<u>**השוואות בין מודלים**</u>

בהשוואה בין שני מודלים 1 ו -2 (עם ובלי Batchnorm) נצפו הבדלים מעניינים בביצועים.
המודל ללא Batchnorm השיג תוצאות טובות יותר עם דיוק של 94%, לעומת 89% במודל עם Batchnorm.
מבחינת זמני האימון, לא נצפה הבדל משמעותי - המודל עם Batchnorm התכנס ב-1.55 דקות, בעוד המודל ללא Batchnorm נדרש ל-1.63 דקות. ההבדל במספר ה- Epochs היה מינורי - המודל ללא Batchnorm דרש 243 אפוקים לעומת 216 במודל עם Batchnorm – פער של 0.027%.
ניתן להסיק מתוצאות אלו כי השימוש ב- Batchnorm, בניגוד למצופה, לא שיפר את ביצועי המודל ואף השיג תוצאות פחות טובות מהמודל המקורי. באופן כללי, Btchnorm נחשב לטכניקה מועילה אך זה אין זה אומר שתמיד יביא לשיפור בביצועים.

<u>**הוספת L2_norm**</u>

מטרת L2_norm היא לתת עונש למודל עבור משקלים גדולים שעלולים לגרום לחוסר יציבות של הרשת.
השינויים שביצענו בקוד על מנת לאפשר שימוש ב- L2_norm באו לידי ביטוי בחישוב פונקציית המחיר (cost) ועדכון הפרמטרים.

במהלך חישוב המחיר הוספנו ביטוי המתחשב בגודל המשקלים - למדה (=רכיב הרגולציה) כפול הנורמה בריבוע של המשקלים.

```python
if L2_norm:
    for l in range(len(layers_dims)-1):
        w = parameters[f'W{l+1}']
        cost_train = cost_train + (lamda)* np.sum(w*w)
```

בהתאם לכך עדכון הפרמטרים וחישוב הנגזרות היה צריך להשתנות גם כן.
ביעצנו זאת באופן הבא:

```python
if L2_norm:
    parameters[f'W{i}'] =parameters[f'W{i}'] -learning_rate * (grads[f'dW{i}']+ lamda *parameters[f'W{i}'])
```


<u>**השוואות משקלי המודלים עם ובלי L2_norm**</u>

כחלק מהרצת המודלים בחנו ביצענו השוואה בין מודלים 1 ו-3 המובחנים בהפעלת L2_norm.
את ההשוואה עשינו באופן הבא:

```python
# # Compare wights difference with and without L2 norm
weight_diff = np.sum(parameters_4['W1'] - parameters_L2['W1']) + np.sum(parameters_4['W2'] - parameters_L2['W2'])\
            + np.sum(parameters_4['W3'] - parameters_L2['W3']) + np.sum(parameters_4['W4'] - parameters_L2['W4'])
print("The difference between the weights of the model with or without L2 norm is " + str(weight_diff))
```

קיבלנו:

*The difference between the weights of the model with or without L2 norm is **134.09973426007***

ניתן לראות כי סך המשקולות במודל עם L2_norm קטן יותר מהמודל המקורי (בלי L2_norm). המודל "העניש" משקלים גדולים מדיי והם קטנו למשקלים קטנים יותר.
תוצאה זו תואמת את שציפינו לה שכן ההפרש החיובי של 134.09 מאשר שה L2_norm אכן פעל להקטנת המשקלים, מה שמעיד על הצלחת הרגולריזציה במניעת התאמת יתר של המודל.

נספח א' - Model without Batchnorm and without L2_norm

Training with batch size: 256
Batches per epoch: 175
Training samples: 44800
Validation samples: 11200
Epoch 1, Learning Step 100: Cost = 2.0836, Validation Accuracy 26.2589%
Epoch 2, Learning Step 200: Cost = 1.7899, Validation Accuracy 31.1964%
Epoch 2, Learning Step 300: Cost = 1.7903, Validation Accuracy 39.0714%
Epoch 3, Learning Step 400: Cost = 1.5553, Validation Accuracy 43.6786%
Epoch 3, Learning Step 500: Cost = 1.5311, Validation Accuracy 46.4643%
Epoch 4, Learning Step 600: Cost = 1.4242, Validation Accuracy 49.0268%
Epoch 4, Learning Step 700: Cost = 1.4003, Validation Accuracy 51.8393%
Epoch 5, Learning Step 800: Cost = 1.3130, Validation Accuracy 55.6786%
Epoch 6, Learning Step 900: Cost = 1.0937, Validation Accuracy 59.5714%
Epoch 6, Learning Step 1000: Cost = 1.1139, Validation Accuracy 63.6161%
Epoch 7, Learning Step 1100: Cost = 0.9022, Validation Accuracy 68.0893%
Epoch 7, Learning Step 1200: Cost = 0.8828, Validation Accuracy 71.3214%
Epoch 8, Learning Step 1300: Cost = 0.8233, Validation Accuracy 74.2321%
Epoch 8, Learning Step 1400: Cost = 0.7537, Validation Accuracy 76.2679%
Epoch 9, Learning Step 1500: Cost = 0.7543, Validation Accuracy 77.3304%
Epoch 10, Learning Step 1600: Cost = 0.6822, Validation Accuracy 78.9196%
Epoch 10, Learning Step 1700: Cost = 0.6945, Validation Accuracy 79.6518%
Epoch 11, Learning Step 1800: Cost = 0.5974, Validation Accuracy 80.6696%
Epoch 11, Learning Step 1900: Cost = 0.6114, Validation Accuracy 80.9464%
Epoch 12, Learning Step 2000: Cost = 0.5445, Validation Accuracy 82.0446%
Epoch 12, Learning Step 2100: Cost = 0.5605, Validation Accuracy 83.0000%
Epoch 13, Learning Step 2200: Cost = 0.5472, Validation Accuracy 83.3125%
Epoch 14, Learning Step 2300: Cost = 0.5312, Validation Accuracy 84.2857%
Epoch 14, Learning Step 2400: Cost = 0.5337, Validation Accuracy 84.5982%
Epoch 15, Learning Step 2500: Cost = 0.4721, Validation Accuracy 85.2054%
Epoch 15, Learning Step 2600: Cost = 0.4852, Validation Accuracy 85.1518%
Epoch 16, Learning Step 2700: Cost = 0.4197, Validation Accuracy 85.8750%
Epoch 16, Learning Step 2800: Cost = 0.4667, Validation Accuracy 86.0625%
Epoch 17, Learning Step 2900: Cost = 0.4371, Validation Accuracy 86.2946%
Epoch 18, Learning Step 3000: Cost = 0.4549, Validation Accuracy 86.6964%
Epoch 18, Learning Step 3100: Cost = 0.4484, Validation Accuracy 86.8929%
Epoch 19, Learning Step 3200: Cost = 0.3884, Validation Accuracy 87.2500%
Epoch 19, Learning Step 3300: Cost = 0.3990, Validation Accuracy 87.2321%
Epoch 20, Learning Step 3400: Cost = 0.3547, Validation Accuracy 87.6875%
Epoch 20, Learning Step 3500: Cost = 0.4230, Validation Accuracy 87.8036%
Epoch 21, Learning Step 3600: Cost = 0.3722, Validation Accuracy 87.9732%
Epoch 22, Learning Step 3700: Cost = 0.4047, Validation Accuracy 88.2589%
Epoch 22, Learning Step 3800: Cost = 0.3941, Validation Accuracy 88.3839%
Epoch 23, Learning Step 3900: Cost = 0.3366, Validation Accuracy 88.4732%
Epoch 23, Learning Step 4000: Cost = 0.3400, Validation Accuracy 88.6786%
Epoch 24, Learning Step 4100: Cost = 0.3253, Validation Accuracy 88.9286%
Epoch 24, Learning Step 4200: Cost = 0.3991, Validation Accuracy 89.1071%
Epoch 25, Learning Step 4300: Cost = 0.3323, Validation Accuracy 89.3482%
Epoch 26, Learning Step 4400: Cost = 0.3633, Validation Accuracy 89.5893%
Epoch 26, Learning Step 4500: Cost = 0.3569, Validation Accuracy 89.5357%
Epoch 27, Learning Step 4600: Cost = 0.3068, Validation Accuracy 89.6250%
Epoch 27, Learning Step 4700: Cost = 0.2974, Validation Accuracy 89.6339%
Epoch 28, Learning Step 4800: Cost = 0.3055, Validation Accuracy 90.0893%
Epoch 28, Learning Step 4900: Cost = 0.3833, Validation Accuracy 90.2589%
Epoch 29, Learning Step 5000: Cost = 0.3030, Validation Accuracy 90.2946%
Epoch 30, Learning Step 5100: Cost = 0.3310, Validation Accuracy 90.4018%
Epoch 30, Learning Step 5200: Cost = 0.3279, Validation Accuracy 90.5089%
Epoch 31, Learning Step 5300: Cost = 0.2853, Validation Accuracy 90.5714%
Epoch 31, Learning Step 5400: Cost = 0.2682, Validation Accuracy 90.5982%
Epoch 32, Learning Step 5500: Cost = 0.2883, Validation Accuracy 90.9375%
Epoch 32, Learning Step 5600: Cost = 0.3689, Validation Accuracy 91.0714%

Epoch 33, Learning Step 5700: Cost = 0.2819, Validation Accuracy 91.0804%
Epoch 34, Learning Step 5800: Cost = 0.3066, Validation Accuracy 91.1071%
Epoch 34, Learning Step 5900: Cost = 0.3025, Validation Accuracy 91.0000%
Epoch 35, Learning Step 6000: Cost = 0.2625, Validation Accuracy 91.1786%
Epoch 35, Learning Step 6100: Cost = 0.2422, Validation Accuracy 91.2321%
Epoch 36, Learning Step 6200: Cost = 0.2731, Validation Accuracy 91.3929%
Epoch 36, Learning Step 6300: Cost = 0.3554, Validation Accuracy 91.4821%
Epoch 37, Learning Step 6400: Cost = 0.2675, Validation Accuracy 91.4911%
Epoch 38, Learning Step 6500: Cost = 0.2902, Validation Accuracy 91.5714%
Epoch 38, Learning Step 6600: Cost = 0.2834, Validation Accuracy 91.5357%
Epoch 39, Learning Step 6700: Cost = 0.2440, Validation Accuracy 91.5179%
Epoch 39, Learning Step 6800: Cost = 0.2213, Validation Accuracy 91.5625%
Epoch 40, Learning Step 6900: Cost = 0.2627, Validation Accuracy 91.7768%
Epoch 40, Learning Step 7000: Cost = 0.3450, Validation Accuracy 91.8482%
Epoch 41, Learning Step 7100: Cost = 0.2551, Validation Accuracy 91.7946%
Epoch 42, Learning Step 7200: Cost = 0.2777, Validation Accuracy 91.8304%
Epoch 42, Learning Step 7300: Cost = 0.2698, Validation Accuracy 91.9018%
Epoch 43, Learning Step 7400: Cost = 0.2292, Validation Accuracy 91.8661%
Epoch 43, Learning Step 7500: Cost = 0.2048, Validation Accuracy 91.8750%
Epoch 44, Learning Step 7600: Cost = 0.2547, Validation Accuracy 92.1250%
Epoch 44, Learning Step 7700: Cost = 0.3351, Validation Accuracy 92.1607%
Epoch 45, Learning Step 7800: Cost = 0.2439, Validation Accuracy 92.1518%
Epoch 46, Learning Step 7900: Cost = 0.2675, Validation Accuracy 92.1429%
Epoch 46, Learning Step 8000: Cost = 0.2580, Validation Accuracy 92.3214%
Epoch 47, Learning Step 8100: Cost = 0.2170, Validation Accuracy 92.1696%
Epoch 47, Learning Step 8200: Cost = 0.1928, Validation Accuracy 92.3482%
Epoch 48, Learning Step 8300: Cost = 0.2475, Validation Accuracy 92.4286%
Epoch 48, Learning Step 8400: Cost = 0.3252, Validation Accuracy 92.4375%
Epoch 49, Learning Step 8500: Cost = 0.2337, Validation Accuracy 92.4375%
Epoch 50, Learning Step 8600: Cost = 0.2588, Validation Accuracy 92.4911%
Epoch 50, Learning Step 8700: Cost = 0.2499, Validation Accuracy 92.5893%
Epoch 51, Learning Step 8800: Cost = 0.2053, Validation Accuracy 92.4643%
Epoch 51, Learning Step 8900: Cost = 0.1825, Validation Accuracy 92.4911%
Epoch 52, Learning Step 9000: Cost = 0.2391, Validation Accuracy 92.6786%
Epoch 52, Learning Step 9100: Cost = 0.3176, Validation Accuracy 92.7321%
Epoch 53, Learning Step 9200: Cost = 0.2240, Validation Accuracy 92.7232%
Epoch 54, Learning Step 9300: Cost = 0.2530, Validation Accuracy 92.7321%
Epoch 54, Learning Step 9400: Cost = 0.2444, Validation Accuracy 92.7143%
Epoch 55, Learning Step 9500: Cost = 0.1958, Validation Accuracy 92.6964%
Epoch 55, Learning Step 9600: Cost = 0.1741, Validation Accuracy 92.7589%
Epoch 56, Learning Step 9700: Cost = 0.2320, Validation Accuracy 92.7321%
Epoch 56, Learning Step 9800: Cost = 0.3102, Validation Accuracy 92.8750%
Epoch 57, Learning Step 9900: Cost = 0.2162, Validation Accuracy 92.8839%
Epoch 58, Learning Step 10000: Cost = 0.2476, Validation Accuracy 92.8571%
Epoch 58, Learning Step 10100: Cost = 0.2390, Validation Accuracy 92.8661%
Epoch 59, Learning Step 10200: Cost = 0.1876, Validation Accuracy 92.8214%
Epoch 59, Learning Step 10300: Cost = 0.1673, Validation Accuracy 92.9464%
Epoch 60, Learning Step 10400: Cost = 0.2245, Validation Accuracy 92.9107%
Epoch 60, Learning Step 10500: Cost = 0.3030, Validation Accuracy 92.9554%
Epoch 61, Learning Step 10600: Cost = 0.2085, Validation Accuracy 93.0625%
Epoch 62, Learning Step 10700: Cost = 0.2432, Validation Accuracy 92.9464%
Epoch 62, Learning Step 10800: Cost = 0.2337, Validation Accuracy 92.9821%
Epoch 63, Learning Step 10900: Cost = 0.1803, Validation Accuracy 93.0089%
Epoch 63, Learning Step 11000: Cost = 0.1609, Validation Accuracy 93.0446%
Epoch 64, Learning Step 11100: Cost = 0.2169, Validation Accuracy 92.9643%
Epoch 64, Learning Step 11200: Cost = 0.2957, Validation Accuracy 93.0804%
Epoch 65, Learning Step 11300: Cost = 0.2017, Validation Accuracy 93.1875%
Epoch 66, Learning Step 11400: Cost = 0.2376, Validation Accuracy 93.0893%
Epoch 66, Learning Step 11500: Cost = 0.2277, Validation Accuracy 93.1518%
Epoch 67, Learning Step 11600: Cost = 0.1725, Validation Accuracy 93.1071%
Epoch 67, Learning Step 11700: Cost = 0.1538, Validation Accuracy 93.2143%
Epoch 68, Learning Step 11800: Cost = 0.2092, Validation Accuracy 93.1339%
Epoch 68, Learning Step 11900: Cost = 0.2887, Validation Accuracy 93.2321%
Epoch 69, Learning Step 12000: Cost = 0.1957, Validation Accuracy 93.2946%

Epoch 70, Learning Step 12100: Cost = 0.2312, Validation Accuracy 93.2232%
Epoch 70, Learning Step 12200: Cost = 0.2227, Validation Accuracy 93.2500%
Epoch 71, Learning Step 12300: Cost = 0.1631, Validation Accuracy 93.2321%
Epoch 71, Learning Step 12400: Cost = 0.1484, Validation Accuracy 93.3393%
Epoch 72, Learning Step 12500: Cost = 0.2028, Validation Accuracy 93.2500%
Epoch 72, Learning Step 12600: Cost = 0.2815, Validation Accuracy 93.3304%
Epoch 73, Learning Step 12700: Cost = 0.1908, Validation Accuracy 93.4375%
Epoch 74, Learning Step 12800: Cost = 0.2244, Validation Accuracy 93.3393%
Epoch 74, Learning Step 12900: Cost = 0.2214, Validation Accuracy 93.3036%
Epoch 75, Learning Step 13000: Cost = 0.1549, Validation Accuracy 93.3214%
Epoch 75, Learning Step 13100: Cost = 0.1438, Validation Accuracy 93.3571%
Epoch 76, Learning Step 13200: Cost = 0.1965, Validation Accuracy 93.3571%
Epoch 76, Learning Step 13300: Cost = 0.2756, Validation Accuracy 93.5000%
Epoch 77, Learning Step 13400: Cost = 0.1862, Validation Accuracy 93.4911%
Epoch 78, Learning Step 13500: Cost = 0.2171, Validation Accuracy 93.4911%
Epoch 78, Learning Step 13600: Cost = 0.2205, Validation Accuracy 93.4732%
Epoch 79, Learning Step 13700: Cost = 0.1471, Validation Accuracy 93.4018%
Epoch 79, Learning Step 13800: Cost = 0.1402, Validation Accuracy 93.4196%
Epoch 80, Learning Step 13900: Cost = 0.1910, Validation Accuracy 93.5089%
Epoch 80, Learning Step 14000: Cost = 0.2678, Validation Accuracy 93.5804%
Epoch 81, Learning Step 14100: Cost = 0.1815, Validation Accuracy 93.5536%
Epoch 82, Learning Step 14200: Cost = 0.2113, Validation Accuracy 93.5446%
Epoch 82, Learning Step 14300: Cost = 0.2191, Validation Accuracy 93.6696%
Epoch 83, Learning Step 14400: Cost = 0.1404, Validation Accuracy 93.5179%
Epoch 83, Learning Step 14500: Cost = 0.1355, Validation Accuracy 93.5714%
Epoch 84, Learning Step 14600: Cost = 0.1851, Validation Accuracy 93.5714%
Epoch 84, Learning Step 14700: Cost = 0.2604, Validation Accuracy 93.6339%
Epoch 85, Learning Step 14800: Cost = 0.1779, Validation Accuracy 93.6786%
Epoch 86, Learning Step 14900: Cost = 0.2051, Validation Accuracy 93.6964%
Epoch 86, Learning Step 15000: Cost = 0.2183, Validation Accuracy 93.8036%
Epoch 87, Learning Step 15100: Cost = 0.1334, Validation Accuracy 93.6875%
Epoch 87, Learning Step 15200: Cost = 0.1311, Validation Accuracy 93.7143%
Epoch 88, Learning Step 15300: Cost = 0.1793, Validation Accuracy 93.7232%
Epoch 88, Learning Step 15400: Cost = 0.2540, Validation Accuracy 93.7054%
Epoch 89, Learning Step 15500: Cost = 0.1739, Validation Accuracy 93.7946%
Epoch 90, Learning Step 15600: Cost = 0.1993, Validation Accuracy 93.8036%
Epoch 90, Learning Step 15700: Cost = 0.2168, Validation Accuracy 93.8125%
Epoch 91, Learning Step 15800: Cost = 0.1275, Validation Accuracy 93.7321%
Epoch 91, Learning Step 15900: Cost = 0.1273, Validation Accuracy 93.7768%
Epoch 92, Learning Step 16000: Cost = 0.1739, Validation Accuracy 93.7589%
Epoch 92, Learning Step 16100: Cost = 0.2478, Validation Accuracy 93.8125%
Epoch 93, Learning Step 16200: Cost = 0.1696, Validation Accuracy 93.8304%
Epoch 94, Learning Step 16300: Cost = 0.1934, Validation Accuracy 93.8304%
Epoch 94, Learning Step 16400: Cost = 0.2157, Validation Accuracy 93.8304%
Epoch 95, Learning Step 16500: Cost = 0.1221, Validation Accuracy 93.7946%
Epoch 95, Learning Step 16600: Cost = 0.1236, Validation Accuracy 93.8036%
Epoch 96, Learning Step 16700: Cost = 0.1686, Validation Accuracy 93.8393%
Epoch 96, Learning Step 16800: Cost = 0.2428, Validation Accuracy 93.9018%
Epoch 97, Learning Step 16900: Cost = 0.1656, Validation Accuracy 93.9554%
Epoch 98, Learning Step 17000: Cost = 0.1874, Validation Accuracy 93.8393%
Epoch 98, Learning Step 17100: Cost = 0.2141, Validation Accuracy 93.9196%
Epoch 99, Learning Step 17200: Cost = 0.1167, Validation Accuracy 93.7857%
Epoch 99, Learning Step 17300: Cost = 0.1204, Validation Accuracy 93.8571%
Epoch 100, Learning Step 17400: Cost = 0.1635, Validation Accuracy 93.9107%
Epoch 100, Learning Step 17500: Cost = 0.2372, Validation Accuracy 93.9464%
Epoch 101, Learning Step 17600: Cost = 0.1623, Validation Accuracy 94.0089%
Epoch 102, Learning Step 17700: Cost = 0.1817, Validation Accuracy 93.8393%
Epoch 102, Learning Step 17800: Cost = 0.2127, Validation Accuracy 93.9286%
Epoch 103, Learning Step 17900: Cost = 0.1132, Validation Accuracy 93.8304%
Epoch 103, Learning Step 18000: Cost = 0.1164, Validation Accuracy 93.9107%
Epoch 104, Learning Step 18100: Cost = 0.1595, Validation Accuracy 93.9375%
Epoch 104, Learning Step 18200: Cost = 0.2329, Validation Accuracy 94.0089%
Epoch 105, Learning Step 18300: Cost = 0.1595, Validation Accuracy 94.0446%
Epoch 106, Learning Step 18400: Cost = 0.1770, Validation Accuracy 93.9018%

Epoch 106, Learning Step 18500: Cost = 0.2097, Validation Accuracy 94.0000%
Epoch 107, Learning Step 18600: Cost = 0.1093, Validation Accuracy 93.9107%
Epoch 107, Learning Step 18700: Cost = 0.1128, Validation Accuracy 93.9107%
Epoch 108, Learning Step 18800: Cost = 0.1564, Validation Accuracy 93.9821%
Epoch 108, Learning Step 18900: Cost = 0.2269, Validation Accuracy 94.0179%
Epoch 109, Learning Step 19000: Cost = 0.1578, Validation Accuracy 94.0536%
Epoch 110, Learning Step 19100: Cost = 0.1728, Validation Accuracy 94.0000%
Epoch 110, Learning Step 19200: Cost = 0.2078, Validation Accuracy 94.0357%
Epoch 111, Learning Step 19300: Cost = 0.1065, Validation Accuracy 93.8571%
Epoch 111, Learning Step 19400: Cost = 0.1093, Validation Accuracy 93.9196%
Epoch 112, Learning Step 19500: Cost = 0.1537, Validation Accuracy 94.0446%
Epoch 112, Learning Step 19600: Cost = 0.2207, Validation Accuracy 94.0625%
Epoch 113, Learning Step 19700: Cost = 0.1563, Validation Accuracy 94.0714%
Epoch 114, Learning Step 19800: Cost = 0.1681, Validation Accuracy 94.0446%
Epoch 114, Learning Step 19900: Cost = 0.2053, Validation Accuracy 94.0357%
Epoch 115, Learning Step 20000: Cost = 0.1032, Validation Accuracy 93.9643%
Epoch 115, Learning Step 20100: Cost = 0.1061, Validation Accuracy 94.0268%
Epoch 116, Learning Step 20200: Cost = 0.1514, Validation Accuracy 94.1071%
Epoch 116, Learning Step 20300: Cost = 0.2150, Validation Accuracy 94.0982%
Epoch 117, Learning Step 20400: Cost = 0.1543, Validation Accuracy 94.0625%
Epoch 118, Learning Step 20500: Cost = 0.1643, Validation Accuracy 94.0893%
Epoch 118, Learning Step 20600: Cost = 0.2027, Validation Accuracy 94.1250%
Epoch 119, Learning Step 20700: Cost = 0.1003, Validation Accuracy 93.9732%
Epoch 119, Learning Step 20800: Cost = 0.1027, Validation Accuracy 94.0625%
Epoch 120, Learning Step 20900: Cost = 0.1489, Validation Accuracy 94.1161%
Epoch 120, Learning Step 21000: Cost = 0.2084, Validation Accuracy 94.1161%
Epoch 121, Learning Step 21100: Cost = 0.1522, Validation Accuracy 94.1161%
Epoch 122, Learning Step 21200: Cost = 0.1605, Validation Accuracy 94.0536%
Epoch 122, Learning Step 21300: Cost = 0.2002, Validation Accuracy 94.1696%
Epoch 123, Learning Step 21400: Cost = 0.0990, Validation Accuracy 93.9911%
Epoch 123, Learning Step 21500: Cost = 0.0995, Validation Accuracy 94.0625%
Epoch 124, Learning Step 21600: Cost = 0.1460, Validation Accuracy 94.1339%
Epoch 124, Learning Step 21700: Cost = 0.2017, Validation Accuracy 94.1071%
Epoch 125, Learning Step 21800: Cost = 0.1498, Validation Accuracy 94.1429%
Epoch 126, Learning Step 21900: Cost = 0.1570, Validation Accuracy 94.0536%
Epoch 126, Learning Step 22000: Cost = 0.1980, Validation Accuracy 94.2054%
Epoch 127, Learning Step 22100: Cost = 0.0968, Validation Accuracy 94.0714%
Epoch 127, Learning Step 22200: Cost = 0.0968, Validation Accuracy 94.1786%
Epoch 128, Learning Step 22300: Cost = 0.1439, Validation Accuracy 94.1429%
Epoch 128, Learning Step 22400: Cost = 0.1959, Validation Accuracy 94.1429%
Epoch 129, Learning Step 22500: Cost = 0.1472, Validation Accuracy 94.1607%
Epoch 130, Learning Step 22600: Cost = 0.1537, Validation Accuracy 94.0982%
Epoch 130, Learning Step 22700: Cost = 0.1951, Validation Accuracy 94.3214%
Epoch 131, Learning Step 22800: Cost = 0.0949, Validation Accuracy 94.0893%
Epoch 131, Learning Step 22900: Cost = 0.0944, Validation Accuracy 94.2143%
Epoch 132, Learning Step 23000: Cost = 0.1418, Validation Accuracy 94.1875%
Epoch 132, Learning Step 23100: Cost = 0.1901, Validation Accuracy 94.1339%
Epoch 133, Learning Step 23200: Cost = 0.1450, Validation Accuracy 94.1607%
Epoch 134, Learning Step 23300: Cost = 0.1504, Validation Accuracy 94.1786%
Epoch 134, Learning Step 23400: Cost = 0.1920, Validation Accuracy 94.3393%
Epoch 135, Learning Step 23500: Cost = 0.0930, Validation Accuracy 94.0982%
Epoch 135, Learning Step 23600: Cost = 0.0918, Validation Accuracy 94.2589%
Epoch 136, Learning Step 23700: Cost = 0.1397, Validation Accuracy 94.2143%
Epoch 136, Learning Step 23800: Cost = 0.1847, Validation Accuracy 94.1696%
Epoch 137, Learning Step 23900: Cost = 0.1423, Validation Accuracy 94.1786%
Epoch 138, Learning Step 24000: Cost = 0.1471, Validation Accuracy 94.1786%
Epoch 138, Learning Step 24100: Cost = 0.1889, Validation Accuracy 94.3661%
Epoch 139, Learning Step 24200: Cost = 0.0909, Validation Accuracy 94.1250%
Epoch 139, Learning Step 24300: Cost = 0.0888, Validation Accuracy 94.2768%
Epoch 140, Learning Step 24400: Cost = 0.1382, Validation Accuracy 94.2768%
Epoch 140, Learning Step 24500: Cost = 0.1797, Validation Accuracy 94.2143%
Epoch 141, Learning Step 24600: Cost = 0.1394, Validation Accuracy 94.2232%
Epoch 142, Learning Step 24700: Cost = 0.1436, Validation Accuracy 94.2143%
Epoch 142, Learning Step 24800: Cost = 0.1855, Validation Accuracy 94.3839%

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Epoch 143, Learning Step 24900: Cost = 0.0894, Validation Accuracy 94.1339%
Epoch 143, Learning Step 25000: Cost = 0.0867, Validation Accuracy 94.3036%
Epoch 144, Learning Step 25100: Cost = 0.1366, Validation Accuracy 94.3036%
Epoch 144, Learning Step 25200: Cost = 0.1758, Validation Accuracy 94.2143%
Epoch 145, Learning Step 25300: Cost = 0.1361, Validation Accuracy 94.2768%
Epoch 146, Learning Step 25400: Cost = 0.1404, Validation Accuracy 94.2411%
Epoch 146, Learning Step 25500: Cost = 0.1815, Validation Accuracy 94.3839%
Epoch 147, Learning Step 25600: Cost = 0.0880, Validation Accuracy 94.1607%
Epoch 147, Learning Step 25700: Cost = 0.0844, Validation Accuracy 94.3125%
Epoch 148, Learning Step 25800: Cost = 0.1352, Validation Accuracy 94.3393%
Epoch 148, Learning Step 25900: Cost = 0.1724, Validation Accuracy 94.2500%
Epoch 149, Learning Step 26000: Cost = 0.1334, Validation Accuracy 94.3036%
Epoch 150, Learning Step 26100: Cost = 0.1378, Validation Accuracy 94.2679%
Epoch 150, Learning Step 26200: Cost = 0.1782, Validation Accuracy 94.3839%
Epoch 151, Learning Step 26300: Cost = 0.0860, Validation Accuracy 94.1696%
Epoch 151, Learning Step 26400: Cost = 0.0826, Validation Accuracy 94.3571%
Epoch 152, Learning Step 26500: Cost = 0.1339, Validation Accuracy 94.3214%
Epoch 152, Learning Step 26600: Cost = 0.1689, Validation Accuracy 94.2589%
Epoch 153, Learning Step 26700: Cost = 0.1308, Validation Accuracy 94.2946%
Epoch 154, Learning Step 26800: Cost = 0.1354, Validation Accuracy 94.2679%
Epoch 154, Learning Step 26900: Cost = 0.1741, Validation Accuracy 94.3571%
Epoch 155, Learning Step 27000: Cost = 0.0848, Validation Accuracy 94.1518%
Epoch 155, Learning Step 27100: Cost = 0.0806, Validation Accuracy 94.4196%
Epoch 156, Learning Step 27200: Cost = 0.1330, Validation Accuracy 94.3304%
Epoch 156, Learning Step 27300: Cost = 0.1665, Validation Accuracy 94.3036%
Epoch 157, Learning Step 27400: Cost = 0.1284, Validation Accuracy 94.2946%
Epoch 158, Learning Step 27500: Cost = 0.1333, Validation Accuracy 94.2857%
Epoch 158, Learning Step 27600: Cost = 0.1699, Validation Accuracy 94.3571%
Epoch 159, Learning Step 27700: Cost = 0.0831, Validation Accuracy 94.1964%
Epoch 159, Learning Step 27800: Cost = 0.0788, Validation Accuracy 94.4018%
Epoch 160, Learning Step 27900: Cost = 0.1312, Validation Accuracy 94.2946%
Epoch 160, Learning Step 28000: Cost = 0.1645, Validation Accuracy 94.3214%
Epoch 161, Learning Step 28100: Cost = 0.1259, Validation Accuracy 94.3036%
Epoch 162, Learning Step 28200: Cost = 0.1307, Validation Accuracy 94.3214%
Epoch 162, Learning Step 28300: Cost = 0.1659, Validation Accuracy 94.4196%
Epoch 163, Learning Step 28400: Cost = 0.0818, Validation Accuracy 94.2054%
Epoch 163, Learning Step 28500: Cost = 0.0769, Validation Accuracy 94.3393%
Epoch 164, Learning Step 28600: Cost = 0.1295, Validation Accuracy 94.2946%
Epoch 164, Learning Step 28700: Cost = 0.1627, Validation Accuracy 94.3036%
Epoch 165, Learning Step 28800: Cost = 0.1232, Validation Accuracy 94.3304%
Epoch 166, Learning Step 28900: Cost = 0.1278, Validation Accuracy 94.3482%
Epoch 166, Learning Step 29000: Cost = 0.1624, Validation Accuracy 94.4107%
Epoch 167, Learning Step 29100: Cost = 0.0806, Validation Accuracy 94.2589%
Epoch 167, Learning Step 29200: Cost = 0.0746, Validation Accuracy 94.3393%
Epoch 168, Learning Step 29300: Cost = 0.1283, Validation Accuracy 94.3036%
Epoch 168, Learning Step 29400: Cost = 0.1602, Validation Accuracy 94.3304%
Epoch 169, Learning Step 29500: Cost = 0.1218, Validation Accuracy 94.3036%
Epoch 170, Learning Step 29600: Cost = 0.1261, Validation Accuracy 94.3750%
Epoch 170, Learning Step 29700: Cost = 0.1584, Validation Accuracy 94.4554%
Epoch 171, Learning Step 29800: Cost = 0.0797, Validation Accuracy 94.2857%
Epoch 171, Learning Step 29900: Cost = 0.0730, Validation Accuracy 94.3482%
Epoch 172, Learning Step 30000: Cost = 0.1268, Validation Accuracy 94.3482%
Epoch 172, Learning Step 30100: Cost = 0.1581, Validation Accuracy 94.3393%
Epoch 173, Learning Step 30200: Cost = 0.1198, Validation Accuracy 94.2768%
Epoch 174, Learning Step 30300: Cost = 0.1241, Validation Accuracy 94.4286%
Epoch 174, Learning Step 30400: Cost = 0.1541, Validation Accuracy 94.4464%
Epoch 175, Learning Step 30500: Cost = 0.0783, Validation Accuracy 94.3125%
Epoch 175, Learning Step 30600: Cost = 0.0716, Validation Accuracy 94.3482%
Epoch 176, Learning Step 30700: Cost = 0.1258, Validation Accuracy 94.3304%
Epoch 176, Learning Step 30800: Cost = 0.1565, Validation Accuracy 94.3929%
Epoch 177, Learning Step 30900: Cost = 0.1173, Validation Accuracy 94.3125%
Epoch 178, Learning Step 31000: Cost = 0.1222, Validation Accuracy 94.4375%
Epoch 178, Learning Step 31100: Cost = 0.1500, Validation Accuracy 94.5000%
Epoch 179, Learning Step 31200: Cost = 0.0768, Validation Accuracy 94.3661%
```

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Epoch 179, Learning Step 31300: Cost = 0.0699, Validation Accuracy 94.3839%
Epoch 180, Learning Step 31400: Cost = 0.1250, Validation Accuracy 94.3304%
Epoch 180, Learning Step 31500: Cost = 0.1551, Validation Accuracy 94.4464%
Epoch 181, Learning Step 31600: Cost = 0.1152, Validation Accuracy 94.3125%
Epoch 182, Learning Step 31700: Cost = 0.1203, Validation Accuracy 94.4375%
Epoch 182, Learning Step 31800: Cost = 0.1467, Validation Accuracy 94.4911%
Epoch 183, Learning Step 31900: Cost = 0.0760, Validation Accuracy 94.3750%
Epoch 183, Learning Step 32000: Cost = 0.0684, Validation Accuracy 94.3929%
Epoch 184, Learning Step 32100: Cost = 0.1240, Validation Accuracy 94.3750%
Epoch 184, Learning Step 32200: Cost = 0.1539, Validation Accuracy 94.4286%
Epoch 185, Learning Step 32300: Cost = 0.1137, Validation Accuracy 94.3393%
Epoch 186, Learning Step 32400: Cost = 0.1187, Validation Accuracy 94.4375%
Epoch 186, Learning Step 32500: Cost = 0.1430, Validation Accuracy 94.5536%
Epoch 187, Learning Step 32600: Cost = 0.0743, Validation Accuracy 94.3839%
Epoch 187, Learning Step 32700: Cost = 0.0669, Validation Accuracy 94.4196%
Epoch 188, Learning Step 32800: Cost = 0.1230, Validation Accuracy 94.3393%
Epoch 188, Learning Step 32900: Cost = 0.1528, Validation Accuracy 94.4375%
Epoch 189, Learning Step 33000: Cost = 0.1115, Validation Accuracy 94.3482%
Epoch 190, Learning Step 33100: Cost = 0.1170, Validation Accuracy 94.4196%
Epoch 190, Learning Step 33200: Cost = 0.1397, Validation Accuracy 94.5625%
Epoch 191, Learning Step 33300: Cost = 0.0730, Validation Accuracy 94.4196%
Epoch 191, Learning Step 33400: Cost = 0.0658, Validation Accuracy 94.4375%
Epoch 192, Learning Step 33500: Cost = 0.1218, Validation Accuracy 94.3393%
Epoch 192, Learning Step 33600: Cost = 0.1514, Validation Accuracy 94.4554%
Epoch 193, Learning Step 33700: Cost = 0.1094, Validation Accuracy 94.3750%
Epoch 194, Learning Step 33800: Cost = 0.1148, Validation Accuracy 94.4554%
Epoch 194, Learning Step 33900: Cost = 0.1362, Validation Accuracy 94.5446%
Epoch 195, Learning Step 34000: Cost = 0.0717, Validation Accuracy 94.3929%
Epoch 195, Learning Step 34100: Cost = 0.0647, Validation Accuracy 94.4554%
Epoch 196, Learning Step 34200: Cost = 0.1206, Validation Accuracy 94.3929%
Epoch 196, Learning Step 34300: Cost = 0.1503, Validation Accuracy 94.4464%
Epoch 197, Learning Step 34400: Cost = 0.1075, Validation Accuracy 94.4018%
Epoch 198, Learning Step 34500: Cost = 0.1131, Validation Accuracy 94.4375%
Epoch 198, Learning Step 34600: Cost = 0.1330, Validation Accuracy 94.5089%
Epoch 199, Learning Step 34700: Cost = 0.0706, Validation Accuracy 94.4196%
Epoch 199, Learning Step 34800: Cost = 0.0632, Validation Accuracy 94.4554%
Epoch 200, Learning Step 34900: Cost = 0.1189, Validation Accuracy 94.3393%
Epoch 200, Learning Step 35000: Cost = 0.1495, Validation Accuracy 94.4286%
Epoch 201, Learning Step 35100: Cost = 0.1059, Validation Accuracy 94.3750%
Epoch 202, Learning Step 35200: Cost = 0.1112, Validation Accuracy 94.4464%
Epoch 202, Learning Step 35300: Cost = 0.1302, Validation Accuracy 94.5179%
Epoch 203, Learning Step 35400: Cost = 0.0695, Validation Accuracy 94.4286%
Epoch 203, Learning Step 35500: Cost = 0.0611, Validation Accuracy 94.4554%
Epoch 204, Learning Step 35600: Cost = 0.1182, Validation Accuracy 94.2857%
Epoch 204, Learning Step 35700: Cost = 0.1485, Validation Accuracy 94.4464%
Epoch 205, Learning Step 35800: Cost = 0.1040, Validation Accuracy 94.3482%
Epoch 206, Learning Step 35900: Cost = 0.1096, Validation Accuracy 94.4911%
Epoch 206, Learning Step 36000: Cost = 0.1269, Validation Accuracy 94.5268%
Epoch 207, Learning Step 36100: Cost = 0.0683, Validation Accuracy 94.4286%
Epoch 207, Learning Step 36200: Cost = 0.0603, Validation Accuracy 94.4375%
Epoch 208, Learning Step 36300: Cost = 0.1181, Validation Accuracy 94.2946%
Epoch 208, Learning Step 36400: Cost = 0.1463, Validation Accuracy 94.4821%
Epoch 209, Learning Step 36500: Cost = 0.1023, Validation Accuracy 94.3571%
Epoch 210, Learning Step 36600: Cost = 0.1080, Validation Accuracy 94.5089%
Epoch 210, Learning Step 36700: Cost = 0.1241, Validation Accuracy 94.4911%
Epoch 211, Learning Step 36800: Cost = 0.0668, Validation Accuracy 94.4732%
Epoch 211, Learning Step 36900: Cost = 0.0593, Validation Accuracy 94.4286%
Epoch 212, Learning Step 37000: Cost = 0.1167, Validation Accuracy 94.2500%
Epoch 212, Learning Step 37100: Cost = 0.1445, Validation Accuracy 94.4464%
Epoch 213, Learning Step 37200: Cost = 0.1006, Validation Accuracy 94.3929%
Epoch 214, Learning Step 37300: Cost = 0.1062, Validation Accuracy 94.5536%
Epoch 214, Learning Step 37400: Cost = 0.1209, Validation Accuracy 94.4821%
Epoch 215, Learning Step 37500: Cost = 0.0662, Validation Accuracy 94.4554%
Epoch 215, Learning Step 37600: Cost = 0.0578, Validation Accuracy 94.4018%
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Epoch 216, Learning Step 37700: Cost = 0.1164, Validation Accuracy 94.2500%
Epoch 216, Learning Step 37800: Cost = 0.1431, Validation Accuracy 94.4464%
Epoch 217, Learning Step 37900: Cost = 0.0995, Validation Accuracy 94.3750%
Epoch 218, Learning Step 38000: Cost = 0.1043, Validation Accuracy 94.5536%
Epoch 218, Learning Step 38100: Cost = 0.1187, Validation Accuracy 94.4821%
Epoch 219, Learning Step 38200: Cost = 0.0653, Validation Accuracy 94.4732%
Epoch 219, Learning Step 38300: Cost = 0.0568, Validation Accuracy 94.4107%
Epoch 220, Learning Step 38400: Cost = 0.1158, Validation Accuracy 94.2411%
Epoch 220, Learning Step 38500: Cost = 0.1414, Validation Accuracy 94.4375%
Epoch 221, Learning Step 38600: Cost = 0.0982, Validation Accuracy 94.3661%
Epoch 222, Learning Step 38700: Cost = 0.1023, Validation Accuracy 94.5268%
Epoch 222, Learning Step 38800: Cost = 0.1167, Validation Accuracy 94.4732%
Epoch 223, Learning Step 38900: Cost = 0.0640, Validation Accuracy 94.4196%
Epoch 223, Learning Step 39000: Cost = 0.0561, Validation Accuracy 94.4286%
Epoch 224, Learning Step 39100: Cost = 0.1154, Validation Accuracy 94.2232%
Epoch 224, Learning Step 39200: Cost = 0.1403, Validation Accuracy 94.4286%
Epoch 225, Learning Step 39300: Cost = 0.0967, Validation Accuracy 94.3304%
Epoch 226, Learning Step 39400: Cost = 0.1003, Validation Accuracy 94.4732%
Epoch 226, Learning Step 39500: Cost = 0.1146, Validation Accuracy 94.4554%
Epoch 227, Learning Step 39600: Cost = 0.0629, Validation Accuracy 94.4107%
Epoch 227, Learning Step 39700: Cost = 0.0550, Validation Accuracy 94.4107%
Epoch 228, Learning Step 39800: Cost = 0.1145, Validation Accuracy 94.2411%
Epoch 228, Learning Step 39900: Cost = 0.1392, Validation Accuracy 94.4464%
Epoch 229, Learning Step 40000: Cost = 0.0957, Validation Accuracy 94.3571%
Epoch 230, Learning Step 40100: Cost = 0.0987, Validation Accuracy 94.4643%
Epoch 230, Learning Step 40200: Cost = 0.1124, Validation Accuracy 94.4196%
Epoch 231, Learning Step 40300: Cost = 0.0623, Validation Accuracy 94.4107%
Epoch 231, Learning Step 40400: Cost = 0.0539, Validation Accuracy 94.3839%
Epoch 232, Learning Step 40500: Cost = 0.1136, Validation Accuracy 94.2589%
Epoch 232, Learning Step 40600: Cost = 0.1379, Validation Accuracy 94.4464%
Epoch 233, Learning Step 40700: Cost = 0.0945, Validation Accuracy 94.3214%
Epoch 234, Learning Step 40800: Cost = 0.0967, Validation Accuracy 94.4554%
Epoch 234, Learning Step 40900: Cost = 0.1098, Validation Accuracy 94.4286%
Epoch 235, Learning Step 41000: Cost = 0.0614, Validation Accuracy 94.3929%
Epoch 235, Learning Step 41100: Cost = 0.0530, Validation Accuracy 94.4464%
Epoch 236, Learning Step 41200: Cost = 0.1130, Validation Accuracy 94.2143%
Epoch 236, Learning Step 41300: Cost = 0.1368, Validation Accuracy 94.3929%
Epoch 237, Learning Step 41400: Cost = 0.0935, Validation Accuracy 94.3036%
Epoch 238, Learning Step 41500: Cost = 0.0954, Validation Accuracy 94.4196%
Epoch 238, Learning Step 41600: Cost = 0.1080, Validation Accuracy 94.4464%
Epoch 239, Learning Step 41700: Cost = 0.0603, Validation Accuracy 94.4286%
Epoch 239, Learning Step 41800: Cost = 0.0524, Validation Accuracy 94.4196%
Epoch 240, Learning Step 41900: Cost = 0.1115, Validation Accuracy 94.1786%
Epoch 240, Learning Step 42000: Cost = 0.1359, Validation Accuracy 94.3929%
Epoch 241, Learning Step 42100: Cost = 0.0915, Validation Accuracy 94.2857%
Epoch 242, Learning Step 42200: Cost = 0.0940, Validation Accuracy 94.4554%
Epoch 242, Learning Step 42300: Cost = 0.1060, Validation Accuracy 94.4375%
Epoch 243, Learning Step 42400: Cost = 0.0595, Validation Accuracy 94.4018%
Epoch 243, Learning Step 42500: Cost = 0.0514, Validation Accuracy 94.4286%

Stopping training - No improvement for 100 steps
Total epochs completed: 243 from 100000
Total batches completed: 42674 from 17500000
Best validation accuracy: 94.5536%

Final Report:
Training Time: 97.56 seconds (1.63 minutes)
Final Training Accuracy: 97.34%
Final Validation Accuracy: 94.43%
Final Test Accuracy: 94.31%

Model with Batchnorm without L2_norm **- 'נספח ב**

Training with batch size: 256
Batches per epoch: 175
Training samples: 44800
Validation samples: 11200
Epoch 1, Learning Step 100: Cost = 2.3112, Validation Accuracy 21.1071%
Epoch 2, Learning Step 200: Cost = 2.1835, Validation Accuracy 27.0714%
Epoch 2, Learning Step 300: Cost = 2.0355, Validation Accuracy 31.3214%
Epoch 3, Learning Step 400: Cost = 1.8692, Validation Accuracy 34.6518%
Epoch 3, Learning Step 500: Cost = 1.8393, Validation Accuracy 37.9732%
Epoch 4, Learning Step 600: Cost = 1.7798, Validation Accuracy 41.9554%
Epoch 4, Learning Step 700: Cost = 1.5910, Validation Accuracy 45.6696%
Epoch 5, Learning Step 800: Cost = 1.6292, Validation Accuracy 48.4643%
Epoch 6, Learning Step 900: Cost = 1.6027, Validation Accuracy 50.2768%
Epoch 6, Learning Step 1000: Cost = 1.5432, Validation Accuracy 52.1161%
Epoch 7, Learning Step 1100: Cost = 1.4120, Validation Accuracy 53.4286%
Epoch 7, Learning Step 1200: Cost = 1.4108, Validation Accuracy 54.5268%
Epoch 8, Learning Step 1300: Cost = 1.3714, Validation Accuracy 55.2857%
Epoch 8, Learning Step 1400: Cost = 1.3085, Validation Accuracy 55.9554%
Epoch 9, Learning Step 1500: Cost = 1.2891, Validation Accuracy 57.0893%
Epoch 10, Learning Step 1600: Cost = 1.2934, Validation Accuracy 57.8393%
Epoch 10, Learning Step 1700: Cost = 1.2656, Validation Accuracy 58.6786%
Epoch 11, Learning Step 1800: Cost = 1.1719, Validation Accuracy 59.2143%
Epoch 11, Learning Step 1900: Cost = 1.1816, Validation Accuracy 60.0446%
Epoch 12, Learning Step 2000: Cost = 1.1538, Validation Accuracy 60.6071%
Epoch 12, Learning Step 2100: Cost = 1.1243, Validation Accuracy 61.0714%
Epoch 13, Learning Step 2200: Cost = 1.1384, Validation Accuracy 61.6339%
Epoch 14, Learning Step 2300: Cost = 1.1103, Validation Accuracy 62.3482%
Epoch 14, Learning Step 2400: Cost = 1.1134, Validation Accuracy 63.0357%
Epoch 15, Learning Step 2500: Cost = 1.0168, Validation Accuracy 63.8839%
Epoch 15, Learning Step 2600: Cost = 1.0373, Validation Accuracy 64.8571%
Epoch 16, Learning Step 2700: Cost = 1.0327, Validation Accuracy 65.9018%
Epoch 16, Learning Step 2800: Cost = 0.9720, Validation Accuracy 66.0268%
Epoch 17, Learning Step 2900: Cost = 0.9961, Validation Accuracy 66.4821%
Epoch 18, Learning Step 3000: Cost = 0.9918, Validation Accuracy 66.6518%
Epoch 18, Learning Step 3100: Cost = 1.0233, Validation Accuracy 66.5536%
Epoch 19, Learning Step 3200: Cost = 0.9197, Validation Accuracy 67.2054%
Epoch 19, Learning Step 3300: Cost = 0.9650, Validation Accuracy 67.0179%
Epoch 20, Learning Step 3400: Cost = 0.9600, Validation Accuracy 68.7054%
Epoch 20, Learning Step 3500: Cost = 0.8961, Validation Accuracy 68.2946%
Epoch 21, Learning Step 3600: Cost = 0.9254, Validation Accuracy 69.0446%
Epoch 22, Learning Step 3700: Cost = 0.9443, Validation Accuracy 70.5536%
Epoch 22, Learning Step 3800: Cost = 0.9366, Validation Accuracy 71.1964%
Epoch 23, Learning Step 3900: Cost = 0.8453, Validation Accuracy 72.8750%
Epoch 23, Learning Step 4000: Cost = 0.8573, Validation Accuracy 73.5804%
Epoch 24, Learning Step 4100: Cost = 0.8601, Validation Accuracy 75.5268%
Epoch 24, Learning Step 4200: Cost = 0.8422, Validation Accuracy 75.3036%
Epoch 25, Learning Step 4300: Cost = 0.8350, Validation Accuracy 76.3571%
Epoch 26, Learning Step 4400: Cost = 0.8895, Validation Accuracy 77.1339%
Epoch 26, Learning Step 4500: Cost = 0.8512, Validation Accuracy 77.5714%
Epoch 27, Learning Step 4600: Cost = 0.7800, Validation Accuracy 77.6875%
Epoch 27, Learning Step 4700: Cost = 0.7941, Validation Accuracy 78.9821%
Epoch 28, Learning Step 4800: Cost = 0.7932, Validation Accuracy 79.7321%
Epoch 28, Learning Step 4900: Cost = 0.8139, Validation Accuracy 79.3393%
Epoch 29, Learning Step 5000: Cost = 0.7607, Validation Accuracy 79.6696%
Epoch 30, Learning Step 5100: Cost = 0.8363, Validation Accuracy 80.0625%
Epoch 30, Learning Step 5200: Cost = 0.7957, Validation Accuracy 80.2679%
Epoch 31, Learning Step 5300: Cost = 0.8102, Validation Accuracy 80.2768%
Epoch 31, Learning Step 5400: Cost = 0.7282, Validation Accuracy 81.3839%
Epoch 32, Learning Step 5500: Cost = 0.7281, Validation Accuracy 81.9464%
Epoch 32, Learning Step 5600: Cost = 0.7534, Validation Accuracy 81.1696%
Epoch 33, Learning Step 5700: Cost = 0.6911, Validation Accuracy 82.0268%
Epoch 34, Learning Step 5800: Cost = 0.7717, Validation Accuracy 81.8125%
Epoch 34, Learning Step 5900: Cost = 0.7337, Validation Accuracy 82.4643%

Epoch 35, Learning Step 6000: Cost = 0.7352, Validation Accuracy 82.4464%
Epoch 35, Learning Step 6100: Cost = 0.6811, Validation Accuracy 82.9643%
Epoch 36, Learning Step 6200: Cost = 0.6788, Validation Accuracy 83.4821%
Epoch 36, Learning Step 6300: Cost = 0.6917, Validation Accuracy 83.0804%
Epoch 37, Learning Step 6400: Cost = 0.6373, Validation Accuracy 83.6161%
Epoch 38, Learning Step 6500: Cost = 0.6918, Validation Accuracy 83.6607%
Epoch 38, Learning Step 6600: Cost = 0.6927, Validation Accuracy 83.8214%
Epoch 39, Learning Step 6700: Cost = 0.8449, Validation Accuracy 77.8661%
Epoch 39, Learning Step 6800: Cost = 0.6590, Validation Accuracy 82.0982%
Epoch 40, Learning Step 6900: Cost = 0.6442, Validation Accuracy 83.1607%
Epoch 40, Learning Step 7000: Cost = 0.6845, Validation Accuracy 83.5357%
Epoch 41, Learning Step 7100: Cost = 0.6298, Validation Accuracy 84.6071%
Epoch 42, Learning Step 7200: Cost = 0.6671, Validation Accuracy 84.2321%
Epoch 42, Learning Step 7300: Cost = 0.6635, Validation Accuracy 84.2679%
Epoch 43, Learning Step 7400: Cost = 0.6645, Validation Accuracy 83.8929%
Epoch 43, Learning Step 7500: Cost = 0.5979, Validation Accuracy 84.3750%
Epoch 44, Learning Step 7600: Cost = 0.6210, Validation Accuracy 84.2411%
Epoch 44, Learning Step 7700: Cost = 0.6540, Validation Accuracy 83.9196%
Epoch 45, Learning Step 7800: Cost = 0.6324, Validation Accuracy 84.6429%
Epoch 46, Learning Step 7900: Cost = 0.6454, Validation Accuracy 83.5536%
Epoch 46, Learning Step 8000: Cost = 0.6629, Validation Accuracy 83.9464%
Epoch 47, Learning Step 8100: Cost = 0.6534, Validation Accuracy 82.8482%
Epoch 47, Learning Step 8200: Cost = 0.5972, Validation Accuracy 83.2857%
Epoch 48, Learning Step 8300: Cost = 0.6217, Validation Accuracy 81.8482%
Epoch 48, Learning Step 8400: Cost = 0.6685, Validation Accuracy 80.1250%
Epoch 49, Learning Step 8500: Cost = 0.7041, Validation Accuracy 78.6607%
Epoch 50, Learning Step 8600: Cost = 0.6795, Validation Accuracy 81.3571%
Epoch 50, Learning Step 8700: Cost = 0.6707, Validation Accuracy 84.9554%
Epoch 51, Learning Step 8800: Cost = 0.6783, Validation Accuracy 84.1875%
Epoch 51, Learning Step 8900: Cost = 0.6319, Validation Accuracy 87.0982%
Epoch 52, Learning Step 9000: Cost = 0.6036, Validation Accuracy 87.5357%
Epoch 52, Learning Step 9100: Cost = 0.6519, Validation Accuracy 87.5625%
Epoch 53, Learning Step 9200: Cost = 0.6795, Validation Accuracy 85.5625%
Epoch 54, Learning Step 9300: Cost = 0.6740, Validation Accuracy 87.3036%
Epoch 54, Learning Step 9400: Cost = 0.6357, Validation Accuracy 87.5446%
Epoch 55, Learning Step 9500: Cost = 0.6376, Validation Accuracy 86.8750%
Epoch 55, Learning Step 9600: Cost = 0.5993, Validation Accuracy 87.4375%
Epoch 56, Learning Step 9700: Cost = 0.5718, Validation Accuracy 87.5536%
Epoch 56, Learning Step 9800: Cost = 0.6195, Validation Accuracy 87.5804%
Epoch 57, Learning Step 9900: Cost = 0.6462, Validation Accuracy 85.9732%
Epoch 58, Learning Step 10000: Cost = 0.6279, Validation Accuracy 87.6161%
Epoch 58, Learning Step 10100: Cost = 0.6100, Validation Accuracy 87.6696%
Epoch 59, Learning Step 10200: Cost = 0.6021, Validation Accuracy 87.1786%
Epoch 59, Learning Step 10300: Cost = 0.5732, Validation Accuracy 87.5625%
Epoch 60, Learning Step 10400: Cost = 0.5455, Validation Accuracy 87.7768%
Epoch 60, Learning Step 10500: Cost = 0.5912, Validation Accuracy 87.8214%
Epoch 61, Learning Step 10600: Cost = 0.6129, Validation Accuracy 87.2500%
Epoch 62, Learning Step 10700: Cost = 0.5873, Validation Accuracy 87.7054%
Epoch 62, Learning Step 10800: Cost = 0.5873, Validation Accuracy 87.7679%
Epoch 63, Learning Step 10900: Cost = 0.5749, Validation Accuracy 87.5714%
Epoch 63, Learning Step 11000: Cost = 0.5533, Validation Accuracy 87.8304%
Epoch 64, Learning Step 11100: Cost = 0.5204, Validation Accuracy 87.9286%
Epoch 64, Learning Step 11200: Cost = 0.5628, Validation Accuracy 87.9821%
Epoch 65, Learning Step 11300: Cost = 0.5932, Validation Accuracy 87.6071%
Epoch 66, Learning Step 11400: Cost = 0.5621, Validation Accuracy 87.9196%
Epoch 66, Learning Step 11500: Cost = 0.5619, Validation Accuracy 87.9375%
Epoch 67, Learning Step 11600: Cost = 0.5523, Validation Accuracy 87.9554%
Epoch 67, Learning Step 11700: Cost = 0.5396, Validation Accuracy 88.1429%
Epoch 68, Learning Step 11800: Cost = 0.4955, Validation Accuracy 88.1161%
Epoch 68, Learning Step 11900: Cost = 0.5444, Validation Accuracy 87.9911%
Epoch 69, Learning Step 12000: Cost = 0.5777, Validation Accuracy 87.7232%
Epoch 70, Learning Step 12100: Cost = 0.5413, Validation Accuracy 88.1161%
Epoch 70, Learning Step 12200: Cost = 0.5396, Validation Accuracy 88.0625%
Epoch 71, Learning Step 12300: Cost = 0.5331, Validation Accuracy 88.0982%

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Epoch 71, Learning Step 12400: Cost = 0.5224, Validation Accuracy 88.3929%
Epoch 72, Learning Step 12500: Cost = 0.5039, Validation Accuracy 88.2589%
Epoch 72, Learning Step 12600: Cost = 0.5222, Validation Accuracy 88.2321%
Epoch 73, Learning Step 12700: Cost = 0.5641, Validation Accuracy 87.8304%
Epoch 74, Learning Step 12800: Cost = 0.5299, Validation Accuracy 88.2500%
Epoch 74, Learning Step 12900: Cost = 0.5157, Validation Accuracy 88.2946%
Epoch 75, Learning Step 13000: Cost = 0.5194, Validation Accuracy 88.3750%
Epoch 75, Learning Step 13100: Cost = 0.5055, Validation Accuracy 88.6607%
Epoch 76, Learning Step 13200: Cost = 0.5005, Validation Accuracy 88.5357%
Epoch 76, Learning Step 13300: Cost = 0.5079, Validation Accuracy 88.4821%
Epoch 77, Learning Step 13400: Cost = 0.5398, Validation Accuracy 88.3839%
Epoch 78, Learning Step 13500: Cost = 0.5179, Validation Accuracy 88.4375%
Epoch 78, Learning Step 13600: Cost = 0.4934, Validation Accuracy 88.4464%
Epoch 79, Learning Step 13700: Cost = 0.5065, Validation Accuracy 88.4732%
Epoch 79, Learning Step 13800: Cost = 0.4934, Validation Accuracy 88.7232%
Epoch 80, Learning Step 13900: Cost = 0.4708, Validation Accuracy 88.7768%
Epoch 80, Learning Step 14000: Cost = 0.4978, Validation Accuracy 88.7143%
Epoch 81, Learning Step 14100: Cost = 0.5272, Validation Accuracy 88.6071%
Epoch 82, Learning Step 14200: Cost = 0.5071, Validation Accuracy 88.6250%
Epoch 82, Learning Step 14300: Cost = 0.4731, Validation Accuracy 88.4732%
Epoch 83, Learning Step 14400: Cost = 0.4880, Validation Accuracy 88.5536%
Epoch 83, Learning Step 14500: Cost = 0.4836, Validation Accuracy 88.8482%
Epoch 84, Learning Step 14600: Cost = 0.4353, Validation Accuracy 89.0357%
Epoch 84, Learning Step 14700: Cost = 0.4862, Validation Accuracy 88.9375%
Epoch 85, Learning Step 14800: Cost = 0.5150, Validation Accuracy 88.8661%
Epoch 86, Learning Step 14900: Cost = 0.4945, Validation Accuracy 88.7679%
Epoch 86, Learning Step 15000: Cost = 0.4567, Validation Accuracy 88.6875%
Epoch 87, Learning Step 15100: Cost = 0.4764, Validation Accuracy 88.7232%
Epoch 87, Learning Step 15200: Cost = 0.4710, Validation Accuracy 88.6786%
Epoch 88, Learning Step 15300: Cost = 0.4215, Validation Accuracy 89.0446%
Epoch 88, Learning Step 15400: Cost = 0.4553, Validation Accuracy 89.0625%
Epoch 89, Learning Step 15500: Cost = 0.4929, Validation Accuracy 88.8661%
Epoch 90, Learning Step 15600: Cost = 0.4849, Validation Accuracy 88.8571%
Epoch 90, Learning Step 15700: Cost = 0.4468, Validation Accuracy 88.8036%
Epoch 91, Learning Step 15800: Cost = 0.4621, Validation Accuracy 89.0089%
Epoch 91, Learning Step 15900: Cost = 0.4564, Validation Accuracy 89.0446%
Epoch 92, Learning Step 16000: Cost = 0.4044, Validation Accuracy 89.4107%
Epoch 92, Learning Step 16100: Cost = 0.4554, Validation Accuracy 89.2589%
Epoch 93, Learning Step 16200: Cost = 0.4944, Validation Accuracy 89.0357%
Epoch 94, Learning Step 16300: Cost = 0.4725, Validation Accuracy 89.0268%
Epoch 94, Learning Step 16400: Cost = 0.4362, Validation Accuracy 88.9464%
Epoch 95, Learning Step 16500: Cost = 0.4519, Validation Accuracy 89.2321%
Epoch 95, Learning Step 16600: Cost = 0.4494, Validation Accuracy 89.1429%
Epoch 96, Learning Step 16700: Cost = 0.3938, Validation Accuracy 89.4464%
Epoch 96, Learning Step 16800: Cost = 0.4432, Validation Accuracy 89.3036%
Epoch 97, Learning Step 16900: Cost = 0.4898, Validation Accuracy 89.1429%
Epoch 98, Learning Step 17000: Cost = 0.4617, Validation Accuracy 89.0714%
Epoch 98, Learning Step 17100: Cost = 0.4254, Validation Accuracy 89.1607%
Epoch 99, Learning Step 17200: Cost = 0.4386, Validation Accuracy 89.3214%
Epoch 99, Learning Step 17300: Cost = 0.4413, Validation Accuracy 89.1964%
Epoch 100, Learning Step 17400: Cost = 0.3843, Validation Accuracy 89.4821%
Epoch 100, Learning Step 17500: Cost = 0.4401, Validation Accuracy 89.4464%
Epoch 101, Learning Step 17600: Cost = 0.4797, Validation Accuracy 89.2679%
Epoch 102, Learning Step 17700: Cost = 0.4968, Validation Accuracy 89.1161%
Epoch 102, Learning Step 17800: Cost = 0.4157, Validation Accuracy 89.2143%
Epoch 103, Learning Step 17900: Cost = 0.4265, Validation Accuracy 89.5000%
Epoch 103, Learning Step 18000: Cost = 0.4332, Validation Accuracy 89.2143%
Epoch 104, Learning Step 18100: Cost = 0.3747, Validation Accuracy 89.6429%
Epoch 104, Learning Step 18200: Cost = 0.4381, Validation Accuracy 89.5179%
Epoch 105, Learning Step 18300: Cost = 0.4713, Validation Accuracy 89.3482%
Epoch 106, Learning Step 18400: Cost = 0.4398, Validation Accuracy 89.1786%
Epoch 106, Learning Step 18500: Cost = 0.4052, Validation Accuracy 89.3214%
Epoch 107, Learning Step 18600: Cost = 0.4178, Validation Accuracy 89.6339%
Epoch 107, Learning Step 18700: Cost = 0.4237, Validation Accuracy 89.3214%
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Epoch 108, Learning Step 18800: Cost = 0.3672, Validation Accuracy 89.7411%
Epoch 108, Learning Step 18900: Cost = 0.4315, Validation Accuracy 89.6964%
Epoch 109, Learning Step 19000: Cost = 0.4602, Validation Accuracy 89.3929%
Epoch 110, Learning Step 19100: Cost = 0.4296, Validation Accuracy 89.4107%
Epoch 110, Learning Step 19200: Cost = 0.3969, Validation Accuracy 89.5446%
Epoch 111, Learning Step 19300: Cost = 0.4104, Validation Accuracy 89.6875%
Epoch 111, Learning Step 19400: Cost = 0.4153, Validation Accuracy 89.3929%
Epoch 112, Learning Step 19500: Cost = 0.3577, Validation Accuracy 89.9196%
Epoch 112, Learning Step 19600: Cost = 0.4235, Validation Accuracy 89.7768%
Epoch 113, Learning Step 19700: Cost = 0.4471, Validation Accuracy 89.4107%
Epoch 114, Learning Step 19800: Cost = 0.4218, Validation Accuracy 89.5268%
Epoch 114, Learning Step 19900: Cost = 0.3864, Validation Accuracy 89.6607%
Epoch 115, Learning Step 20000: Cost = 0.4059, Validation Accuracy 89.8393%
Epoch 115, Learning Step 20100: Cost = 0.4082, Validation Accuracy 89.4464%
Epoch 116, Learning Step 20200: Cost = 0.3524, Validation Accuracy 89.9018%
Epoch 116, Learning Step 20300: Cost = 0.4169, Validation Accuracy 89.8661%
Epoch 117, Learning Step 20400: Cost = 0.4345, Validation Accuracy 89.6429%
Epoch 118, Learning Step 20500: Cost = 0.4132, Validation Accuracy 89.5893%
Epoch 118, Learning Step 20600: Cost = 0.3754, Validation Accuracy 89.7679%
Epoch 119, Learning Step 20700: Cost = 0.4030, Validation Accuracy 89.7768%
Epoch 119, Learning Step 20800: Cost = 0.4007, Validation Accuracy 89.6161%
Epoch 120, Learning Step 20900: Cost = 0.3445, Validation Accuracy 89.9107%
Epoch 120, Learning Step 21000: Cost = 0.4129, Validation Accuracy 89.9196%
Epoch 121, Learning Step 21100: Cost = 0.4278, Validation Accuracy 89.7946%
Epoch 122, Learning Step 21200: Cost = 0.4087, Validation Accuracy 89.7589%
Epoch 122, Learning Step 21300: Cost = 0.3638, Validation Accuracy 89.7321%
Epoch 123, Learning Step 21400: Cost = 0.3929, Validation Accuracy 89.8929%
Epoch 123, Learning Step 21500: Cost = 0.3941, Validation Accuracy 89.7232%
Epoch 124, Learning Step 21600: Cost = 0.3360, Validation Accuracy 89.9732%
Epoch 124, Learning Step 21700: Cost = 0.4091, Validation Accuracy 90.0714%
Epoch 125, Learning Step 21800: Cost = 0.4250, Validation Accuracy 89.8036%
Epoch 126, Learning Step 21900: Cost = 0.3997, Validation Accuracy 89.9911%
Epoch 126, Learning Step 22000: Cost = 0.3603, Validation Accuracy 89.7857%
Epoch 127, Learning Step 22100: Cost = 0.3870, Validation Accuracy 90.0804%
Epoch 127, Learning Step 22200: Cost = 0.3878, Validation Accuracy 89.8929%
Epoch 128, Learning Step 22300: Cost = 0.3292, Validation Accuracy 90.0446%
Epoch 128, Learning Step 22400: Cost = 0.4020, Validation Accuracy 90.0625%
Epoch 129, Learning Step 22500: Cost = 0.4223, Validation Accuracy 89.9375%
Epoch 130, Learning Step 22600: Cost = 0.3879, Validation Accuracy 89.8214%
Epoch 130, Learning Step 22700: Cost = 0.3524, Validation Accuracy 89.6964%
Epoch 131, Learning Step 22800: Cost = 0.3824, Validation Accuracy 90.0982%
Epoch 131, Learning Step 22900: Cost = 0.3817, Validation Accuracy 90.0804%
Epoch 132, Learning Step 23000: Cost = 0.3241, Validation Accuracy 90.1786%
Epoch 132, Learning Step 23100: Cost = 0.3989, Validation Accuracy 90.1786%
Epoch 133, Learning Step 23200: Cost = 0.4165, Validation Accuracy 90.0357%
Epoch 134, Learning Step 23300: Cost = 0.3842, Validation Accuracy 90.0446%
Epoch 134, Learning Step 23400: Cost = 0.3453, Validation Accuracy 89.9286%
Epoch 135, Learning Step 23500: Cost = 0.3735, Validation Accuracy 90.2500%
Epoch 135, Learning Step 23600: Cost = 0.3766, Validation Accuracy 90.1875%
Epoch 136, Learning Step 23700: Cost = 0.3194, Validation Accuracy 90.1518%
Epoch 136, Learning Step 23800: Cost = 0.3968, Validation Accuracy 90.1696%
Epoch 137, Learning Step 23900: Cost = 0.4114, Validation Accuracy 90.1161%
Epoch 138, Learning Step 24000: Cost = 0.3788, Validation Accuracy 90.1339%
Epoch 138, Learning Step 24100: Cost = 0.3374, Validation Accuracy 89.9375%
Epoch 139, Learning Step 24200: Cost = 0.3665, Validation Accuracy 90.3661%
Epoch 139, Learning Step 24300: Cost = 0.3743, Validation Accuracy 90.1875%
Epoch 140, Learning Step 24400: Cost = 0.3123, Validation Accuracy 90.2143%
Epoch 140, Learning Step 24500: Cost = 0.3963, Validation Accuracy 90.1696%
Epoch 141, Learning Step 24600: Cost = 0.4039, Validation Accuracy 90.0982%
Epoch 142, Learning Step 24700: Cost = 0.3727, Validation Accuracy 90.0893%
Epoch 142, Learning Step 24800: Cost = 0.3327, Validation Accuracy 90.0714%
Epoch 143, Learning Step 24900: Cost = 0.3612, Validation Accuracy 90.4464%
Epoch 143, Learning Step 25000: Cost = 0.3710, Validation Accuracy 90.2232%
Epoch 144, Learning Step 25100: Cost = 0.3046, Validation Accuracy 90.3036%

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Epoch 144, Learning Step 25200: Cost = 0.3955, Validation Accuracy 90.1696%
Epoch 145, Learning Step 25300: Cost = 0.3979, Validation Accuracy 90.0893%
Epoch 146, Learning Step 25400: Cost = 0.3687, Validation Accuracy 90.1518%
Epoch 146, Learning Step 25500: Cost = 0.3266, Validation Accuracy 89.9464%
Epoch 147, Learning Step 25600: Cost = 0.3569, Validation Accuracy 90.4911%
Epoch 147, Learning Step 25700: Cost = 0.3680, Validation Accuracy 90.1250%
Epoch 148, Learning Step 25800: Cost = 0.2983, Validation Accuracy 90.2768%
Epoch 148, Learning Step 25900: Cost = 0.3970, Validation Accuracy 90.1339%
Epoch 149, Learning Step 26000: Cost = 0.3870, Validation Accuracy 90.1786%
Epoch 150, Learning Step 26100: Cost = 0.3773, Validation Accuracy 90.1786%
Epoch 150, Learning Step 26200: Cost = 0.3241, Validation Accuracy 89.9911%
Epoch 151, Learning Step 26300: Cost = 0.3520, Validation Accuracy 90.4821%
Epoch 151, Learning Step 26400: Cost = 0.3668, Validation Accuracy 90.1875%
Epoch 152, Learning Step 26500: Cost = 0.2931, Validation Accuracy 90.4107%
Epoch 152, Learning Step 26600: Cost = 0.3950, Validation Accuracy 90.2054%
Epoch 153, Learning Step 26700: Cost = 0.3790, Validation Accuracy 90.1161%
Epoch 154, Learning Step 26800: Cost = 0.3958, Validation Accuracy 90.2679%
Epoch 154, Learning Step 26900: Cost = 0.3243, Validation Accuracy 90.0804%
Epoch 155, Learning Step 27000: Cost = 0.3461, Validation Accuracy 90.5446%
Epoch 155, Learning Step 27100: Cost = 0.3662, Validation Accuracy 90.3036%
Epoch 156, Learning Step 27200: Cost = 0.2889, Validation Accuracy 90.4196%
Epoch 156, Learning Step 27300: Cost = 0.3892, Validation Accuracy 90.1607%
Epoch 157, Learning Step 27400: Cost = 0.3728, Validation Accuracy 90.0982%
Epoch 158, Learning Step 27500: Cost = 0.3916, Validation Accuracy 90.1875%
Epoch 158, Learning Step 27600: Cost = 0.3187, Validation Accuracy 90.1161%
Epoch 159, Learning Step 27700: Cost = 0.3449, Validation Accuracy 90.5625%
Epoch 159, Learning Step 27800: Cost = 0.3614, Validation Accuracy 90.3750%
Epoch 160, Learning Step 27900: Cost = 0.2828, Validation Accuracy 90.3750%
Epoch 160, Learning Step 28000: Cost = 0.3851, Validation Accuracy 90.2054%
Epoch 161, Learning Step 28100: Cost = 0.3637, Validation Accuracy 90.2054%
Epoch 162, Learning Step 28200: Cost = 0.3876, Validation Accuracy 90.1607%
Epoch 162, Learning Step 28300: Cost = 0.3175, Validation Accuracy 89.9821%
Epoch 163, Learning Step 28400: Cost = 0.3421, Validation Accuracy 90.4911%
Epoch 163, Learning Step 28500: Cost = 0.3644, Validation Accuracy 90.4196%
Epoch 164, Learning Step 28600: Cost = 0.2737, Validation Accuracy 90.4464%
Epoch 164, Learning Step 28700: Cost = 0.3802, Validation Accuracy 90.2321%
Epoch 165, Learning Step 28800: Cost = 0.3624, Validation Accuracy 90.2946%
Epoch 166, Learning Step 28900: Cost = 0.3825, Validation Accuracy 90.2500%
Epoch 166, Learning Step 29000: Cost = 0.3148, Validation Accuracy 90.0804%
Epoch 167, Learning Step 29100: Cost = 0.3386, Validation Accuracy 90.5268%
Epoch 167, Learning Step 29200: Cost = 0.3587, Validation Accuracy 90.3393%
Epoch 168, Learning Step 29300: Cost = 0.2709, Validation Accuracy 90.3482%
Epoch 168, Learning Step 29400: Cost = 0.3747, Validation Accuracy 90.2411%
Epoch 169, Learning Step 29500: Cost = 0.3612, Validation Accuracy 90.1786%
Epoch 170, Learning Step 29600: Cost = 0.3795, Validation Accuracy 90.2857%
Epoch 170, Learning Step 29700: Cost = 0.3130, Validation Accuracy 90.0089%
Epoch 171, Learning Step 29800: Cost = 0.3340, Validation Accuracy 90.4375%
Epoch 171, Learning Step 29900: Cost = 0.3543, Validation Accuracy 90.3661%
Epoch 172, Learning Step 30000: Cost = 0.2618, Validation Accuracy 90.4107%
Epoch 172, Learning Step 30100: Cost = 0.3734, Validation Accuracy 90.1071%
Epoch 173, Learning Step 30200: Cost = 0.3609, Validation Accuracy 90.3214%
Epoch 174, Learning Step 30300: Cost = 0.3770, Validation Accuracy 90.1250%
Epoch 174, Learning Step 30400: Cost = 0.3130, Validation Accuracy 90.1339%
Epoch 175, Learning Step 30500: Cost = 0.3335, Validation Accuracy 90.5179%
Epoch 175, Learning Step 30600: Cost = 0.3527, Validation Accuracy 90.3304%
Epoch 176, Learning Step 30700: Cost = 0.2643, Validation Accuracy 90.3125%
Epoch 176, Learning Step 30800: Cost = 0.3706, Validation Accuracy 90.1607%
Epoch 177, Learning Step 30900: Cost = 0.3573, Validation Accuracy 90.0982%
Epoch 178, Learning Step 31000: Cost = 0.3759, Validation Accuracy 90.1339%
Epoch 178, Learning Step 31100: Cost = 0.3074, Validation Accuracy 89.9732%
Epoch 179, Learning Step 31200: Cost = 0.3284, Validation Accuracy 90.4196%
Epoch 179, Learning Step 31300: Cost = 0.3515, Validation Accuracy 90.1696%
Epoch 180, Learning Step 31400: Cost = 0.2577, Validation Accuracy 90.3304%
Epoch 180, Learning Step 31500: Cost = 0.3706, Validation Accuracy 90.1339%
```

Epoch 181, Learning Step 31600: Cost = 0.3577, Validation Accuracy 89.9911%
Epoch 182, Learning Step 31700: Cost = 0.3769, Validation Accuracy 90.1429%
Epoch 182, Learning Step 31800: Cost = 0.3070, Validation Accuracy 89.9286%
Epoch 183, Learning Step 31900: Cost = 0.3274, Validation Accuracy 90.3750%
Epoch 183, Learning Step 32000: Cost = 0.3444, Validation Accuracy 90.2321%
Epoch 184, Learning Step 32100: Cost = 0.2535, Validation Accuracy 90.1875%
Epoch 184, Learning Step 32200: Cost = 0.3737, Validation Accuracy 90.1964%
Epoch 185, Learning Step 32300: Cost = 0.3539, Validation Accuracy 90.1339%
Epoch 186, Learning Step 32400: Cost = 0.3740, Validation Accuracy 90.0804%
Epoch 186, Learning Step 32500: Cost = 0.3053, Validation Accuracy 89.5714%
Epoch 187, Learning Step 32600: Cost = 0.3251, Validation Accuracy 90.3929%
Epoch 187, Learning Step 32700: Cost = 0.3379, Validation Accuracy 90.1429%
Epoch 188, Learning Step 32800: Cost = 0.2494, Validation Accuracy 90.1518%
Epoch 188, Learning Step 32900: Cost = 0.3711, Validation Accuracy 90.3214%
Epoch 189, Learning Step 33000: Cost = 0.3516, Validation Accuracy 90.0804%
Epoch 190, Learning Step 33100: Cost = 0.3686, Validation Accuracy 90.0714%
Epoch 190, Learning Step 33200: Cost = 0.3078, Validation Accuracy 89.5714%
Epoch 191, Learning Step 33300: Cost = 0.3293, Validation Accuracy 90.3304%
Epoch 191, Learning Step 33400: Cost = 0.3389, Validation Accuracy 90.0893%
Epoch 192, Learning Step 33500: Cost = 0.2447, Validation Accuracy 90.0982%
Epoch 192, Learning Step 33600: Cost = 0.3727, Validation Accuracy 90.1339%
Epoch 193, Learning Step 33700: Cost = 0.3536, Validation Accuracy 90.0625%
Epoch 194, Learning Step 33800: Cost = 0.3710, Validation Accuracy 90.0982%
Epoch 194, Learning Step 33900: Cost = 0.3085, Validation Accuracy 89.6161%
Epoch 195, Learning Step 34000: Cost = 0.3278, Validation Accuracy 90.1161%
Epoch 195, Learning Step 34100: Cost = 0.3407, Validation Accuracy 90.0804%
Epoch 196, Learning Step 34200: Cost = 0.2338, Validation Accuracy 89.9911%
Epoch 196, Learning Step 34300: Cost = 0.3723, Validation Accuracy 89.8482%
Epoch 197, Learning Step 34400: Cost = 0.3618, Validation Accuracy 89.8661%
Epoch 198, Learning Step 34500: Cost = 0.3557, Validation Accuracy 89.9643%
Epoch 198, Learning Step 34600: Cost = 0.3101, Validation Accuracy 89.3304%
Epoch 199, Learning Step 34700: Cost = 0.3341, Validation Accuracy 90.0446%
Epoch 199, Learning Step 34800: Cost = 0.3329, Validation Accuracy 90.1429%
Epoch 200, Learning Step 34900: Cost = 0.2251, Validation Accuracy 90.0714%
Epoch 200, Learning Step 35000: Cost = 0.3707, Validation Accuracy 89.8482%
Epoch 201, Learning Step 35100: Cost = 0.3734, Validation Accuracy 89.6071%
Epoch 202, Learning Step 35200: Cost = 0.3506, Validation Accuracy 89.9821%
Epoch 202, Learning Step 35300: Cost = 0.3154, Validation Accuracy 89.4821%
Epoch 203, Learning Step 35400: Cost = 0.3387, Validation Accuracy 90.0179%
Epoch 203, Learning Step 35500: Cost = 0.3309, Validation Accuracy 90.1607%
Epoch 204, Learning Step 35600: Cost = 0.2210, Validation Accuracy 90.2321%
Epoch 204, Learning Step 35700: Cost = 0.3666, Validation Accuracy 89.7411%
Epoch 205, Learning Step 35800: Cost = 0.3742, Validation Accuracy 89.6786%
Epoch 206, Learning Step 35900: Cost = 0.3430, Validation Accuracy 89.9821%
Epoch 206, Learning Step 36000: Cost = 0.3303, Validation Accuracy 89.4196%
Epoch 207, Learning Step 36100: Cost = 0.3331, Validation Accuracy 89.9643%
Epoch 207, Learning Step 36200: Cost = 0.3296, Validation Accuracy 90.0982%
Epoch 208, Learning Step 36300: Cost = 0.2207, Validation Accuracy 90.0714%
Epoch 208, Learning Step 36400: Cost = 0.3640, Validation Accuracy 89.8036%
Epoch 209, Learning Step 36500: Cost = 0.3675, Validation Accuracy 89.6429%
Epoch 210, Learning Step 36600: Cost = 0.3413, Validation Accuracy 89.9732%
Epoch 210, Learning Step 36700: Cost = 0.3195, Validation Accuracy 89.2768%
Epoch 211, Learning Step 36800: Cost = 0.3272, Validation Accuracy 89.8750%
Epoch 211, Learning Step 36900: Cost = 0.3249, Validation Accuracy 90.0268%
Epoch 212, Learning Step 37000: Cost = 0.2268, Validation Accuracy 89.9732%
Epoch 212, Learning Step 37100: Cost = 0.3605, Validation Accuracy 89.7143%
Epoch 213, Learning Step 37200: Cost = 0.3677, Validation Accuracy 89.5357%
Epoch 214, Learning Step 37300: Cost = 0.3380, Validation Accuracy 89.9554%
Epoch 214, Learning Step 37400: Cost = 0.3135, Validation Accuracy 89.0089%
Epoch 215, Learning Step 37500: Cost = 0.3320, Validation Accuracy 89.7054%
Epoch 215, Learning Step 37600: Cost = 0.3230, Validation Accuracy 89.8661%
Epoch 216, Learning Step 37700: Cost = 0.2279, Validation Accuracy 89.9464%

Stopping training - No improvement for 100 steps

Total epochs completed: 216 from 100000
Total batches completed: 37874 from 17500000
Best validation accuracy: 90.5625%

Final Report:
Training Time: 93.11 seconds (1.55 minutes)
Final Training Accuracy: 91.38%
Final Validation Accuracy: 89.95%
Final Test Accuracy: 89.86%

Model with L2 norm without batchnorm - **'נפסח ג**

Training with batch size: 256
Batches per epoch: 175
Training samples: 44800
Validation samples: 11200
Epoch 1, Learning Step 100: Cost = 2.5399, Validation Accuracy 14.8750%
Epoch 2, Learning Step 200: Cost = 2.4199, Validation Accuracy 17.6339%
Epoch 2, Learning Step 300: Cost = 2.3277, Validation Accuracy 19.4464%
Epoch 3, Learning Step 400: Cost = 2.2572, Validation Accuracy 22.4464%
Epoch 3, Learning Step 500: Cost = 2.1860, Validation Accuracy 27.6429%
Epoch 4, Learning Step 600: Cost = 2.1488, Validation Accuracy 31.9821%
Epoch 4, Learning Step 700: Cost = 2.0584, Validation Accuracy 33.5357%
Epoch 5, Learning Step 800: Cost = 2.1006, Validation Accuracy 34.4732%
Epoch 6, Learning Step 900: Cost = 2.0559, Validation Accuracy 36.9821%
Epoch 6, Learning Step 1000: Cost = 2.0338, Validation Accuracy 38.0536%
Epoch 7, Learning Step 1100: Cost = 1.9405, Validation Accuracy 38.8929%
Epoch 7, Learning Step 1200: Cost = 1.9074, Validation Accuracy 40.0357%
Epoch 8, Learning Step 1300: Cost = 1.9133, Validation Accuracy 40.4018%
Epoch 8, Learning Step 1400: Cost = 1.8395, Validation Accuracy 41.4286%
Epoch 9, Learning Step 1500: Cost = 1.9197, Validation Accuracy 41.8214%
Epoch 10, Learning Step 1600: Cost = 1.9093, Validation Accuracy 42.8661%
Epoch 10, Learning Step 1700: Cost = 1.8907, Validation Accuracy 43.1518%
Epoch 11, Learning Step 1800: Cost = 1.8092, Validation Accuracy 43.6875%
Epoch 11, Learning Step 1900: Cost = 1.7680, Validation Accuracy 44.4107%
Epoch 12, Learning Step 2000: Cost = 1.7844, Validation Accuracy 44.6696%
Epoch 12, Learning Step 2100: Cost = 1.7126, Validation Accuracy 45.2679%
Epoch 13, Learning Step 2200: Cost = 1.8057, Validation Accuracy 45.7054%
Epoch 14, Learning Step 2300: Cost = 1.8107, Validation Accuracy 46.1429%
Epoch 14, Learning Step 2400: Cost = 1.7892, Validation Accuracy 46.1696%
Epoch 15, Learning Step 2500: Cost = 1.7070, Validation Accuracy 46.7143%
Epoch 15, Learning Step 2600: Cost = 1.6603, Validation Accuracy 47.1071%
Epoch 16, Learning Step 2700: Cost = 1.6791, Validation Accuracy 47.9196%
Epoch 16, Learning Step 2800: Cost = 1.6054, Validation Accuracy 48.6161%
Epoch 17, Learning Step 2900: Cost = 1.7042, Validation Accuracy 49.3661%
Epoch 18, Learning Step 3000: Cost = 1.7141, Validation Accuracy 49.7946%
Epoch 18, Learning Step 3100: Cost = 1.6918, Validation Accuracy 50.3214%
Epoch 19, Learning Step 3200: Cost = 1.5940, Validation Accuracy 51.0446%
Epoch 19, Learning Step 3300: Cost = 1.5561, Validation Accuracy 51.6518%
Epoch 20, Learning Step 3400: Cost = 1.5664, Validation Accuracy 52.8929%
Epoch 20, Learning Step 3500: Cost = 1.4992, Validation Accuracy 53.4018%
Epoch 21, Learning Step 3600: Cost = 1.5922, Validation Accuracy 54.4554%
Epoch 22, Learning Step 3700: Cost = 1.6035, Validation Accuracy 55.2857%
Epoch 22, Learning Step 3800: Cost = 1.5832, Validation Accuracy 56.0714%
Epoch 23, Learning Step 3900: Cost = 1.4638, Validation Accuracy 56.7589%
Epoch 23, Learning Step 4000: Cost = 1.4308, Validation Accuracy 57.4464%
Epoch 24, Learning Step 4100: Cost = 1.4499, Validation Accuracy 59.4107%
Epoch 24, Learning Step 4200: Cost = 1.3927, Validation Accuracy 59.9464%
Epoch 25, Learning Step 4300: Cost = 1.4659, Validation Accuracy 61.7768%
Epoch 26, Learning Step 4400: Cost = 1.4757, Validation Accuracy 62.7857%
Epoch 26, Learning Step 4500: Cost = 1.4549, Validation Accuracy 63.8750%
Epoch 27, Learning Step 4600: Cost = 1.3010, Validation Accuracy 65.3482%
Epoch 27, Learning Step 4700: Cost = 1.2833, Validation Accuracy 66.1339%

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Epoch 28, Learning Step 4800: Cost = 1.3205, Validation Accuracy 68.1607%
Epoch 28, Learning Step 4900: Cost = 1.2658, Validation Accuracy 68.8393%
Epoch 29, Learning Step 5000: Cost = 1.3333, Validation Accuracy 69.8929%
Epoch 30, Learning Step 5100: Cost = 1.3416, Validation Accuracy 70.6161%
Epoch 30, Learning Step 5200: Cost = 1.3220, Validation Accuracy 71.0804%
Epoch 31, Learning Step 5300: Cost = 1.1690, Validation Accuracy 72.3393%
Epoch 31, Learning Step 5400: Cost = 1.1541, Validation Accuracy 72.7500%
Epoch 32, Learning Step 5500: Cost = 1.2142, Validation Accuracy 74.1875%
Epoch 32, Learning Step 5600: Cost = 1.1628, Validation Accuracy 74.9107%
Epoch 33, Learning Step 5700: Cost = 1.2205, Validation Accuracy 75.6786%
Epoch 34, Learning Step 5800: Cost = 1.2425, Validation Accuracy 76.2232%
Epoch 34, Learning Step 5900: Cost = 1.2023, Validation Accuracy 76.5000%
Epoch 35, Learning Step 6000: Cost = 1.0751, Validation Accuracy 77.7232%
Epoch 35, Learning Step 6100: Cost = 1.0533, Validation Accuracy 78.4018%
Epoch 36, Learning Step 6200: Cost = 1.1157, Validation Accuracy 79.1250%
Epoch 36, Learning Step 6300: Cost = 1.0740, Validation Accuracy 80.0446%
Epoch 37, Learning Step 6400: Cost = 1.1250, Validation Accuracy 80.7589%
Epoch 38, Learning Step 6500: Cost = 1.1634, Validation Accuracy 81.3036%
Epoch 38, Learning Step 6600: Cost = 1.0822, Validation Accuracy 81.3125%
Epoch 39, Learning Step 6700: Cost = 0.9936, Validation Accuracy 82.3036%
Epoch 39, Learning Step 6800: Cost = 0.9592, Validation Accuracy 82.4196%
Epoch 40, Learning Step 6900: Cost = 1.0255, Validation Accuracy 83.0268%
Epoch 40, Learning Step 7000: Cost = 0.9873, Validation Accuracy 83.3036%
Epoch 41, Learning Step 7100: Cost = 1.0390, Validation Accuracy 83.7232%
Epoch 42, Learning Step 7200: Cost = 1.0939, Validation Accuracy 84.0000%
Epoch 42, Learning Step 7300: Cost = 0.9856, Validation Accuracy 83.9375%
Epoch 43, Learning Step 7400: Cost = 0.9268, Validation Accuracy 84.4107%
Epoch 43, Learning Step 7500: Cost = 0.8925, Validation Accuracy 84.5804%
Epoch 44, Learning Step 7600: Cost = 0.9692, Validation Accuracy 84.9196%
Epoch 44, Learning Step 7700: Cost = 0.9130, Validation Accuracy 85.0446%
Epoch 45, Learning Step 7800: Cost = 0.9718, Validation Accuracy 85.4643%
Epoch 46, Learning Step 7900: Cost = 1.0444, Validation Accuracy 85.6250%
Epoch 46, Learning Step 8000: Cost = 0.9208, Validation Accuracy 85.8929%
Epoch 47, Learning Step 8100: Cost = 0.8764, Validation Accuracy 86.1071%
Epoch 47, Learning Step 8200: Cost = 0.8480, Validation Accuracy 86.2679%
Epoch 48, Learning Step 8300: Cost = 0.9308, Validation Accuracy 86.3571%
Epoch 48, Learning Step 8400: Cost = 0.8584, Validation Accuracy 86.4911%
Epoch 49, Learning Step 8500: Cost = 0.9244, Validation Accuracy 86.6161%
Epoch 50, Learning Step 8600: Cost = 1.0081, Validation Accuracy 86.8571%
Epoch 50, Learning Step 8700: Cost = 0.8769, Validation Accuracy 86.7857%
Epoch 51, Learning Step 8800: Cost = 0.8357, Validation Accuracy 86.9464%
Epoch 51, Learning Step 8900: Cost = 0.8158, Validation Accuracy 87.0357%
Epoch 52, Learning Step 9000: Cost = 0.9018, Validation Accuracy 87.2321%
Epoch 52, Learning Step 9100: Cost = 0.8176, Validation Accuracy 87.2768%
Epoch 53, Learning Step 9200: Cost = 0.8894, Validation Accuracy 87.4375%
Epoch 54, Learning Step 9300: Cost = 0.9761, Validation Accuracy 87.5446%
Epoch 54, Learning Step 9400: Cost = 0.8446, Validation Accuracy 87.5268%
Epoch 55, Learning Step 9500: Cost = 0.8024, Validation Accuracy 87.6071%
Epoch 55, Learning Step 9600: Cost = 0.7921, Validation Accuracy 87.6964%
Epoch 56, Learning Step 9700: Cost = 0.8761, Validation Accuracy 87.8125%
Epoch 56, Learning Step 9800: Cost = 0.7866, Validation Accuracy 87.7946%
Epoch 57, Learning Step 9900: Cost = 0.8632, Validation Accuracy 87.8125%
Epoch 58, Learning Step 10000: Cost = 0.9496, Validation Accuracy 87.9821%
Epoch 58, Learning Step 10100: Cost = 0.8199, Validation Accuracy 88.1875%
Epoch 59, Learning Step 10200: Cost = 0.7755, Validation Accuracy 88.1339%
Epoch 59, Learning Step 10300: Cost = 0.7728, Validation Accuracy 88.1429%
Epoch 60, Learning Step 10400: Cost = 0.8521, Validation Accuracy 88.2321%
Epoch 60, Learning Step 10500: Cost = 0.7601, Validation Accuracy 88.3750%
Epoch 61, Learning Step 10600: Cost = 0.8430, Validation Accuracy 88.4286%
Epoch 62, Learning Step 10700: Cost = 0.9248, Validation Accuracy 88.5179%
Epoch 62, Learning Step 10800: Cost = 0.7989, Validation Accuracy 88.4464%
Epoch 63, Learning Step 10900: Cost = 0.7537, Validation Accuracy 88.6339%
Epoch 63, Learning Step 11000: Cost = 0.7565, Validation Accuracy 88.6786%
Epoch 64, Learning Step 11100: Cost = 0.8319, Validation Accuracy 88.7321%
```

Epoch 64, Learning Step 11200: Cost = 0.7381, Validation Accuracy 88.6339%
Epoch 65, Learning Step 11300: Cost = 0.8262, Validation Accuracy 88.9375%
Epoch 66, Learning Step 11400: Cost = 0.9029, Validation Accuracy 88.9464%
Epoch 66, Learning Step 11500: Cost = 0.7828, Validation Accuracy 88.8571%
Epoch 67, Learning Step 11600: Cost = 0.7350, Validation Accuracy 88.9732%
Epoch 67, Learning Step 11700: Cost = 0.7425, Validation Accuracy 88.9464%
Epoch 68, Learning Step 11800: Cost = 0.8129, Validation Accuracy 89.0893%
Epoch 68, Learning Step 11900: Cost = 0.7200, Validation Accuracy 89.0625%
Epoch 69, Learning Step 12000: Cost = 0.8113, Validation Accuracy 89.2232%
Epoch 70, Learning Step 12100: Cost = 0.8867, Validation Accuracy 89.1518%
Epoch 70, Learning Step 12200: Cost = 0.7693, Validation Accuracy 89.1339%
Epoch 71, Learning Step 12300: Cost = 0.7175, Validation Accuracy 89.2143%
Epoch 71, Learning Step 12400: Cost = 0.7295, Validation Accuracy 89.1607%
Epoch 72, Learning Step 12500: Cost = 0.7972, Validation Accuracy 89.3393%
Epoch 72, Learning Step 12600: Cost = 0.7048, Validation Accuracy 89.1607%
Epoch 73, Learning Step 12700: Cost = 0.8002, Validation Accuracy 89.3482%
Epoch 74, Learning Step 12800: Cost = 0.8733, Validation Accuracy 89.4018%
Epoch 74, Learning Step 12900: Cost = 0.7583, Validation Accuracy 89.3125%
Epoch 75, Learning Step 13000: Cost = 0.7029, Validation Accuracy 89.3929%
Epoch 75, Learning Step 13100: Cost = 0.7174, Validation Accuracy 89.4018%
Epoch 76, Learning Step 13200: Cost = 0.7831, Validation Accuracy 89.5268%
Epoch 76, Learning Step 13300: Cost = 0.6910, Validation Accuracy 89.4018%
Epoch 77, Learning Step 13400: Cost = 0.7898, Validation Accuracy 89.6161%
Epoch 78, Learning Step 13500: Cost = 0.8620, Validation Accuracy 89.6607%
Epoch 78, Learning Step 13600: Cost = 0.7493, Validation Accuracy 89.5804%
Epoch 79, Learning Step 13700: Cost = 0.6908, Validation Accuracy 89.6964%
Epoch 79, Learning Step 13800: Cost = 0.7066, Validation Accuracy 89.5982%
Epoch 80, Learning Step 13900: Cost = 0.7708, Validation Accuracy 89.6607%
Epoch 80, Learning Step 14000: Cost = 0.6791, Validation Accuracy 89.7143%
Epoch 81, Learning Step 14100: Cost = 0.7814, Validation Accuracy 89.8571%
Epoch 82, Learning Step 14200: Cost = 0.8513, Validation Accuracy 89.8929%
Epoch 82, Learning Step 14300: Cost = 0.7419, Validation Accuracy 89.7679%
Epoch 83, Learning Step 14400: Cost = 0.6812, Validation Accuracy 89.9464%
Epoch 83, Learning Step 14500: Cost = 0.6964, Validation Accuracy 89.7143%
Epoch 84, Learning Step 14600: Cost = 0.7590, Validation Accuracy 90.0089%
Epoch 84, Learning Step 14700: Cost = 0.6690, Validation Accuracy 89.7589%
Epoch 85, Learning Step 14800: Cost = 0.7733, Validation Accuracy 90.0268%
Epoch 86, Learning Step 14900: Cost = 0.8428, Validation Accuracy 90.0714%
Epoch 86, Learning Step 15000: Cost = 0.7352, Validation Accuracy 89.8750%
Epoch 87, Learning Step 15100: Cost = 0.6722, Validation Accuracy 90.0714%
Epoch 87, Learning Step 15200: Cost = 0.6880, Validation Accuracy 89.9375%
Epoch 88, Learning Step 15300: Cost = 0.7479, Validation Accuracy 90.1607%
Epoch 88, Learning Step 15400: Cost = 0.6605, Validation Accuracy 89.9554%
Epoch 89, Learning Step 15500: Cost = 0.7661, Validation Accuracy 90.1875%
Epoch 90, Learning Step 15600: Cost = 0.8345, Validation Accuracy 90.2679%
Epoch 90, Learning Step 15700: Cost = 0.7288, Validation Accuracy 90.0268%
Epoch 91, Learning Step 15800: Cost = 0.6643, Validation Accuracy 90.1518%
Epoch 91, Learning Step 15900: Cost = 0.6801, Validation Accuracy 90.0625%
Epoch 92, Learning Step 16000: Cost = 0.7379, Validation Accuracy 90.3482%
Epoch 92, Learning Step 16100: Cost = 0.6526, Validation Accuracy 90.1607%
Epoch 93, Learning Step 16200: Cost = 0.7599, Validation Accuracy 90.2589%
Epoch 94, Learning Step 16300: Cost = 0.8273, Validation Accuracy 90.3214%
Epoch 94, Learning Step 16400: Cost = 0.7233, Validation Accuracy 90.2143%
Epoch 95, Learning Step 16500: Cost = 0.6572, Validation Accuracy 90.3929%
Epoch 95, Learning Step 16600: Cost = 0.6728, Validation Accuracy 90.2232%
Epoch 96, Learning Step 16700: Cost = 0.7287, Validation Accuracy 90.4821%
Epoch 96, Learning Step 16800: Cost = 0.6452, Validation Accuracy 90.2946%
Epoch 97, Learning Step 16900: Cost = 0.7547, Validation Accuracy 90.4286%
Epoch 98, Learning Step 17000: Cost = 0.8199, Validation Accuracy 90.4375%
Epoch 98, Learning Step 17100: Cost = 0.7191, Validation Accuracy 90.3393%
Epoch 99, Learning Step 17200: Cost = 0.6513, Validation Accuracy 90.4643%
Epoch 99, Learning Step 17300: Cost = 0.6667, Validation Accuracy 90.4107%
Epoch 100, Learning Step 17400: Cost = 0.7208, Validation Accuracy 90.5893%
Epoch 100, Learning Step 17500: Cost = 0.6379, Validation Accuracy 90.4554%

Epoch 101, Learning Step 17600: Cost = 0.7488, Validation Accuracy 90.5714%
Epoch 102, Learning Step 17700: Cost = 0.8138, Validation Accuracy 90.6250%
Epoch 102, Learning Step 17800: Cost = 0.7151, Validation Accuracy 90.5000%
Epoch 103, Learning Step 17900: Cost = 0.6460, Validation Accuracy 90.6875%
Epoch 103, Learning Step 18000: Cost = 0.6608, Validation Accuracy 90.5179%
Epoch 104, Learning Step 18100: Cost = 0.7140, Validation Accuracy 90.6964%
Epoch 104, Learning Step 18200: Cost = 0.6316, Validation Accuracy 90.5446%
Epoch 105, Learning Step 18300: Cost = 0.7448, Validation Accuracy 90.7143%
Epoch 106, Learning Step 18400: Cost = 0.8087, Validation Accuracy 90.7411%
Epoch 106, Learning Step 18500: Cost = 0.7125, Validation Accuracy 90.6071%
Epoch 107, Learning Step 18600: Cost = 0.6410, Validation Accuracy 90.7946%
Epoch 107, Learning Step 18700: Cost = 0.6558, Validation Accuracy 90.6875%
Epoch 108, Learning Step 18800: Cost = 0.7080, Validation Accuracy 90.8482%
Epoch 108, Learning Step 18900: Cost = 0.6254, Validation Accuracy 90.6786%
Epoch 109, Learning Step 19000: Cost = 0.7409, Validation Accuracy 90.8036%
Epoch 110, Learning Step 19100: Cost = 0.8043, Validation Accuracy 90.8393%
Epoch 110, Learning Step 19200: Cost = 0.7102, Validation Accuracy 90.7500%
Epoch 111, Learning Step 19300: Cost = 0.6364, Validation Accuracy 90.8571%
Epoch 111, Learning Step 19400: Cost = 0.6510, Validation Accuracy 90.7768%
Epoch 112, Learning Step 19500: Cost = 0.7025, Validation Accuracy 90.9196%
Epoch 112, Learning Step 19600: Cost = 0.6212, Validation Accuracy 90.8214%
Epoch 113, Learning Step 19700: Cost = 0.7369, Validation Accuracy 90.9732%
Epoch 114, Learning Step 19800: Cost = 0.8006, Validation Accuracy 90.9286%
Epoch 114, Learning Step 19900: Cost = 0.7077, Validation Accuracy 90.8661%
Epoch 115, Learning Step 20000: Cost = 0.6324, Validation Accuracy 90.9554%
Epoch 115, Learning Step 20100: Cost = 0.6464, Validation Accuracy 90.9286%
Epoch 116, Learning Step 20200: Cost = 0.6974, Validation Accuracy 90.9107%
Epoch 116, Learning Step 20300: Cost = 0.6174, Validation Accuracy 90.8571%
Epoch 117, Learning Step 20400: Cost = 0.7331, Validation Accuracy 91.0179%
Epoch 118, Learning Step 20500: Cost = 0.7978, Validation Accuracy 90.9643%
Epoch 118, Learning Step 20600: Cost = 0.7054, Validation Accuracy 90.9732%
Epoch 119, Learning Step 20700: Cost = 0.6289, Validation Accuracy 91.0000%
Epoch 119, Learning Step 20800: Cost = 0.6423, Validation Accuracy 90.9643%
Epoch 120, Learning Step 20900: Cost = 0.6927, Validation Accuracy 91.0000%
Epoch 120, Learning Step 21000: Cost = 0.6133, Validation Accuracy 90.9286%
Epoch 121, Learning Step 21100: Cost = 0.7292, Validation Accuracy 91.0804%
Epoch 122, Learning Step 21200: Cost = 0.7957, Validation Accuracy 91.0089%
Epoch 122, Learning Step 21300: Cost = 0.7035, Validation Accuracy 91.0982%
Epoch 123, Learning Step 21400: Cost = 0.6257, Validation Accuracy 91.0714%
Epoch 123, Learning Step 21500: Cost = 0.6389, Validation Accuracy 91.0446%
Epoch 124, Learning Step 21600: Cost = 0.6890, Validation Accuracy 91.0625%
Epoch 124, Learning Step 21700: Cost = 0.6095, Validation Accuracy 91.0179%
Epoch 125, Learning Step 21800: Cost = 0.7249, Validation Accuracy 91.0982%
Epoch 126, Learning Step 21900: Cost = 0.7936, Validation Accuracy 91.0536%
Epoch 126, Learning Step 22000: Cost = 0.7012, Validation Accuracy 91.1339%
Epoch 127, Learning Step 22100: Cost = 0.6227, Validation Accuracy 91.0893%
Epoch 127, Learning Step 22200: Cost = 0.6357, Validation Accuracy 91.1161%
Epoch 128, Learning Step 22300: Cost = 0.6856, Validation Accuracy 91.0893%
Epoch 128, Learning Step 22400: Cost = 0.6063, Validation Accuracy 91.1607%
Epoch 129, Learning Step 22500: Cost = 0.7209, Validation Accuracy 91.1875%
Epoch 130, Learning Step 22600: Cost = 0.7914, Validation Accuracy 91.0804%
Epoch 130, Learning Step 22700: Cost = 0.6992, Validation Accuracy 91.1696%
Epoch 131, Learning Step 22800: Cost = 0.6195, Validation Accuracy 91.1250%
Epoch 131, Learning Step 22900: Cost = 0.6328, Validation Accuracy 91.1518%
Epoch 132, Learning Step 23000: Cost = 0.6828, Validation Accuracy 91.1786%
Epoch 132, Learning Step 23100: Cost = 0.6030, Validation Accuracy 91.1607%
Epoch 133, Learning Step 23200: Cost = 0.7164, Validation Accuracy 91.2232%
Epoch 134, Learning Step 23300: Cost = 0.7887, Validation Accuracy 91.1250%
Epoch 134, Learning Step 23400: Cost = 0.6971, Validation Accuracy 91.1964%
Epoch 135, Learning Step 23500: Cost = 0.6164, Validation Accuracy 91.1875%
Epoch 135, Learning Step 23600: Cost = 0.6298, Validation Accuracy 91.1964%
Epoch 136, Learning Step 23700: Cost = 0.6797, Validation Accuracy 91.2054%
Epoch 136, Learning Step 23800: Cost = 0.6002, Validation Accuracy 91.1696%
Epoch 137, Learning Step 23900: Cost = 0.7120, Validation Accuracy 91.3304%

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Epoch 138, Learning Step 24000: Cost = 0.7862, Validation Accuracy 91.1964%
Epoch 138, Learning Step 24100: Cost = 0.6948, Validation Accuracy 91.1964%
Epoch 139, Learning Step 24200: Cost = 0.6135, Validation Accuracy 91.1786%
Epoch 139, Learning Step 24300: Cost = 0.6274, Validation Accuracy 91.2054%
Epoch 140, Learning Step 24400: Cost = 0.6771, Validation Accuracy 91.2500%
Epoch 140, Learning Step 24500: Cost = 0.5972, Validation Accuracy 91.1875%
Epoch 141, Learning Step 24600: Cost = 0.7085, Validation Accuracy 91.4375%
Epoch 142, Learning Step 24700: Cost = 0.7839, Validation Accuracy 91.3304%
Epoch 142, Learning Step 24800: Cost = 0.6924, Validation Accuracy 91.2232%
Epoch 143, Learning Step 24900: Cost = 0.6103, Validation Accuracy 91.2411%
Epoch 143, Learning Step 25000: Cost = 0.6244, Validation Accuracy 91.2589%
Epoch 144, Learning Step 25100: Cost = 0.6745, Validation Accuracy 91.3125%
Epoch 144, Learning Step 25200: Cost = 0.5947, Validation Accuracy 91.2411%
Epoch 145, Learning Step 25300: Cost = 0.7048, Validation Accuracy 91.4464%
Epoch 146, Learning Step 25400: Cost = 0.7823, Validation Accuracy 91.4196%
Epoch 146, Learning Step 25500: Cost = 0.6902, Validation Accuracy 91.2946%
Epoch 147, Learning Step 25600: Cost = 0.6076, Validation Accuracy 91.2143%
Epoch 147, Learning Step 25700: Cost = 0.6213, Validation Accuracy 91.2857%
Epoch 148, Learning Step 25800: Cost = 0.6713, Validation Accuracy 91.3571%
Epoch 148, Learning Step 25900: Cost = 0.5928, Validation Accuracy 91.3214%
Epoch 149, Learning Step 26000: Cost = 0.7011, Validation Accuracy 91.5000%
Epoch 150, Learning Step 26100: Cost = 0.7802, Validation Accuracy 91.4107%
Epoch 150, Learning Step 26200: Cost = 0.6883, Validation Accuracy 91.2946%
Epoch 151, Learning Step 26300: Cost = 0.6050, Validation Accuracy 91.3125%
Epoch 151, Learning Step 26400: Cost = 0.6190, Validation Accuracy 91.3036%
Epoch 152, Learning Step 26500: Cost = 0.6684, Validation Accuracy 91.4375%
Epoch 152, Learning Step 26600: Cost = 0.5907, Validation Accuracy 91.4018%
Epoch 153, Learning Step 26700: Cost = 0.6981, Validation Accuracy 91.4911%
Epoch 154, Learning Step 26800: Cost = 0.7785, Validation Accuracy 91.4732%
Epoch 154, Learning Step 26900: Cost = 0.6866, Validation Accuracy 91.3482%
Epoch 155, Learning Step 27000: Cost = 0.6029, Validation Accuracy 91.4286%
Epoch 155, Learning Step 27100: Cost = 0.6170, Validation Accuracy 91.3571%
Epoch 156, Learning Step 27200: Cost = 0.6660, Validation Accuracy 91.5000%
Epoch 156, Learning Step 27300: Cost = 0.5893, Validation Accuracy 91.3839%
Epoch 157, Learning Step 27400: Cost = 0.6943, Validation Accuracy 91.4464%
Epoch 158, Learning Step 27500: Cost = 0.7770, Validation Accuracy 91.4554%
Epoch 158, Learning Step 27600: Cost = 0.6849, Validation Accuracy 91.3929%
Epoch 159, Learning Step 27700: Cost = 0.6012, Validation Accuracy 91.4375%
Epoch 159, Learning Step 27800: Cost = 0.6158, Validation Accuracy 91.4375%
Epoch 160, Learning Step 27900: Cost = 0.6643, Validation Accuracy 91.5089%
Epoch 160, Learning Step 28000: Cost = 0.5878, Validation Accuracy 91.4732%
Epoch 161, Learning Step 28100: Cost = 0.6910, Validation Accuracy 91.4911%
Epoch 162, Learning Step 28200: Cost = 0.7757, Validation Accuracy 91.4911%
Epoch 162, Learning Step 28300: Cost = 0.6832, Validation Accuracy 91.3929%
Epoch 163, Learning Step 28400: Cost = 0.5996, Validation Accuracy 91.5714%
Epoch 163, Learning Step 28500: Cost = 0.6142, Validation Accuracy 91.5089%
Epoch 164, Learning Step 28600: Cost = 0.6628, Validation Accuracy 91.5536%
Epoch 164, Learning Step 28700: Cost = 0.5868, Validation Accuracy 91.5714%
Epoch 165, Learning Step 28800: Cost = 0.6879, Validation Accuracy 91.5625%
Epoch 166, Learning Step 28900: Cost = 0.7743, Validation Accuracy 91.5089%
Epoch 166, Learning Step 29000: Cost = 0.6813, Validation Accuracy 91.5268%
Epoch 167, Learning Step 29100: Cost = 0.5978, Validation Accuracy 91.5982%
Epoch 167, Learning Step 29200: Cost = 0.6127, Validation Accuracy 91.5089%
Epoch 168, Learning Step 29300: Cost = 0.6610, Validation Accuracy 91.5446%
Epoch 168, Learning Step 29400: Cost = 0.5855, Validation Accuracy 91.5893%
Epoch 169, Learning Step 29500: Cost = 0.6851, Validation Accuracy 91.5804%
Epoch 170, Learning Step 29600: Cost = 0.7728, Validation Accuracy 91.5625%
Epoch 170, Learning Step 29700: Cost = 0.6795, Validation Accuracy 91.5714%
Epoch 171, Learning Step 29800: Cost = 0.5962, Validation Accuracy 91.6518%
Epoch 171, Learning Step 29900: Cost = 0.6107, Validation Accuracy 91.5714%
Epoch 172, Learning Step 30000: Cost = 0.6602, Validation Accuracy 91.5536%
Epoch 172, Learning Step 30100: Cost = 0.5843, Validation Accuracy 91.5625%
Epoch 173, Learning Step 30200: Cost = 0.6828, Validation Accuracy 91.6518%
Epoch 174, Learning Step 30300: Cost = 0.7713, Validation Accuracy 91.5982%
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Epoch 174, Learning Step 30400: Cost = 0.6779, Validation Accuracy 91.6607%
Epoch 175, Learning Step 30500: Cost = 0.5945, Validation Accuracy 91.6964%
Epoch 175, Learning Step 30600: Cost = 0.6093, Validation Accuracy 91.6250%
Epoch 176, Learning Step 30700: Cost = 0.6599, Validation Accuracy 91.6339%
Epoch 176, Learning Step 30800: Cost = 0.5831, Validation Accuracy 91.5893%
Epoch 177, Learning Step 30900: Cost = 0.6811, Validation Accuracy 91.7054%
Epoch 178, Learning Step 31000: Cost = 0.7701, Validation Accuracy 91.6339%
Epoch 178, Learning Step 31100: Cost = 0.6767, Validation Accuracy 91.6875%
Epoch 179, Learning Step 31200: Cost = 0.5928, Validation Accuracy 91.6786%
Epoch 179, Learning Step 31300: Cost = 0.6073, Validation Accuracy 91.6607%
Epoch 180, Learning Step 31400: Cost = 0.6591, Validation Accuracy 91.6607%
Epoch 180, Learning Step 31500: Cost = 0.5823, Validation Accuracy 91.5714%
Epoch 181, Learning Step 31600: Cost = 0.6795, Validation Accuracy 91.7500%
Epoch 182, Learning Step 31700: Cost = 0.7686, Validation Accuracy 91.7054%
Epoch 182, Learning Step 31800: Cost = 0.6759, Validation Accuracy 91.7589%
Epoch 183, Learning Step 31900: Cost = 0.5915, Validation Accuracy 91.7143%
Epoch 183, Learning Step 32000: Cost = 0.6060, Validation Accuracy 91.6786%
Epoch 184, Learning Step 32100: Cost = 0.6585, Validation Accuracy 91.6607%
Epoch 184, Learning Step 32200: Cost = 0.5815, Validation Accuracy 91.6250%
Epoch 185, Learning Step 32300: Cost = 0.6781, Validation Accuracy 91.8125%
Epoch 186, Learning Step 32400: Cost = 0.7670, Validation Accuracy 91.7232%
Epoch 186, Learning Step 32500: Cost = 0.6747, Validation Accuracy 91.7768%
Epoch 187, Learning Step 32600: Cost = 0.5902, Validation Accuracy 91.7679%
Epoch 187, Learning Step 32700: Cost = 0.6048, Validation Accuracy 91.7143%
Epoch 188, Learning Step 32800: Cost = 0.6579, Validation Accuracy 91.7143%
Epoch 188, Learning Step 32900: Cost = 0.5806, Validation Accuracy 91.6696%
Epoch 189, Learning Step 33000: Cost = 0.6771, Validation Accuracy 91.8571%
Epoch 190, Learning Step 33100: Cost = 0.7648, Validation Accuracy 91.7500%
Epoch 190, Learning Step 33200: Cost = 0.6738, Validation Accuracy 91.8036%
Epoch 191, Learning Step 33300: Cost = 0.5889, Validation Accuracy 91.7768%
Epoch 191, Learning Step 33400: Cost = 0.6037, Validation Accuracy 91.7500%
Epoch 192, Learning Step 33500: Cost = 0.6575, Validation Accuracy 91.7768%
Epoch 192, Learning Step 33600: Cost = 0.5797, Validation Accuracy 91.7054%
Epoch 193, Learning Step 33700: Cost = 0.6758, Validation Accuracy 91.8571%
Epoch 194, Learning Step 33800: Cost = 0.7620, Validation Accuracy 91.8036%
Epoch 194, Learning Step 33900: Cost = 0.6731, Validation Accuracy 91.8125%
Epoch 195, Learning Step 34000: Cost = 0.5876, Validation Accuracy 91.8304%
Epoch 195, Learning Step 34100: Cost = 0.6030, Validation Accuracy 91.7321%
Epoch 196, Learning Step 34200: Cost = 0.6567, Validation Accuracy 91.7857%
Epoch 196, Learning Step 34300: Cost = 0.5790, Validation Accuracy 91.7500%
Epoch 197, Learning Step 34400: Cost = 0.6752, Validation Accuracy 91.8571%
Epoch 198, Learning Step 34500: Cost = 0.7600, Validation Accuracy 91.8214%
Epoch 198, Learning Step 34600: Cost = 0.6720, Validation Accuracy 91.8036%
Epoch 199, Learning Step 34700: Cost = 0.5862, Validation Accuracy 91.8482%
Epoch 199, Learning Step 34800: Cost = 0.6028, Validation Accuracy 91.6696%
Epoch 200, Learning Step 34900: Cost = 0.6563, Validation Accuracy 91.7857%
Epoch 200, Learning Step 35000: Cost = 0.5781, Validation Accuracy 91.7679%
Epoch 201, Learning Step 35100: Cost = 0.6744, Validation Accuracy 91.9196%
Epoch 202, Learning Step 35200: Cost = 0.7577, Validation Accuracy 91.8125%
Epoch 202, Learning Step 35300: Cost = 0.6709, Validation Accuracy 91.8661%
Epoch 203, Learning Step 35400: Cost = 0.5852, Validation Accuracy 91.8304%
Epoch 203, Learning Step 35500: Cost = 0.6020, Validation Accuracy 91.7321%
Epoch 204, Learning Step 35600: Cost = 0.6558, Validation Accuracy 91.8036%
Epoch 204, Learning Step 35700: Cost = 0.5769, Validation Accuracy 91.7679%
Epoch 205, Learning Step 35800: Cost = 0.6733, Validation Accuracy 91.9286%
Epoch 206, Learning Step 35900: Cost = 0.7560, Validation Accuracy 91.8482%
Epoch 206, Learning Step 36000: Cost = 0.6693, Validation Accuracy 91.9018%
Epoch 207, Learning Step 36100: Cost = 0.5843, Validation Accuracy 91.8661%
Epoch 207, Learning Step 36200: Cost = 0.6014, Validation Accuracy 91.7143%
Epoch 208, Learning Step 36300: Cost = 0.6558, Validation Accuracy 91.7946%
Epoch 208, Learning Step 36400: Cost = 0.5759, Validation Accuracy 91.7589%
Epoch 209, Learning Step 36500: Cost = 0.6724, Validation Accuracy 91.9643%
Epoch 210, Learning Step 36600: Cost = 0.7542, Validation Accuracy 91.8125%
Epoch 210, Learning Step 36700: Cost = 0.6682, Validation Accuracy 91.9107%
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Epoch 211, Learning Step 36800: Cost = 0.5833, Validation Accuracy 91.7946%
Epoch 211, Learning Step 36900: Cost = 0.6006, Validation Accuracy 91.7768%
Epoch 212, Learning Step 37000: Cost = 0.6549, Validation Accuracy 91.8304%
Epoch 212, Learning Step 37100: Cost = 0.5748, Validation Accuracy 91.8036%
Epoch 213, Learning Step 37200: Cost = 0.6716, Validation Accuracy 91.9732%
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Epoch 214, Learning Step 37400: Cost = 0.6671, Validation Accuracy 91.9196%
Epoch 215, Learning Step 37500: Cost = 0.5824, Validation Accuracy 91.7768%
Epoch 215, Learning Step 37600: Cost = 0.5999, Validation Accuracy 91.8482%
Epoch 216, Learning Step 37700: Cost = 0.6541, Validation Accuracy 91.8571%
Epoch 216, Learning Step 37800: Cost = 0.5738, Validation Accuracy 91.8571%
Epoch 217, Learning Step 37900: Cost = 0.6708, Validation Accuracy 92.0179%
Epoch 218, Learning Step 38000: Cost = 0.7515, Validation Accuracy 91.8304%
Epoch 218, Learning Step 38100: Cost = 0.6661, Validation Accuracy 91.9643%
Epoch 219, Learning Step 38200: Cost = 0.5814, Validation Accuracy 91.8214%
Epoch 219, Learning Step 38300: Cost = 0.5994, Validation Accuracy 91.8393%
Epoch 220, Learning Step 38400: Cost = 0.6536, Validation Accuracy 91.8929%
Epoch 220, Learning Step 38500: Cost = 0.5726, Validation Accuracy 91.8839%
Epoch 221, Learning Step 38600: Cost = 0.6701, Validation Accuracy 92.0357%
Epoch 222, Learning Step 38700: Cost = 0.7501, Validation Accuracy 91.8661%
Epoch 222, Learning Step 38800: Cost = 0.6650, Validation Accuracy 92.0179%
Epoch 223, Learning Step 38900: Cost = 0.5804, Validation Accuracy 91.8482%
Epoch 223, Learning Step 39000: Cost = 0.5987, Validation Accuracy 91.9018%
Epoch 224, Learning Step 39100: Cost = 0.6530, Validation Accuracy 91.8839%
Epoch 224, Learning Step 39200: Cost = 0.5716, Validation Accuracy 91.9375%
Epoch 225, Learning Step 39300: Cost = 0.6695, Validation Accuracy 92.0804%
Epoch 226, Learning Step 39400: Cost = 0.7487, Validation Accuracy 91.9107%
Epoch 226, Learning Step 39500: Cost = 0.6647, Validation Accuracy 92.0357%
Epoch 227, Learning Step 39600: Cost = 0.5795, Validation Accuracy 91.8482%
Epoch 227, Learning Step 39700: Cost = 0.5981, Validation Accuracy 91.9732%
Epoch 228, Learning Step 39800: Cost = 0.6526, Validation Accuracy 91.9286%
Epoch 228, Learning Step 39900: Cost = 0.5708, Validation Accuracy 91.9911%
Epoch 229, Learning Step 40000: Cost = 0.6686, Validation Accuracy 92.1250%
Epoch 230, Learning Step 40100: Cost = 0.7474, Validation Accuracy 91.9286%
Epoch 230, Learning Step 40200: Cost = 0.6637, Validation Accuracy 92.0536%
Epoch 231, Learning Step 40300: Cost = 0.5785, Validation Accuracy 91.9018%
Epoch 231, Learning Step 40400: Cost = 0.5977, Validation Accuracy 91.9732%
Epoch 232, Learning Step 40500: Cost = 0.6521, Validation Accuracy 91.9107%
Epoch 232, Learning Step 40600: Cost = 0.5701, Validation Accuracy 92.0179%
Epoch 233, Learning Step 40700: Cost = 0.6679, Validation Accuracy 92.1875%
Epoch 234, Learning Step 40800: Cost = 0.7461, Validation Accuracy 91.9821%
Epoch 234, Learning Step 40900: Cost = 0.6633, Validation Accuracy 92.0446%
Epoch 235, Learning Step 41000: Cost = 0.5778, Validation Accuracy 91.9375%
Epoch 235, Learning Step 41100: Cost = 0.5976, Validation Accuracy 92.0089%
Epoch 236, Learning Step 41200: Cost = 0.6518, Validation Accuracy 91.8929%
Epoch 236, Learning Step 41300: Cost = 0.5697, Validation Accuracy 92.0179%
Epoch 237, Learning Step 41400: Cost = 0.6668, Validation Accuracy 92.1875%
Epoch 238, Learning Step 41500: Cost = 0.7451, Validation Accuracy 92.0000%
Epoch 238, Learning Step 41600: Cost = 0.6623, Validation Accuracy 92.0625%
Epoch 239, Learning Step 41700: Cost = 0.5773, Validation Accuracy 91.9286%
Epoch 239, Learning Step 41800: Cost = 0.5973, Validation Accuracy 92.0536%
Epoch 240, Learning Step 41900: Cost = 0.6519, Validation Accuracy 91.9286%
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Epoch 241, Learning Step 42100: Cost = 0.6661, Validation Accuracy 92.2321%
Epoch 242, Learning Step 42200: Cost = 0.7440, Validation Accuracy 92.0000%
Epoch 242, Learning Step 42300: Cost = 0.6617, Validation Accuracy 92.0804%
Epoch 243, Learning Step 42400: Cost = 0.5767, Validation Accuracy 92.0000%
Epoch 243, Learning Step 42500: Cost = 0.5972, Validation Accuracy 92.0714%
Epoch 244, Learning Step 42600: Cost = 0.6517, Validation Accuracy 91.9375%
Epoch 244, Learning Step 42700: Cost = 0.5683, Validation Accuracy 92.0268%
Epoch 245, Learning Step 42800: Cost = 0.6654, Validation Accuracy 92.1964%
Epoch 246, Learning Step 42900: Cost = 0.7430, Validation Accuracy 92.0357%
Epoch 246, Learning Step 43000: Cost = 0.6613, Validation Accuracy 92.0804%
Epoch 247, Learning Step 43100: Cost = 0.5761, Validation Accuracy 91.9821%
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Epoch 247, Learning Step 43200: Cost = 0.5970, Validation Accuracy 92.0625%
Epoch 248, Learning Step 43300: Cost = 0.6513, Validation Accuracy 91.9464%
Epoch 248, Learning Step 43400: Cost = 0.5675, Validation Accuracy 92.0268%
Epoch 249, Learning Step 43500: Cost = 0.6647, Validation Accuracy 92.2054%
Epoch 250, Learning Step 43600: Cost = 0.7422, Validation Accuracy 92.0268%
Epoch 250, Learning Step 43700: Cost = 0.6602, Validation Accuracy 92.1161%
Epoch 251, Learning Step 43800: Cost = 0.5756, Validation Accuracy 91.9732%
Epoch 251, Learning Step 43900: Cost = 0.5967, Validation Accuracy 92.0714%
Epoch 252, Learning Step 44000: Cost = 0.6508, Validation Accuracy 92.0089%
Epoch 252, Learning Step 44100: Cost = 0.5669, Validation Accuracy 92.0804%
Epoch 253, Learning Step 44200: Cost = 0.6640, Validation Accuracy 92.2054%
Epoch 254, Learning Step 44300: Cost = 0.7411, Validation Accuracy 92.0714%
Epoch 254, Learning Step 44400: Cost = 0.6595, Validation Accuracy 92.1518%
Epoch 255, Learning Step 44500: Cost = 0.5751, Validation Accuracy 92.0089%
Epoch 255, Learning Step 44600: Cost = 0.5963, Validation Accuracy 92.0536%
Epoch 256, Learning Step 44700: Cost = 0.6507, Validation Accuracy 92.0089%
Epoch 256, Learning Step 44800: Cost = 0.5664, Validation Accuracy 92.0982%
Epoch 257, Learning Step 44900: Cost = 0.6633, Validation Accuracy 92.1964%
Epoch 258, Learning Step 45000: Cost = 0.7404, Validation Accuracy 92.0714%
Epoch 258, Learning Step 45100: Cost = 0.6592, Validation Accuracy 92.1696%
Epoch 259, Learning Step 45200: Cost = 0.5748, Validation Accuracy 92.0446%
Epoch 259, Learning Step 45300: Cost = 0.5961, Validation Accuracy 92.1071%
Epoch 260, Learning Step 45400: Cost = 0.6506, Validation Accuracy 92.0625%
Epoch 260, Learning Step 45500: Cost = 0.5660, Validation Accuracy 92.0893%
Epoch 261, Learning Step 45600: Cost = 0.6628, Validation Accuracy 92.1696%
Epoch 262, Learning Step 45700: Cost = 0.7395, Validation Accuracy 92.1071%
Epoch 262, Learning Step 45800: Cost = 0.6586, Validation Accuracy 92.2232%
Epoch 263, Learning Step 45900: Cost = 0.5743, Validation Accuracy 92.0536%
Epoch 263, Learning Step 46000: Cost = 0.5964, Validation Accuracy 92.1429%
Epoch 264, Learning Step 46100: Cost = 0.6507, Validation Accuracy 92.1071%
Epoch 264, Learning Step 46200: Cost = 0.5658, Validation Accuracy 92.1161%
Epoch 265, Learning Step 46300: Cost = 0.6620, Validation Accuracy 92.1786%
Epoch 266, Learning Step 46400: Cost = 0.7392, Validation Accuracy 92.1429%
Epoch 266, Learning Step 46500: Cost = 0.6580, Validation Accuracy 92.1964%
Epoch 267, Learning Step 46600: Cost = 0.5738, Validation Accuracy 92.0446%
Epoch 267, Learning Step 46700: Cost = 0.5962, Validation Accuracy 92.1339%
Epoch 268, Learning Step 46800: Cost = 0.6510, Validation Accuracy 92.1161%
Epoch 268, Learning Step 46900: Cost = 0.5654, Validation Accuracy 92.1339%
Epoch 269, Learning Step 47000: Cost = 0.6612, Validation Accuracy 92.2143%
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Epoch 272, Learning Step 47500: Cost = 0.6511, Validation Accuracy 92.1696%
Epoch 272, Learning Step 47600: Cost = 0.5649, Validation Accuracy 92.1607%
Epoch 273, Learning Step 47700: Cost = 0.6604, Validation Accuracy 92.2143%
Epoch 274, Learning Step 47800: Cost = 0.7373, Validation Accuracy 92.1339%
Epoch 274, Learning Step 47900: Cost = 0.6575, Validation Accuracy 92.1339%
Epoch 275, Learning Step 48000: Cost = 0.5725, Validation Accuracy 92.0893%
Epoch 275, Learning Step 48100: Cost = 0.5964, Validation Accuracy 92.1696%
Epoch 276, Learning Step 48200: Cost = 0.6509, Validation Accuracy 92.1696%
Epoch 276, Learning Step 48300: Cost = 0.5646, Validation Accuracy 92.1786%
Epoch 277, Learning Step 48400: Cost = 0.6597, Validation Accuracy 92.2232%
Epoch 278, Learning Step 48500: Cost = 0.7369, Validation Accuracy 92.1071%
Epoch 278, Learning Step 48600: Cost = 0.6570, Validation Accuracy 92.1607%
Epoch 279, Learning Step 48700: Cost = 0.5720, Validation Accuracy 92.0804%
Epoch 279, Learning Step 48800: Cost = 0.5963, Validation Accuracy 92.1875%
Epoch 280, Learning Step 48900: Cost = 0.6509, Validation Accuracy 92.1696%
Epoch 280, Learning Step 49000: Cost = 0.5643, Validation Accuracy 92.2143%
Epoch 281, Learning Step 49100: Cost = 0.6592, Validation Accuracy 92.2143%
Epoch 282, Learning Step 49200: Cost = 0.7360, Validation Accuracy 92.1518%
Epoch 282, Learning Step 49300: Cost = 0.6565, Validation Accuracy 92.2054%
Epoch 283, Learning Step 49400: Cost = 0.5713, Validation Accuracy 92.0714%
Epoch 283, Learning Step 49500: Cost = 0.5963, Validation Accuracy 92.1964%

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Epoch 284, Learning Step 49600: Cost = 0.6509, Validation Accuracy 92.1875%
Epoch 284, Learning Step 49700: Cost = 0.5639, Validation Accuracy 92.2054%
Epoch 285, Learning Step 49800: Cost = 0.6587, Validation Accuracy 92.1786%
Epoch 286, Learning Step 49900: Cost = 0.7350, Validation Accuracy 92.1607%
Epoch 286, Learning Step 50000: Cost = 0.6559, Validation Accuracy 92.2143%
Epoch 287, Learning Step 50100: Cost = 0.5711, Validation Accuracy 92.0357%
Epoch 287, Learning Step 50200: Cost = 0.5962, Validation Accuracy 92.2143%
Epoch 288, Learning Step 50300: Cost = 0.6507, Validation Accuracy 92.1964%
Epoch 288, Learning Step 50400: Cost = 0.5634, Validation Accuracy 92.1875%
Epoch 289, Learning Step 50500: Cost = 0.6580, Validation Accuracy 92.1875%
Epoch 290, Learning Step 50600: Cost = 0.7343, Validation Accuracy 92.1607%
Epoch 290, Learning Step 50700: Cost = 0.6552, Validation Accuracy 92.1875%
Epoch 291, Learning Step 50800: Cost = 0.5707, Validation Accuracy 92.0268%
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Epoch 292, Learning Step 51100: Cost = 0.5630, Validation Accuracy 92.2143%
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Epoch 297, Learning Step 51900: Cost = 0.6572, Validation Accuracy 92.2232%
Epoch 298, Learning Step 52000: Cost = 0.7331, Validation Accuracy 92.1429%
Epoch 298, Learning Step 52100: Cost = 0.6541, Validation Accuracy 92.2589%
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Epoch 300, Learning Step 52500: Cost = 0.5618, Validation Accuracy 92.2411%
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Epoch 302, Learning Step 52700: Cost = 0.7325, Validation Accuracy 92.2054%
Epoch 302, Learning Step 52800: Cost = 0.6534, Validation Accuracy 92.2946%
Epoch 303, Learning Step 52900: Cost = 0.5693, Validation Accuracy 92.0446%
Epoch 303, Learning Step 53000: Cost = 0.5961, Validation Accuracy 92.2589%
Epoch 304, Learning Step 53100: Cost = 0.6501, Validation Accuracy 92.1964%
Epoch 304, Learning Step 53200: Cost = 0.5613, Validation Accuracy 92.2589%
Epoch 305, Learning Step 53300: Cost = 0.6564, Validation Accuracy 92.1786%
Epoch 306, Learning Step 53400: Cost = 0.7318, Validation Accuracy 92.1875%
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Epoch 310, Learning Step 54100: Cost = 0.7311, Validation Accuracy 92.1786%
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Epoch 320, Learning Step 55900: Cost = 0.6491, Validation Accuracy 92.1964%
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Epoch 335, Learning Step 58600: Cost = 0.5950, Validation Accuracy 92.2946%
Epoch 336, Learning Step 58700: Cost = 0.6482, Validation Accuracy 92.1161%
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Epoch 351, Learning Step 61400: Cost = 0.5938, Validation Accuracy 92.3214%
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Epoch 353, Learning Step 61700: Cost = 0.6517, Validation Accuracy 92.3125%
Epoch 354, Learning Step 61800: Cost = 0.7238, Validation Accuracy 92.2857%
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Epoch 355, Learning Step 62000: Cost = 0.5649, Validation Accuracy 92.1250%
Epoch 355, Learning Step 62100: Cost = 0.5935, Validation Accuracy 92.3393%
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Epoch 356, Learning Step 62300: Cost = 0.5548, Validation Accuracy 92.3036%

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Epoch 358, Learning Step 62500: Cost = 0.7232, Validation Accuracy 92.2857%
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Epoch 359, Learning Step 62800: Cost = 0.5928, Validation Accuracy 92.3571%
Epoch 360, Learning Step 62900: Cost = 0.6461, Validation Accuracy 92.1964%
Epoch 360, Learning Step 63000: Cost = 0.5544, Validation Accuracy 92.2679%
Epoch 361, Learning Step 63100: Cost = 0.6510, Validation Accuracy 92.2768%
Epoch 362, Learning Step 63200: Cost = 0.7227, Validation Accuracy 92.2500%
Epoch 362, Learning Step 63300: Cost = 0.6445, Validation Accuracy 92.3036%
Epoch 363, Learning Step 63400: Cost = 0.5642, Validation Accuracy 92.1429%
Epoch 363, Learning Step 63500: Cost = 0.5926, Validation Accuracy 92.3214%
Epoch 364, Learning Step 63600: Cost = 0.6460, Validation Accuracy 92.1786%
Epoch 364, Learning Step 63700: Cost = 0.5540, Validation Accuracy 92.2679%
Epoch 365, Learning Step 63800: Cost = 0.6508, Validation Accuracy 92.2679%
Epoch 366, Learning Step 63900: Cost = 0.7220, Validation Accuracy 92.2411%
Epoch 366, Learning Step 64000: Cost = 0.6440, Validation Accuracy 92.2857%
Epoch 367, Learning Step 64100: Cost = 0.5639, Validation Accuracy 92.1429%
Epoch 367, Learning Step 64200: Cost = 0.5925, Validation Accuracy 92.3393%
Epoch 368, Learning Step 64300: Cost = 0.6459, Validation Accuracy 92.1786%
Epoch 368, Learning Step 64400: Cost = 0.5535, Validation Accuracy 92.2857%
Epoch 369, Learning Step 64500: Cost = 0.6507, Validation Accuracy 92.2857%
Epoch 370, Learning Step 64600: Cost = 0.7216, Validation Accuracy 92.2321%
Epoch 370, Learning Step 64700: Cost = 0.6433, Validation Accuracy 92.3125%
Epoch 371, Learning Step 64800: Cost = 0.5637, Validation Accuracy 92.1607%
Epoch 371, Learning Step 64900: Cost = 0.5921, Validation Accuracy 92.3214%
Epoch 372, Learning Step 65000: Cost = 0.6456, Validation Accuracy 92.1607%
Epoch 372, Learning Step 65100: Cost = 0.5532, Validation Accuracy 92.2321%
Epoch 373, Learning Step 65200: Cost = 0.6505, Validation Accuracy 92.3036%
Epoch 374, Learning Step 65300: Cost = 0.7211, Validation Accuracy 92.2500%
Epoch 374, Learning Step 65400: Cost = 0.6425, Validation Accuracy 92.3214%
Epoch 375, Learning Step 65500: Cost = 0.5637, Validation Accuracy 92.1964%
Epoch 375, Learning Step 65600: Cost = 0.5918, Validation Accuracy 92.3214%
Epoch 376, Learning Step 65700: Cost = 0.6455, Validation Accuracy 92.1429%
Epoch 376, Learning Step 65800: Cost = 0.5530, Validation Accuracy 92.2411%
Epoch 377, Learning Step 65900: Cost = 0.6503, Validation Accuracy 92.3214%
Epoch 378, Learning Step 66000: Cost = 0.7206, Validation Accuracy 92.2500%
Epoch 378, Learning Step 66100: Cost = 0.6421, Validation Accuracy 92.3214%
Epoch 379, Learning Step 66200: Cost = 0.5633, Validation Accuracy 92.1964%
Epoch 379, Learning Step 66300: Cost = 0.5919, Validation Accuracy 92.3304%
Epoch 380, Learning Step 66400: Cost = 0.6452, Validation Accuracy 92.1339%
Epoch 380, Learning Step 66500: Cost = 0.5526, Validation Accuracy 92.2232%
Epoch 381, Learning Step 66600: Cost = 0.6501, Validation Accuracy 92.3304%
Epoch 382, Learning Step 66700: Cost = 0.7203, Validation Accuracy 92.2500%
Epoch 382, Learning Step 66800: Cost = 0.6418, Validation Accuracy 92.3036%
Epoch 383, Learning Step 66900: Cost = 0.5631, Validation Accuracy 92.1964%
Epoch 383, Learning Step 67000: Cost = 0.5915, Validation Accuracy 92.3125%
Epoch 384, Learning Step 67100: Cost = 0.6451, Validation Accuracy 92.1518%
Epoch 384, Learning Step 67200: Cost = 0.5523, Validation Accuracy 92.2054%
Epoch 385, Learning Step 67300: Cost = 0.6498, Validation Accuracy 92.3393%
Epoch 386, Learning Step 67400: Cost = 0.7200, Validation Accuracy 92.2679%
Epoch 386, Learning Step 67500: Cost = 0.6413, Validation Accuracy 92.3125%
Epoch 387, Learning Step 67600: Cost = 0.5626, Validation Accuracy 92.1875%
Epoch 387, Learning Step 67700: Cost = 0.5915, Validation Accuracy 92.2946%
Epoch 388, Learning Step 67800: Cost = 0.6450, Validation Accuracy 92.1696%
Epoch 388, Learning Step 67900: Cost = 0.5522, Validation Accuracy 92.2411%
Epoch 389, Learning Step 68000: Cost = 0.6496, Validation Accuracy 92.3482%
Epoch 390, Learning Step 68100: Cost = 0.7195, Validation Accuracy 92.2500%
Epoch 390, Learning Step 68200: Cost = 0.6410, Validation Accuracy 92.3482%
Epoch 391, Learning Step 68300: Cost = 0.5623, Validation Accuracy 92.2054%
Epoch 391, Learning Step 68400: Cost = 0.5913, Validation Accuracy 92.2946%
Epoch 392, Learning Step 68500: Cost = 0.6447, Validation Accuracy 92.1786%
Epoch 392, Learning Step 68600: Cost = 0.5518, Validation Accuracy 92.2589%
Epoch 393, Learning Step 68700: Cost = 0.6494, Validation Accuracy 92.3304%

Epoch 394, Learning Step 68800: Cost = 0.7189, Validation Accuracy 92.2321%
Epoch 394, Learning Step 68900: Cost = 0.6408, Validation Accuracy 92.3571%
Epoch 395, Learning Step 69000: Cost = 0.5620, Validation Accuracy 92.1696%
Epoch 395, Learning Step 69100: Cost = 0.5913, Validation Accuracy 92.3036%
Epoch 396, Learning Step 69200: Cost = 0.6445, Validation Accuracy 92.1696%
Epoch 396, Learning Step 69300: Cost = 0.5516, Validation Accuracy 92.2768%
Epoch 397, Learning Step 69400: Cost = 0.6492, Validation Accuracy 92.3214%
Epoch 398, Learning Step 69500: Cost = 0.7182, Validation Accuracy 92.2411%
Epoch 398, Learning Step 69600: Cost = 0.6405, Validation Accuracy 92.3393%
Epoch 399, Learning Step 69700: Cost = 0.5617, Validation Accuracy 92.1696%
Epoch 399, Learning Step 69800: Cost = 0.5913, Validation Accuracy 92.3125%
Epoch 400, Learning Step 69900: Cost = 0.6443, Validation Accuracy 92.2143%
Epoch 400, Learning Step 70000: Cost = 0.5512, Validation Accuracy 92.2768%
Epoch 401, Learning Step 70100: Cost = 0.6492, Validation Accuracy 92.3036%
Epoch 402, Learning Step 70200: Cost = 0.7177, Validation Accuracy 92.2589%
Epoch 402, Learning Step 70300: Cost = 0.6403, Validation Accuracy 92.3393%
Epoch 403, Learning Step 70400: Cost = 0.5616, Validation Accuracy 92.1875%
Epoch 403, Learning Step 70500: Cost = 0.5912, Validation Accuracy 92.3036%
Epoch 404, Learning Step 70600: Cost = 0.6442, Validation Accuracy 92.2232%
Epoch 404, Learning Step 70700: Cost = 0.5510, Validation Accuracy 92.2946%
Epoch 405, Learning Step 70800: Cost = 0.6490, Validation Accuracy 92.3125%
Epoch 406, Learning Step 70900: Cost = 0.7173, Validation Accuracy 92.2411%
Epoch 406, Learning Step 71000: Cost = 0.6401, Validation Accuracy 92.3393%
Epoch 407, Learning Step 71100: Cost = 0.5613, Validation Accuracy 92.1875%
Epoch 407, Learning Step 71200: Cost = 0.5914, Validation Accuracy 92.3036%
Epoch 408, Learning Step 71300: Cost = 0.6440, Validation Accuracy 92.2589%
Epoch 408, Learning Step 71400: Cost = 0.5507, Validation Accuracy 92.3214%
Epoch 409, Learning Step 71500: Cost = 0.6487, Validation Accuracy 92.2946%
Epoch 410, Learning Step 71600: Cost = 0.7170, Validation Accuracy 92.2589%
Epoch 410, Learning Step 71700: Cost = 0.6399, Validation Accuracy 92.3125%
Epoch 411, Learning Step 71800: Cost = 0.5611, Validation Accuracy 92.1875%
Epoch 411, Learning Step 71900: Cost = 0.5915, Validation Accuracy 92.3125%
Epoch 412, Learning Step 72000: Cost = 0.6438, Validation Accuracy 92.2232%
Epoch 412, Learning Step 72100: Cost = 0.5503, Validation Accuracy 92.3304%
Epoch 413, Learning Step 72200: Cost = 0.6485, Validation Accuracy 92.3036%
Epoch 414, Learning Step 72300: Cost = 0.7166, Validation Accuracy 92.2232%
Epoch 414, Learning Step 72400: Cost = 0.6397, Validation Accuracy 92.3304%
Epoch 415, Learning Step 72500: Cost = 0.5609, Validation Accuracy 92.1786%
Epoch 415, Learning Step 72600: Cost = 0.5914, Validation Accuracy 92.3214%
Epoch 416, Learning Step 72700: Cost = 0.6434, Validation Accuracy 92.2411%
Epoch 416, Learning Step 72800: Cost = 0.5500, Validation Accuracy 92.2857%

Stopping training - No improvement for 100 steps
Total epochs completed: 416 from 100000
Total batches completed: 72974 from 17500000
Best validation accuracy: 92.3571%

Final Report:
Training Time: 170.19 seconds (2.84 minutes)
Final Training Accuracy: 92.76%
Final Validation Accuracy: 92.29%
Final Test Accuracy: 91.92%

Model with L2 norm with batchnorm - **נספח ד'**

Training with batch size: 256
Batches per epoch: 175
Training samples: 44800
Validation samples: 11200
Epoch 1, Learning Step 100: Cost = 2.2662, Validation Accuracy 24.5179%
Epoch 2, Learning Step 200: Cost = 2.0444, Validation Accuracy 30.1250%
Epoch 2, Learning Step 300: Cost = 1.9136, Validation Accuracy 32.8661%

Epoch 3, Learning Step 400: Cost = 1.9076, Validation Accuracy 36.0804%
Epoch 3, Learning Step 500: Cost = 1.7942, Validation Accuracy 38.3304%
Epoch 4, Learning Step 600: Cost = 1.7202, Validation Accuracy 40.0268%
Epoch 4, Learning Step 700: Cost = 1.5773, Validation Accuracy 42.9286%
Epoch 5, Learning Step 800: Cost = 1.4875, Validation Accuracy 45.4018%
Epoch 6, Learning Step 900: Cost = 1.5100, Validation Accuracy 48.1429%
Epoch 6, Learning Step 1000: Cost = 1.4430, Validation Accuracy 50.4018%
Epoch 7, Learning Step 1100: Cost = 1.4748, Validation Accuracy 52.1786%
Epoch 7, Learning Step 1200: Cost = 1.3931, Validation Accuracy 53.7946%
Epoch 8, Learning Step 1300: Cost = 1.4330, Validation Accuracy 54.7768%
Epoch 8, Learning Step 1400: Cost = 1.2899, Validation Accuracy 56.0446%
Epoch 9, Learning Step 1500: Cost = 1.2357, Validation Accuracy 57.2768%
Epoch 10, Learning Step 1600: Cost = 1.2894, Validation Accuracy 57.9821%
Epoch 10, Learning Step 1700: Cost = 1.2381, Validation Accuracy 58.7946%
Epoch 11, Learning Step 1800: Cost = 1.2621, Validation Accuracy 59.7500%
Epoch 11, Learning Step 1900: Cost = 1.1612, Validation Accuracy 60.7589%
Epoch 12, Learning Step 2000: Cost = 1.2345, Validation Accuracy 61.6161%
Epoch 12, Learning Step 2100: Cost = 1.1063, Validation Accuracy 62.8393%
Epoch 13, Learning Step 2200: Cost = 1.0557, Validation Accuracy 63.3393%
Epoch 14, Learning Step 2300: Cost = 1.0942, Validation Accuracy 63.7232%
Epoch 14, Learning Step 2400: Cost = 1.0859, Validation Accuracy 64.8125%
Epoch 15, Learning Step 2500: Cost = 1.0702, Validation Accuracy 65.7411%
Epoch 15, Learning Step 2600: Cost = 0.9904, Validation Accuracy 66.0714%
Epoch 16, Learning Step 2700: Cost = 1.0698, Validation Accuracy 67.1161%
Epoch 16, Learning Step 2800: Cost = 0.9641, Validation Accuracy 67.9821%
Epoch 17, Learning Step 2900: Cost = 0.9231, Validation Accuracy 68.4554%
Epoch 18, Learning Step 3000: Cost = 0.9347, Validation Accuracy 68.9911%
Epoch 18, Learning Step 3100: Cost = 0.9601, Validation Accuracy 69.7857%
Epoch 19, Learning Step 3200: Cost = 0.9274, Validation Accuracy 70.6607%
Epoch 19, Learning Step 3300: Cost = 0.8899, Validation Accuracy 70.9196%
Epoch 20, Learning Step 3400: Cost = 0.9406, Validation Accuracy 71.5804%
Epoch 20, Learning Step 3500: Cost = 0.8435, Validation Accuracy 72.4732%
Epoch 21, Learning Step 3600: Cost = 0.8287, Validation Accuracy 72.8036%
Epoch 22, Learning Step 3700: Cost = 0.8455, Validation Accuracy 73.0982%
Epoch 22, Learning Step 3800: Cost = 0.8430, Validation Accuracy 73.8482%
Epoch 23, Learning Step 3900: Cost = 0.8256, Validation Accuracy 74.5536%
Epoch 23, Learning Step 4000: Cost = 0.7993, Validation Accuracy 74.8929%
Epoch 24, Learning Step 4100: Cost = 0.8381, Validation Accuracy 75.4286%
Epoch 24, Learning Step 4200: Cost = 0.7687, Validation Accuracy 75.6518%
Epoch 25, Learning Step 4300: Cost = 0.7648, Validation Accuracy 76.2679%
Epoch 26, Learning Step 4400: Cost = 0.7698, Validation Accuracy 76.2679%
Epoch 26, Learning Step 4500: Cost = 0.7508, Validation Accuracy 76.7768%
Epoch 27, Learning Step 4600: Cost = 0.7569, Validation Accuracy 77.1339%
Epoch 27, Learning Step 4700: Cost = 0.7397, Validation Accuracy 77.9643%
Epoch 28, Learning Step 4800: Cost = 0.7713, Validation Accuracy 78.1607%
Epoch 28, Learning Step 4900: Cost = 0.7126, Validation Accuracy 78.3571%
Epoch 29, Learning Step 5000: Cost = 0.7191, Validation Accuracy 78.7679%
Epoch 30, Learning Step 5100: Cost = 0.7258, Validation Accuracy 78.9375%
Epoch 30, Learning Step 5200: Cost = 0.6929, Validation Accuracy 79.4732%
Epoch 31, Learning Step 5300: Cost = 0.7333, Validation Accuracy 79.3750%
Epoch 31, Learning Step 5400: Cost = 0.6970, Validation Accuracy 80.4643%
Epoch 32, Learning Step 5500: Cost = 0.7216, Validation Accuracy 80.4464%
Epoch 32, Learning Step 5600: Cost = 0.6707, Validation Accuracy 80.7321%
Epoch 33, Learning Step 5700: Cost = 0.6759, Validation Accuracy 80.6607%
Epoch 34, Learning Step 5800: Cost = 0.6787, Validation Accuracy 81.0893%
Epoch 34, Learning Step 5900: Cost = 0.6345, Validation Accuracy 81.4286%
Epoch 35, Learning Step 6000: Cost = 0.7084, Validation Accuracy 81.6696%
Epoch 35, Learning Step 6100: Cost = 0.6535, Validation Accuracy 82.7768%
Epoch 36, Learning Step 6200: Cost = 0.6759, Validation Accuracy 82.7054%
Epoch 36, Learning Step 6300: Cost = 0.6286, Validation Accuracy 82.5893%
Epoch 37, Learning Step 6400: Cost = 0.6362, Validation Accuracy 82.9643%
Epoch 38, Learning Step 6500: Cost = 0.6382, Validation Accuracy 83.3304%
Epoch 38, Learning Step 6600: Cost = 0.5993, Validation Accuracy 83.5446%
Epoch 39, Learning Step 6700: Cost = 0.6728, Validation Accuracy 84.1518%

Epoch 39, Learning Step 6800: Cost = 0.6159, Validation Accuracy 84.5446%
Epoch 40, Learning Step 6900: Cost = 0.6427, Validation Accuracy 84.7143%
Epoch 40, Learning Step 7000: Cost = 0.5900, Validation Accuracy 84.4375%
Epoch 41, Learning Step 7100: Cost = 0.6160, Validation Accuracy 84.7857%
Epoch 42, Learning Step 7200: Cost = 0.5788, Validation Accuracy 84.8750%
Epoch 42, Learning Step 7300: Cost = 0.5584, Validation Accuracy 85.1786%
Epoch 43, Learning Step 7400: Cost = 0.6297, Validation Accuracy 85.5357%
Epoch 43, Learning Step 7500: Cost = 0.5865, Validation Accuracy 86.0089%
Epoch 44, Learning Step 7600: Cost = 0.5799, Validation Accuracy 86.3839%
Epoch 44, Learning Step 7700: Cost = 0.5431, Validation Accuracy 85.7411%
Epoch 45, Learning Step 7800: Cost = 0.5836, Validation Accuracy 86.2946%
Epoch 46, Learning Step 7900: Cost = 0.5242, Validation Accuracy 85.8036%
Epoch 46, Learning Step 8000: Cost = 0.5177, Validation Accuracy 86.3661%
Epoch 47, Learning Step 8100: Cost = 0.5914, Validation Accuracy 86.8571%
Epoch 47, Learning Step 8200: Cost = 0.5658, Validation Accuracy 86.9286%
Epoch 48, Learning Step 8300: Cost = 0.5421, Validation Accuracy 87.5089%
Epoch 48, Learning Step 8400: Cost = 0.5088, Validation Accuracy 87.2768%
Epoch 49, Learning Step 8500: Cost = 0.5436, Validation Accuracy 87.1518%
Epoch 50, Learning Step 8600: Cost = 0.4835, Validation Accuracy 86.9464%
Epoch 50, Learning Step 8700: Cost = 0.4778, Validation Accuracy 87.4018%
Epoch 51, Learning Step 8800: Cost = 0.5648, Validation Accuracy 87.5446%
Epoch 51, Learning Step 8900: Cost = 0.5442, Validation Accuracy 87.8036%
Epoch 52, Learning Step 9000: Cost = 0.5290, Validation Accuracy 88.0000%
Epoch 52, Learning Step 9100: Cost = 0.4832, Validation Accuracy 88.2321%
Epoch 53, Learning Step 9200: Cost = 0.5178, Validation Accuracy 87.7946%
Epoch 54, Learning Step 9300: Cost = 0.4398, Validation Accuracy 87.7768%
Epoch 54, Learning Step 9400: Cost = 0.4509, Validation Accuracy 88.1786%
Epoch 55, Learning Step 9500: Cost = 0.5361, Validation Accuracy 88.1518%
Epoch 55, Learning Step 9600: Cost = 0.5227, Validation Accuracy 88.4464%
Epoch 56, Learning Step 9700: Cost = 0.5135, Validation Accuracy 88.5982%
Epoch 56, Learning Step 9800: Cost = 0.4648, Validation Accuracy 88.6607%
Epoch 57, Learning Step 9900: Cost = 0.5115, Validation Accuracy 88.2589%
Epoch 58, Learning Step 10000: Cost = 0.4199, Validation Accuracy 88.4643%
Epoch 58, Learning Step 10100: Cost = 0.4323, Validation Accuracy 88.5357%
Epoch 59, Learning Step 10200: Cost = 0.5160, Validation Accuracy 88.6071%
Epoch 59, Learning Step 10300: Cost = 0.5083, Validation Accuracy 88.8839%
Epoch 60, Learning Step 10400: Cost = 0.5055, Validation Accuracy 88.9018%
Epoch 60, Learning Step 10500: Cost = 0.4528, Validation Accuracy 88.9196%
Epoch 61, Learning Step 10600: Cost = 0.4952, Validation Accuracy 88.7589%
Epoch 62, Learning Step 10700: Cost = 0.4081, Validation Accuracy 88.7946%
Epoch 62, Learning Step 10800: Cost = 0.4167, Validation Accuracy 88.7589%
Epoch 63, Learning Step 10900: Cost = 0.4934, Validation Accuracy 88.7679%
Epoch 63, Learning Step 11000: Cost = 0.4954, Validation Accuracy 89.1071%
Epoch 64, Learning Step 11100: Cost = 0.4903, Validation Accuracy 89.3482%
Epoch 64, Learning Step 11200: Cost = 0.4398, Validation Accuracy 89.0714%
Epoch 65, Learning Step 11300: Cost = 0.4839, Validation Accuracy 89.0089%
Epoch 66, Learning Step 11400: Cost = 0.4007, Validation Accuracy 89.0982%
Epoch 66, Learning Step 11500: Cost = 0.4037, Validation Accuracy 88.8929%
Epoch 67, Learning Step 11600: Cost = 0.4819, Validation Accuracy 89.0268%
Epoch 67, Learning Step 11700: Cost = 0.4848, Validation Accuracy 89.3304%
Epoch 68, Learning Step 11800: Cost = 0.4817, Validation Accuracy 89.3482%
Epoch 68, Learning Step 11900: Cost = 0.4272, Validation Accuracy 89.1875%
Epoch 69, Learning Step 12000: Cost = 0.4753, Validation Accuracy 89.2500%
Epoch 70, Learning Step 12100: Cost = 0.3947, Validation Accuracy 89.1786%
Epoch 70, Learning Step 12200: Cost = 0.3920, Validation Accuracy 89.1518%
Epoch 71, Learning Step 12300: Cost = 0.4705, Validation Accuracy 89.2232%
Epoch 71, Learning Step 12400: Cost = 0.4801, Validation Accuracy 89.5893%
Epoch 72, Learning Step 12500: Cost = 0.4727, Validation Accuracy 89.5893%
Epoch 72, Learning Step 12600: Cost = 0.4270, Validation Accuracy 89.1696%
Epoch 73, Learning Step 12700: Cost = 0.4740, Validation Accuracy 89.3929%
Epoch 74, Learning Step 12800: Cost = 0.3874, Validation Accuracy 89.4464%
Epoch 74, Learning Step 12900: Cost = 0.3857, Validation Accuracy 89.2857%
Epoch 75, Learning Step 13000: Cost = 0.4712, Validation Accuracy 89.5000%
Epoch 75, Learning Step 13100: Cost = 0.4764, Validation Accuracy 89.6071%

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Epoch 76, Learning Step 13200: Cost = 0.4641, Validation Accuracy 89.6339%
Epoch 76, Learning Step 13300: Cost = 0.4314, Validation Accuracy 89.2768%
Epoch 77, Learning Step 13400: Cost = 0.4751, Validation Accuracy 89.4732%
Epoch 78, Learning Step 13500: Cost = 0.3846, Validation Accuracy 89.5089%
Epoch 78, Learning Step 13600: Cost = 0.3882, Validation Accuracy 89.1339%
Epoch 79, Learning Step 13700: Cost = 0.4803, Validation Accuracy 89.3125%
Epoch 79, Learning Step 13800: Cost = 0.4783, Validation Accuracy 89.7768%
Epoch 80, Learning Step 13900: Cost = 0.4626, Validation Accuracy 89.7768%
Epoch 80, Learning Step 14000: Cost = 0.4062, Validation Accuracy 89.4911%
Epoch 81, Learning Step 14100: Cost = 0.4811, Validation Accuracy 89.6161%
Epoch 82, Learning Step 14200: Cost = 0.3837, Validation Accuracy 89.5536%
Epoch 82, Learning Step 14300: Cost = 0.3935, Validation Accuracy 89.2054%
Epoch 83, Learning Step 14400: Cost = 0.4908, Validation Accuracy 89.5000%
Epoch 83, Learning Step 14500: Cost = 0.4771, Validation Accuracy 89.6696%
Epoch 84, Learning Step 14600: Cost = 0.4592, Validation Accuracy 90.0000%
Epoch 84, Learning Step 14700: Cost = 0.4099, Validation Accuracy 89.5179%
Epoch 85, Learning Step 14800: Cost = 0.4778, Validation Accuracy 89.7679%
Epoch 86, Learning Step 14900: Cost = 0.3903, Validation Accuracy 89.6786%
Epoch 86, Learning Step 15000: Cost = 0.3973, Validation Accuracy 89.4018%
Epoch 87, Learning Step 15100: Cost = 0.4830, Validation Accuracy 89.5893%
Epoch 87, Learning Step 15200: Cost = 0.4744, Validation Accuracy 90.0000%
Epoch 88, Learning Step 15300: Cost = 0.4629, Validation Accuracy 90.3304%
Epoch 88, Learning Step 15400: Cost = 0.4068, Validation Accuracy 90.0000%
Epoch 89, Learning Step 15500: Cost = 0.4648, Validation Accuracy 90.1786%
Epoch 90, Learning Step 15600: Cost = 0.3945, Validation Accuracy 89.8839%
Epoch 90, Learning Step 15700: Cost = 0.3889, Validation Accuracy 89.8125%
Epoch 91, Learning Step 15800: Cost = 0.4738, Validation Accuracy 90.0357%
Epoch 91, Learning Step 15900: Cost = 0.4547, Validation Accuracy 90.4286%
Epoch 92, Learning Step 16000: Cost = 0.4378, Validation Accuracy 90.5446%
Epoch 92, Learning Step 16100: Cost = 0.4167, Validation Accuracy 90.2321%
Epoch 93, Learning Step 16200: Cost = 0.4700, Validation Accuracy 90.2857%
Epoch 94, Learning Step 16300: Cost = 0.3944, Validation Accuracy 90.1161%
Epoch 94, Learning Step 16400: Cost = 0.3953, Validation Accuracy 89.8214%
Epoch 95, Learning Step 16500: Cost = 0.4862, Validation Accuracy 90.3482%
Epoch 95, Learning Step 16600: Cost = 0.4520, Validation Accuracy 90.5357%
Epoch 96, Learning Step 16700: Cost = 0.4349, Validation Accuracy 90.7143%
Epoch 96, Learning Step 16800: Cost = 0.4037, Validation Accuracy 90.5357%
Epoch 97, Learning Step 16900: Cost = 0.4613, Validation Accuracy 90.6696%
Epoch 98, Learning Step 17000: Cost = 0.3814, Validation Accuracy 90.3571%
Epoch 98, Learning Step 17100: Cost = 0.4021, Validation Accuracy 90.2857%
Epoch 99, Learning Step 17200: Cost = 0.4860, Validation Accuracy 90.6250%
Epoch 99, Learning Step 17300: Cost = 0.4483, Validation Accuracy 90.9464%
Epoch 100, Learning Step 17400: Cost = 0.4365, Validation Accuracy 90.6875%
Epoch 100, Learning Step 17500: Cost = 0.3907, Validation Accuracy 90.9643%
Epoch 101, Learning Step 17600: Cost = 0.4565, Validation Accuracy 90.9732%
Epoch 102, Learning Step 17700: Cost = 0.3839, Validation Accuracy 90.6250%
Epoch 102, Learning Step 17800: Cost = 0.4103, Validation Accuracy 90.6339%
Epoch 103, Learning Step 17900: Cost = 0.4842, Validation Accuracy 90.9464%
Epoch 103, Learning Step 18000: Cost = 0.4534, Validation Accuracy 91.2500%
Epoch 104, Learning Step 18100: Cost = 0.4391, Validation Accuracy 91.1607%
Epoch 104, Learning Step 18200: Cost = 0.3894, Validation Accuracy 91.1429%
Epoch 105, Learning Step 18300: Cost = 0.4441, Validation Accuracy 91.3036%
Epoch 106, Learning Step 18400: Cost = 0.3837, Validation Accuracy 91.0893%
Epoch 106, Learning Step 18500: Cost = 0.4158, Validation Accuracy 90.9911%
Epoch 107, Learning Step 18600: Cost = 0.4838, Validation Accuracy 91.2054%
Epoch 107, Learning Step 18700: Cost = 0.4547, Validation Accuracy 91.6607%
Epoch 108, Learning Step 18800: Cost = 0.4387, Validation Accuracy 91.5179%
Epoch 108, Learning Step 18900: Cost = 0.3964, Validation Accuracy 91.3571%
Epoch 109, Learning Step 19000: Cost = 0.4523, Validation Accuracy 91.5804%
Epoch 110, Learning Step 19100: Cost = 0.3858, Validation Accuracy 91.3571%
Epoch 110, Learning Step 19200: Cost = 0.4265, Validation Accuracy 91.2589%
Epoch 111, Learning Step 19300: Cost = 0.4880, Validation Accuracy 91.4464%
Epoch 111, Learning Step 19400: Cost = 0.4590, Validation Accuracy 91.8036%
Epoch 112, Learning Step 19500: Cost = 0.4402, Validation Accuracy 91.5804%
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Epoch 112, Learning Step 19600: Cost = 0.4042, Validation Accuracy 91.6161%
Epoch 113, Learning Step 19700: Cost = 0.4640, Validation Accuracy 91.8304%
Epoch 114, Learning Step 19800: Cost = 0.3968, Validation Accuracy 91.6786%
Epoch 114, Learning Step 19900: Cost = 0.4341, Validation Accuracy 91.2857%
Epoch 115, Learning Step 20000: Cost = 0.4961, Validation Accuracy 91.6429%
Epoch 115, Learning Step 20100: Cost = 0.4697, Validation Accuracy 91.8482%
Epoch 116, Learning Step 20200: Cost = 0.4498, Validation Accuracy 91.7143%
Epoch 116, Learning Step 20300: Cost = 0.4118, Validation Accuracy 91.7054%
Epoch 117, Learning Step 20400: Cost = 0.4673, Validation Accuracy 91.7411%
Epoch 118, Learning Step 20500: Cost = 0.4067, Validation Accuracy 91.7857%
Epoch 118, Learning Step 20600: Cost = 0.4427, Validation Accuracy 91.4643%
Epoch 119, Learning Step 20700: Cost = 0.5019, Validation Accuracy 91.7589%
Epoch 119, Learning Step 20800: Cost = 0.4814, Validation Accuracy 91.9196%
Epoch 120, Learning Step 20900: Cost = 0.4566, Validation Accuracy 91.7232%
Epoch 120, Learning Step 21000: Cost = 0.4267, Validation Accuracy 91.6964%
Epoch 121, Learning Step 21100: Cost = 0.4743, Validation Accuracy 91.8571%
Epoch 122, Learning Step 21200: Cost = 0.4210, Validation Accuracy 91.8304%
Epoch 122, Learning Step 21300: Cost = 0.4540, Validation Accuracy 91.5982%
Epoch 123, Learning Step 21400: Cost = 0.5089, Validation Accuracy 91.7589%
Epoch 123, Learning Step 21500: Cost = 0.4932, Validation Accuracy 92.0000%
Epoch 124, Learning Step 21600: Cost = 0.4661, Validation Accuracy 91.7946%
Epoch 124, Learning Step 21700: Cost = 0.4399, Validation Accuracy 91.7232%
Epoch 125, Learning Step 21800: Cost = 0.4867, Validation Accuracy 91.8750%
Epoch 126, Learning Step 21900: Cost = 0.4388, Validation Accuracy 91.9286%
Epoch 126, Learning Step 22000: Cost = 0.4676, Validation Accuracy 91.5714%
Epoch 127, Learning Step 22100: Cost = 0.5151, Validation Accuracy 91.8661%
Epoch 127, Learning Step 22200: Cost = 0.5069, Validation Accuracy 92.0536%
Epoch 128, Learning Step 22300: Cost = 0.4803, Validation Accuracy 91.9196%
Epoch 128, Learning Step 22400: Cost = 0.4540, Validation Accuracy 91.9643%
Epoch 129, Learning Step 22500: Cost = 0.5026, Validation Accuracy 92.0357%
Epoch 130, Learning Step 22600: Cost = 0.4570, Validation Accuracy 91.9821%
Epoch 130, Learning Step 22700: Cost = 0.4818, Validation Accuracy 91.7589%
Epoch 131, Learning Step 22800: Cost = 0.5304, Validation Accuracy 91.8839%
Epoch 131, Learning Step 22900: Cost = 0.5220, Validation Accuracy 92.0536%
Epoch 132, Learning Step 23000: Cost = 0.4966, Validation Accuracy 91.9821%
Epoch 132, Learning Step 23100: Cost = 0.4725, Validation Accuracy 91.9911%
Epoch 133, Learning Step 23200: Cost = 0.5183, Validation Accuracy 92.0446%
Epoch 134, Learning Step 23300: Cost = 0.4653, Validation Accuracy 92.0804%
Epoch 134, Learning Step 23400: Cost = 0.5011, Validation Accuracy 91.8661%
Epoch 135, Learning Step 23500: Cost = 0.5424, Validation Accuracy 91.9107%
Epoch 135, Learning Step 23600: Cost = 0.5378, Validation Accuracy 92.0446%
Epoch 136, Learning Step 23700: Cost = 0.5158, Validation Accuracy 91.9464%
Epoch 136, Learning Step 23800: Cost = 0.4910, Validation Accuracy 92.0625%
Epoch 137, Learning Step 23900: Cost = 0.5376, Validation Accuracy 92.1250%
Epoch 138, Learning Step 24000: Cost = 0.4919, Validation Accuracy 92.1696%
Epoch 138, Learning Step 24100: Cost = 0.5206, Validation Accuracy 91.9196%
Epoch 139, Learning Step 24200: Cost = 0.5595, Validation Accuracy 91.9732%
Epoch 139, Learning Step 24300: Cost = 0.5560, Validation Accuracy 92.0893%
Epoch 140, Learning Step 24400: Cost = 0.5405, Validation Accuracy 91.9107%
Epoch 140, Learning Step 24500: Cost = 0.5058, Validation Accuracy 92.0446%
Epoch 141, Learning Step 24600: Cost = 0.5586, Validation Accuracy 92.1250%
Epoch 142, Learning Step 24700: Cost = 0.5197, Validation Accuracy 92.0446%
Epoch 142, Learning Step 24800: Cost = 0.5452, Validation Accuracy 91.9554%
Epoch 143, Learning Step 24900: Cost = 0.5766, Validation Accuracy 92.0714%
Epoch 143, Learning Step 25000: Cost = 0.5751, Validation Accuracy 92.1161%
Epoch 144, Learning Step 25100: Cost = 0.5592, Validation Accuracy 92.0893%
Epoch 144, Learning Step 25200: Cost = 0.5262, Validation Accuracy 92.0982%
Epoch 145, Learning Step 25300: Cost = 0.5753, Validation Accuracy 92.2946%
Epoch 146, Learning Step 25400: Cost = 0.5456, Validation Accuracy 92.0625%
Epoch 146, Learning Step 25500: Cost = 0.5640, Validation Accuracy 92.0536%
Epoch 147, Learning Step 25600: Cost = 0.5968, Validation Accuracy 92.1429%
Epoch 147, Learning Step 25700: Cost = 0.5992, Validation Accuracy 92.1607%
Epoch 148, Learning Step 25800: Cost = 0.5803, Validation Accuracy 92.1250%
Epoch 148, Learning Step 25900: Cost = 0.5511, Validation Accuracy 92.0804%
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Epoch 149, Learning Step 26000: Cost = 0.5978, Validation Accuracy 92.3214%
Epoch 150, Learning Step 26100: Cost = 0.5699, Validation Accuracy 92.1518%
Epoch 150, Learning Step 26200: Cost = 0.5873, Validation Accuracy 92.0446%
Epoch 151, Learning Step 26300: Cost = 0.6180, Validation Accuracy 92.1607%
Epoch 151, Learning Step 26400: Cost = 0.6254, Validation Accuracy 92.1607%
Epoch 152, Learning Step 26500: Cost = 0.6034, Validation Accuracy 92.2321%
Epoch 152, Learning Step 26600: Cost = 0.5759, Validation Accuracy 92.1607%
Epoch 153, Learning Step 26700: Cost = 0.6223, Validation Accuracy 92.3036%
Epoch 154, Learning Step 26800: Cost = 0.5967, Validation Accuracy 92.0804%
Epoch 154, Learning Step 26900: Cost = 0.6113, Validation Accuracy 92.0625%
Epoch 155, Learning Step 27000: Cost = 0.6405, Validation Accuracy 92.1786%
Epoch 155, Learning Step 27100: Cost = 0.6507, Validation Accuracy 92.2054%
Epoch 156, Learning Step 27200: Cost = 0.6289, Validation Accuracy 92.2232%
Epoch 156, Learning Step 27300: Cost = 0.6006, Validation Accuracy 92.2054%
Epoch 157, Learning Step 27400: Cost = 0.6494, Validation Accuracy 92.2857%
Epoch 158, Learning Step 27500: Cost = 0.6229, Validation Accuracy 92.2232%
Epoch 158, Learning Step 27600: Cost = 0.6359, Validation Accuracy 92.1250%
Epoch 159, Learning Step 27700: Cost = 0.6656, Validation Accuracy 92.2411%
Epoch 159, Learning Step 27800: Cost = 0.6779, Validation Accuracy 92.2589%
Epoch 160, Learning Step 27900: Cost = 0.6553, Validation Accuracy 92.2857%
Epoch 160, Learning Step 28000: Cost = 0.6274, Validation Accuracy 92.2500%
Epoch 161, Learning Step 28100: Cost = 0.6787, Validation Accuracy 92.3482%
Epoch 162, Learning Step 28200: Cost = 0.6513, Validation Accuracy 92.2768%
Epoch 162, Learning Step 28300: Cost = 0.6616, Validation Accuracy 92.1875%
Epoch 163, Learning Step 28400: Cost = 0.6941, Validation Accuracy 92.3393%
Epoch 163, Learning Step 28500: Cost = 0.7049, Validation Accuracy 92.3125%
Epoch 164, Learning Step 28600: Cost = 0.6844, Validation Accuracy 92.3571%
Epoch 164, Learning Step 28700: Cost = 0.6531, Validation Accuracy 92.2232%
Epoch 165, Learning Step 28800: Cost = 0.7099, Validation Accuracy 92.3214%
Epoch 166, Learning Step 28900: Cost = 0.6825, Validation Accuracy 92.3482%
Epoch 166, Learning Step 29000: Cost = 0.6898, Validation Accuracy 92.1696%
Epoch 167, Learning Step 29100: Cost = 0.7210, Validation Accuracy 92.2857%
Epoch 167, Learning Step 29200: Cost = 0.7326, Validation Accuracy 92.3661%
Epoch 168, Learning Step 29300: Cost = 0.7160, Validation Accuracy 92.3482%
Epoch 168, Learning Step 29400: Cost = 0.6841, Validation Accuracy 92.1339%
Epoch 169, Learning Step 29500: Cost = 0.7417, Validation Accuracy 92.3750%
Epoch 170, Learning Step 29600: Cost = 0.7128, Validation Accuracy 92.4018%
Epoch 170, Learning Step 29700: Cost = 0.7182, Validation Accuracy 92.0804%
Epoch 171, Learning Step 29800: Cost = 0.7497, Validation Accuracy 92.2946%
Epoch 171, Learning Step 29900: Cost = 0.7668, Validation Accuracy 92.3125%
Epoch 172, Learning Step 30000: Cost = 0.7467, Validation Accuracy 92.3304%
Epoch 172, Learning Step 30100: Cost = 0.7155, Validation Accuracy 92.1964%
Epoch 173, Learning Step 30200: Cost = 0.7740, Validation Accuracy 92.4107%
Epoch 174, Learning Step 30300: Cost = 0.7460, Validation Accuracy 92.4375%
Epoch 174, Learning Step 30400: Cost = 0.7487, Validation Accuracy 92.2232%
Epoch 175, Learning Step 30500: Cost = 0.7813, Validation Accuracy 92.2857%
Epoch 175, Learning Step 30600: Cost = 0.7982, Validation Accuracy 92.2679%
Epoch 176, Learning Step 30700: Cost = 0.7798, Validation Accuracy 92.3839%
Epoch 176, Learning Step 30800: Cost = 0.7488, Validation Accuracy 92.2321%
Epoch 177, Learning Step 30900: Cost = 0.8087, Validation Accuracy 92.3571%
Epoch 178, Learning Step 31000: Cost = 0.7798, Validation Accuracy 92.4464%
Epoch 178, Learning Step 31100: Cost = 0.7805, Validation Accuracy 92.3125%
Epoch 179, Learning Step 31200: Cost = 0.8157, Validation Accuracy 92.3393%
Epoch 179, Learning Step 31300: Cost = 0.8305, Validation Accuracy 92.3661%
Epoch 180, Learning Step 31400: Cost = 0.8128, Validation Accuracy 92.4107%
Epoch 180, Learning Step 31500: Cost = 0.7822, Validation Accuracy 92.2589%
Epoch 181, Learning Step 31600: Cost = 0.8461, Validation Accuracy 92.3750%
Epoch 182, Learning Step 31700: Cost = 0.8195, Validation Accuracy 92.3839%
Epoch 182, Learning Step 31800: Cost = 0.8154, Validation Accuracy 92.4018%
Epoch 183, Learning Step 31900: Cost = 0.8498, Validation Accuracy 92.3661%
Epoch 183, Learning Step 32000: Cost = 0.8656, Validation Accuracy 92.3750%
Epoch 184, Learning Step 32100: Cost = 0.8495, Validation Accuracy 92.4375%
Epoch 184, Learning Step 32200: Cost = 0.8193, Validation Accuracy 92.3839%
Epoch 185, Learning Step 32300: Cost = 0.8827, Validation Accuracy 92.5357%
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Epoch 186, Learning Step 32400: Cost = 0.8575, Validation Accuracy 92.4732%
Epoch 186, Learning Step 32500: Cost = 0.8517, Validation Accuracy 92.4464%
Epoch 187, Learning Step 32600: Cost = 0.8869, Validation Accuracy 92.4464%
Epoch 187, Learning Step 32700: Cost = 0.9045, Validation Accuracy 92.4196%
Epoch 188, Learning Step 32800: Cost = 0.8883, Validation Accuracy 92.4464%
Epoch 188, Learning Step 32900: Cost = 0.8568, Validation Accuracy 92.4732%
Epoch 189, Learning Step 33000: Cost = 0.9233, Validation Accuracy 92.5446%
Epoch 190, Learning Step 33100: Cost = 0.8990, Validation Accuracy 92.5179%
Epoch 190, Learning Step 33200: Cost = 0.8917, Validation Accuracy 92.4821%
Epoch 191, Learning Step 33300: Cost = 0.9259, Validation Accuracy 92.5000%
Epoch 191, Learning Step 33400: Cost = 0.9435, Validation Accuracy 92.4286%
Epoch 192, Learning Step 33500: Cost = 0.9268, Validation Accuracy 92.4286%
Epoch 192, Learning Step 33600: Cost = 0.8966, Validation Accuracy 92.5536%
Epoch 193, Learning Step 33700: Cost = 0.9632, Validation Accuracy 92.5893%
Epoch 194, Learning Step 33800: Cost = 0.9399, Validation Accuracy 92.5179%
Epoch 194, Learning Step 33900: Cost = 0.9330, Validation Accuracy 92.5089%
Epoch 195, Learning Step 34000: Cost = 0.9664, Validation Accuracy 92.5179%
Epoch 195, Learning Step 34100: Cost = 0.9830, Validation Accuracy 92.5446%
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Epoch 198, Learning Step 34600: Cost = 0.9759, Validation Accuracy 92.5446%
Epoch 199, Learning Step 34700: Cost = 1.0068, Validation Accuracy 92.5000%
Epoch 199, Learning Step 34800: Cost = 1.0259, Validation Accuracy 92.6161%
Epoch 200, Learning Step 34900: Cost = 1.0109, Validation Accuracy 92.5089%
Epoch 200, Learning Step 35000: Cost = 0.9847, Validation Accuracy 92.6875%
Epoch 201, Learning Step 35100: Cost = 1.0493, Validation Accuracy 92.6518%
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Epoch 202, Learning Step 35300: Cost = 1.0195, Validation Accuracy 92.5714%
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Epoch 203, Learning Step 35500: Cost = 1.0702, Validation Accuracy 92.6518%
Epoch 204, Learning Step 35600: Cost = 1.0554, Validation Accuracy 92.5625%
Epoch 204, Learning Step 35700: Cost = 1.0307, Validation Accuracy 92.6875%
Epoch 205, Learning Step 35800: Cost = 1.0929, Validation Accuracy 92.6964%
Epoch 206, Learning Step 35900: Cost = 1.0731, Validation Accuracy 92.4732%
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Epoch 207, Learning Step 36200: Cost = 1.1154, Validation Accuracy 92.6786%
Epoch 208, Learning Step 36300: Cost = 1.1019, Validation Accuracy 92.5536%
Epoch 208, Learning Step 36400: Cost = 1.0755, Validation Accuracy 92.6161%
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Epoch 210, Learning Step 36700: Cost = 1.1108, Validation Accuracy 92.5625%
Epoch 211, Learning Step 36800: Cost = 1.1430, Validation Accuracy 92.5893%
Epoch 211, Learning Step 36900: Cost = 1.1629, Validation Accuracy 92.6607%
Epoch 212, Learning Step 37000: Cost = 1.1506, Validation Accuracy 92.5089%
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Epoch 213, Learning Step 37200: Cost = 1.1885, Validation Accuracy 92.6964%
Epoch 214, Learning Step 37300: Cost = 1.1703, Validation Accuracy 92.4643%
Epoch 214, Learning Step 37400: Cost = 1.1606, Validation Accuracy 92.5357%
Epoch 215, Learning Step 37500: Cost = 1.1923, Validation Accuracy 92.5893%
Epoch 215, Learning Step 37600: Cost = 1.2143, Validation Accuracy 92.6875%
Epoch 216, Learning Step 37700: Cost = 1.2001, Validation Accuracy 92.5893%
Epoch 216, Learning Step 37800: Cost = 1.1752, Validation Accuracy 92.6607%
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Epoch 218, Learning Step 38100: Cost = 1.2119, Validation Accuracy 92.6429%
Epoch 219, Learning Step 38200: Cost = 1.2426, Validation Accuracy 92.6429%
Epoch 219, Learning Step 38300: Cost = 1.2652, Validation Accuracy 92.7143%
Epoch 220, Learning Step 38400: Cost = 1.2514, Validation Accuracy 92.5714%
Epoch 220, Learning Step 38500: Cost = 1.2270, Validation Accuracy 92.6339%
Epoch 221, Learning Step 38600: Cost = 1.2934, Validation Accuracy 92.8036%
Epoch 222, Learning Step 38700: Cost = 1.2719, Validation Accuracy 92.4554%

Epoch 222, Learning Step 38800: Cost = 1.2635, Validation Accuracy 92.5714%
Epoch 223, Learning Step 38900: Cost = 1.2949, Validation Accuracy 92.6339%
Epoch 223, Learning Step 39000: Cost = 1.3189, Validation Accuracy 92.7500%
Epoch 224, Learning Step 39100: Cost = 1.3033, Validation Accuracy 92.5625%
Epoch 224, Learning Step 39200: Cost = 1.2815, Validation Accuracy 92.6607%
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Epoch 226, Learning Step 39500: Cost = 1.3172, Validation Accuracy 92.6250%
Epoch 227, Learning Step 39600: Cost = 1.3496, Validation Accuracy 92.6607%
Epoch 227, Learning Step 39700: Cost = 1.3736, Validation Accuracy 92.7500%
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Epoch 228, Learning Step 39900: Cost = 1.3373, Validation Accuracy 92.6339%
Epoch 229, Learning Step 40000: Cost = 1.4052, Validation Accuracy 92.8750%
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Epoch 232, Learning Step 40500: Cost = 1.4169, Validation Accuracy 92.6339%
Epoch 232, Learning Step 40600: Cost = 1.3977, Validation Accuracy 92.6339%
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Epoch 238, Learning Step 41600: Cost = 1.4941, Validation Accuracy 92.6875%
Epoch 239, Learning Step 41700: Cost = 1.5278, Validation Accuracy 92.7143%
Epoch 239, Learning Step 41800: Cost = 1.5536, Validation Accuracy 92.7946%
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Epoch 248, Learning Step 43300: Cost = 1.6669, Validation Accuracy 92.7232%
Epoch 248, Learning Step 43400: Cost = 1.6522, Validation Accuracy 92.7857%
Epoch 249, Learning Step 43500: Cost = 1.7233, Validation Accuracy 92.8571%
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Epoch 250, Learning Step 43700: Cost = 1.6897, Validation Accuracy 92.7232%
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Epoch 255, Learning Step 44600: Cost = 1.8218, Validation Accuracy 92.9107%
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Epoch 260, Learning Step 45500: Cost = 1.8700, Validation Accuracy 92.7679%
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Epoch 272, Learning Step 47600: Cost = 2.1091, Validation Accuracy 92.8929%
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Epoch 274, Learning Step 47800: Cost = 2.1401, Validation Accuracy 92.8036%
Epoch 274, Learning Step 47900: Cost = 2.1493, Validation Accuracy 92.8304%
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Epoch 289, Learning Step 50500: Cost = 2.5529, Validation Accuracy 93.0000%
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Epoch 290, Learning Step 50700: Cost = 2.5211, Validation Accuracy 92.9732%
Epoch 291, Learning Step 50800: Cost = 2.5569, Validation Accuracy 93.0268%
Epoch 291, Learning Step 50900: Cost = 2.5869, Validation Accuracy 93.0625%
Epoch 292, Learning Step 51000: Cost = 2.5795, Validation Accuracy 93.0268%
Epoch 292, Learning Step 51100: Cost = 2.5755, Validation Accuracy 92.9911%
Epoch 293, Learning Step 51200: Cost = 2.6530, Validation Accuracy 93.0179%
Epoch 294, Learning Step 51300: Cost = 2.6043, Validation Accuracy 92.9911%
Epoch 294, Learning Step 51400: Cost = 2.6211, Validation Accuracy 93.0000%
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Epoch 295, Learning Step 51600: Cost = 2.6883, Validation Accuracy 93.0982%
Epoch 296, Learning Step 51700: Cost = 2.6809, Validation Accuracy 93.0179%
Epoch 296, Learning Step 51800: Cost = 2.6788, Validation Accuracy 93.0446%
Epoch 297, Learning Step 51900: Cost = 2.7559, Validation Accuracy 93.0268%
Epoch 298, Learning Step 52000: Cost = 2.7073, Validation Accuracy 92.9554%
Epoch 298, Learning Step 52100: Cost = 2.7245, Validation Accuracy 92.9732%
Epoch 299, Learning Step 52200: Cost = 2.7610, Validation Accuracy 93.0000%
Epoch 299, Learning Step 52300: Cost = 2.7927, Validation Accuracy 93.0804%
Epoch 300, Learning Step 52400: Cost = 2.7862, Validation Accuracy 93.0179%
Epoch 300, Learning Step 52500: Cost = 2.7838, Validation Accuracy 93.0714%
Epoch 301, Learning Step 52600: Cost = 2.8623, Validation Accuracy 93.0446%
Epoch 302, Learning Step 52700: Cost = 2.8152, Validation Accuracy 92.9554%
Epoch 302, Learning Step 52800: Cost = 2.8327, Validation Accuracy 92.9554%
Epoch 303, Learning Step 52900: Cost = 2.8684, Validation Accuracy 93.0536%
Epoch 303, Learning Step 53000: Cost = 2.8988, Validation Accuracy 93.0893%
Epoch 304, Learning Step 53100: Cost = 2.8951, Validation Accuracy 93.0268%
Epoch 304, Learning Step 53200: Cost = 2.8948, Validation Accuracy 93.0268%
Epoch 305, Learning Step 53300: Cost = 2.9722, Validation Accuracy 93.0625%
Epoch 306, Learning Step 53400: Cost = 2.9254, Validation Accuracy 92.9911%
Epoch 306, Learning Step 53500: Cost = 2.9448, Validation Accuracy 92.9554%
Epoch 307, Learning Step 53600: Cost = 2.9808, Validation Accuracy 92.9643%
Epoch 307, Learning Step 53700: Cost = 3.0137, Validation Accuracy 93.0804%
Epoch 308, Learning Step 53800: Cost = 3.0089, Validation Accuracy 93.0536%
Epoch 308, Learning Step 53900: Cost = 3.0111, Validation Accuracy 93.0446%
Epoch 309, Learning Step 54000: Cost = 3.0827, Validation Accuracy 93.0446%
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Epoch 310, Learning Step 54200: Cost = 3.0610, Validation Accuracy 92.9643%
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Epoch 311, Learning Step 54400: Cost = 3.1323, Validation Accuracy 93.1250%
Epoch 312, Learning Step 54500: Cost = 3.1271, Validation Accuracy 93.0268%
Epoch 312, Learning Step 54600: Cost = 3.1307, Validation Accuracy 93.0536%
Epoch 313, Learning Step 54700: Cost = 3.2021, Validation Accuracy 93.0357%
Epoch 314, Learning Step 54800: Cost = 3.1602, Validation Accuracy 93.0000%
Epoch 314, Learning Step 54900: Cost = 3.1819, Validation Accuracy 92.9286%
Epoch 315, Learning Step 55000: Cost = 3.2202, Validation Accuracy 93.0357%
Epoch 315, Learning Step 55100: Cost = 3.2528, Validation Accuracy 93.1696%
Epoch 316, Learning Step 55200: Cost = 3.2493, Validation Accuracy 93.0893%
Epoch 316, Learning Step 55300: Cost = 3.2522, Validation Accuracy 93.0804%
Epoch 317, Learning Step 55400: Cost = 3.3244, Validation Accuracy 93.0714%
Epoch 318, Learning Step 55500: Cost = 3.2847, Validation Accuracy 92.9554%
Epoch 318, Learning Step 55600: Cost = 3.3076, Validation Accuracy 92.9911%
Epoch 319, Learning Step 55700: Cost = 3.3437, Validation Accuracy 93.0089%
Epoch 319, Learning Step 55800: Cost = 3.3788, Validation Accuracy 93.1161%
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Epoch 322, Learning Step 56200: Cost = 3.4111, Validation Accuracy 92.9643%
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Epoch 324, Learning Step 56700: Cost = 3.5099, Validation Accuracy 93.0893%
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Epoch 330, Learning Step 57600: Cost = 3.6803, Validation Accuracy 92.9554%
Epoch 330, Learning Step 57700: Cost = 3.7076, Validation Accuracy 92.9196%
Epoch 331, Learning Step 57800: Cost = 3.7476, Validation Accuracy 93.0000%
Epoch 331, Learning Step 57900: Cost = 3.7827, Validation Accuracy 93.1518%

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Epoch 332, Learning Step 58100: Cost = 3.7903, Validation Accuracy 93.0982%
Epoch 333, Learning Step 58200: Cost = 3.8586, Validation Accuracy 93.0982%
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Epoch 334, Learning Step 58400: Cost = 3.8515, Validation Accuracy 93.0000%
Epoch 335, Learning Step 58500: Cost = 3.8915, Validation Accuracy 93.0446%
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Epoch 336, Learning Step 58700: Cost = 3.9262, Validation Accuracy 92.9732%
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Epoch 338, Learning Step 59000: Cost = 3.9731, Validation Accuracy 93.0804%
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Epoch 339, Learning Step 59200: Cost = 4.0424, Validation Accuracy 93.0000%
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Epoch 340, Learning Step 59500: Cost = 4.0901, Validation Accuracy 93.1161%
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Epoch 342, Learning Step 59800: Cost = 4.1566, Validation Accuracy 92.9554%
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Epoch 346, Learning Step 60400: Cost = 4.2834, Validation Accuracy 93.0982%
Epoch 346, Learning Step 60500: Cost = 4.3154, Validation Accuracy 92.9375%
Epoch 347, Learning Step 60600: Cost = 4.3575, Validation Accuracy 93.0625%
Epoch 347, Learning Step 60700: Cost = 4.3950, Validation Accuracy 93.1250%
Epoch 348, Learning Step 60800: Cost = 4.3945, Validation Accuracy 93.1607%
Epoch 348, Learning Step 60900: Cost = 4.4073, Validation Accuracy 93.1875%
Epoch 349, Learning Step 61000: Cost = 4.4735, Validation Accuracy 93.2589%
Epoch 350, Learning Step 61100: Cost = 4.4476, Validation Accuracy 93.1339%
Epoch 350, Learning Step 61200: Cost = 4.4820, Validation Accuracy 92.9464%
Epoch 351, Learning Step 61300: Cost = 4.5242, Validation Accuracy 93.1071%
Epoch 351, Learning Step 61400: Cost = 4.5608, Validation Accuracy 93.1071%
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Epoch 352, Learning Step 61600: Cost = 4.5759, Validation Accuracy 93.2857%
Epoch 353, Learning Step 61700: Cost = 4.6417, Validation Accuracy 93.2589%
Epoch 354, Learning Step 61800: Cost = 4.6186, Validation Accuracy 93.1696%
Epoch 354, Learning Step 61900: Cost = 4.6548, Validation Accuracy 92.9643%
Epoch 355, Learning Step 62000: Cost = 4.6935, Validation Accuracy 93.1071%
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Epoch 356, Learning Step 62200: Cost = 4.7368, Validation Accuracy 93.2589%
Epoch 356, Learning Step 62300: Cost = 4.7520, Validation Accuracy 93.2946%
Epoch 357, Learning Step 62400: Cost = 4.8151, Validation Accuracy 93.3214%
Epoch 358, Learning Step 62500: Cost = 4.7957, Validation Accuracy 93.2054%
Epoch 358, Learning Step 62600: Cost = 4.8332, Validation Accuracy 93.0179%
Epoch 359, Learning Step 62700: Cost = 4.8719, Validation Accuracy 93.1786%
Epoch 359, Learning Step 62800: Cost = 4.9127, Validation Accuracy 93.2768%
Epoch 360, Learning Step 62900: Cost = 4.9172, Validation Accuracy 93.3036%
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Epoch 362, Learning Step 63300: Cost = 5.0213, Validation Accuracy 93.0446%
Epoch 363, Learning Step 63400: Cost = 5.0597, Validation Accuracy 93.0804%
Epoch 363, Learning Step 63500: Cost = 5.1008, Validation Accuracy 93.2054%
Epoch 364, Learning Step 63600: Cost = 5.1098, Validation Accuracy 93.3304%
Epoch 364, Learning Step 63700: Cost = 5.1250, Validation Accuracy 93.3482%
Epoch 365, Learning Step 63800: Cost = 5.1911, Validation Accuracy 93.2589%
Epoch 366, Learning Step 63900: Cost = 5.1745, Validation Accuracy 93.2679%
Epoch 366, Learning Step 64000: Cost = 5.2154, Validation Accuracy 93.0536%
Epoch 367, Learning Step 64100: Cost = 5.2547, Validation Accuracy 93.1161%
Epoch 367, Learning Step 64200: Cost = 5.2995, Validation Accuracy 93.2321%
Epoch 368, Learning Step 64300: Cost = 5.3064, Validation Accuracy 93.3214%

Epoch 368, Learning Step 64400: Cost = 5.3236, Validation Accuracy 93.3304%
Epoch 369, Learning Step 64500: Cost = 5.3909, Validation Accuracy 93.2589%
Epoch 370, Learning Step 64600: Cost = 5.3759, Validation Accuracy 93.2589%
Epoch 370, Learning Step 64700: Cost = 5.4186, Validation Accuracy 93.0714%
Epoch 371, Learning Step 64800: Cost = 5.4583, Validation Accuracy 93.1607%
Epoch 371, Learning Step 64900: Cost = 5.5030, Validation Accuracy 93.2946%
Epoch 372, Learning Step 65000: Cost = 5.5123, Validation Accuracy 93.3393%
Epoch 372, Learning Step 65100: Cost = 5.5326, Validation Accuracy 93.3125%
Epoch 373, Learning Step 65200: Cost = 5.6004, Validation Accuracy 93.2768%
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Epoch 375, Learning Step 65600: Cost = 5.7171, Validation Accuracy 93.2500%
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Epoch 376, Learning Step 65800: Cost = 5.7491, Validation Accuracy 93.3214%
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Epoch 381, Learning Step 66600: Cost = 6.0422, Validation Accuracy 93.3125%
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Epoch 382, Learning Step 66800: Cost = 6.0745, Validation Accuracy 93.1339%
Epoch 383, Learning Step 66900: Cost = 6.1165, Validation Accuracy 93.2768%
Epoch 383, Learning Step 67000: Cost = 6.1636, Validation Accuracy 93.2857%
Epoch 384, Learning Step 67100: Cost = 6.1749, Validation Accuracy 93.2500%
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Epoch 388, Learning Step 67800: Cost = 6.4096, Validation Accuracy 93.2768%
Epoch 388, Learning Step 67900: Cost = 6.4400, Validation Accuracy 93.3929%
Epoch 389, Learning Step 68000: Cost = 6.5113, Validation Accuracy 93.3661%
Epoch 390, Learning Step 68100: Cost = 6.4983, Validation Accuracy 93.3929%
Epoch 390, Learning Step 68200: Cost = 6.5485, Validation Accuracy 93.1429%
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Epoch 391, Learning Step 68400: Cost = 6.6414, Validation Accuracy 93.3036%
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Epoch 392, Learning Step 68600: Cost = 6.6863, Validation Accuracy 93.3929%
Epoch 393, Learning Step 68700: Cost = 6.7577, Validation Accuracy 93.3304%
Epoch 394, Learning Step 68800: Cost = 6.7476, Validation Accuracy 93.3839%
Epoch 394, Learning Step 68900: Cost = 6.7975, Validation Accuracy 93.1429%
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Epoch 395, Learning Step 69100: Cost = 6.8921, Validation Accuracy 93.3571%
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Epoch 398, Learning Step 69600: Cost = 7.0526, Validation Accuracy 93.1696%
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Epoch 399, Learning Step 69800: Cost = 7.1498, Validation Accuracy 93.3571%
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Epoch 403, Learning Step 70400: Cost = 7.3644, Validation Accuracy 93.4018%
Epoch 403, Learning Step 70500: Cost = 7.4163, Validation Accuracy 93.3304%
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Epoch 404, Learning Step 70700: Cost = 7.4709, Validation Accuracy 93.3393%

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Epoch 406, Learning Step 70900: Cost = 7.5362, Validation Accuracy 93.4107%
Epoch 406, Learning Step 71000: Cost = 7.5919, Validation Accuracy 93.2679%
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Epoch 407, Learning Step 71200: Cost = 7.6933, Validation Accuracy 93.4196%
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Epoch 408, Learning Step 71400: Cost = 7.7507, Validation Accuracy 93.4018%
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Epoch 414, Learning Step 72400: Cost = 8.1700, Validation Accuracy 93.2679%
Epoch 415, Learning Step 72500: Cost = 8.2201, Validation Accuracy 93.4107%
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Epoch 416, Learning Step 72800: Cost = 8.3410, Validation Accuracy 93.3929%
Epoch 417, Learning Step 72900: Cost = 8.4168, Validation Accuracy 93.5000%
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Epoch 422, Learning Step 73800: Cost = 8.7904, Validation Accuracy 93.2857%
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Epoch 439, Learning Step 76800: Cost = 10.2836, Validation Accuracy 93.5357%
Epoch 440, Learning Step 76900: Cost = 10.3172, Validation Accuracy 93.4643%
Epoch 440, Learning Step 77000: Cost = 10.3733, Validation Accuracy 93.4821%
Epoch 441, Learning Step 77100: Cost = 10.4490, Validation Accuracy 93.5357%

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Epoch 443, Learning Step 77500: Cost = 10.6563, Validation Accuracy 93.5625%
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Epoch 444, Learning Step 77700: Cost = 10.7516, Validation Accuracy 93.4821%
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Epoch 468, Learning Step 81900: Cost = 13.3102, Validation Accuracy 93.5000%
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Epoch 471, Learning Step 82400: Cost = 13.6623, Validation Accuracy 93.5893%
Epoch 472, Learning Step 82500: Cost = 13.7125, Validation Accuracy 93.5268%
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Epoch 473, Learning Step 82700: Cost = 13.8800, Validation Accuracy 93.6429%
Epoch 474, Learning Step 82800: Cost = 13.9065, Validation Accuracy 93.6964%
Epoch 474, Learning Step 82900: Cost = 14.0034, Validation Accuracy 93.5000%
Epoch 475, Learning Step 83000: Cost = 14.0765, Validation Accuracy 93.5536%
Epoch 475, Learning Step 83100: Cost = 14.1556, Validation Accuracy 93.5982%
Epoch 476, Learning Step 83200: Cost = 14.2108, Validation Accuracy 93.5536%
Epoch 476, Learning Step 83300: Cost = 14.2911, Validation Accuracy 93.5446%
Epoch 477, Learning Step 83400: Cost = 14.3849, Validation Accuracy 93.6875%
Epoch 478, Learning Step 83500: Cost = 14.4137, Validation Accuracy 93.6429%
```

Epoch 478, Learning Step 83600: Cost = 14.5118, Validation Accuracy 93.5000%
Epoch 479, Learning Step 83700: Cost = 14.5852, Validation Accuracy 93.5536%
Epoch 479, Learning Step 83800: Cost = 14.6675, Validation Accuracy 93.6071%
Epoch 480, Learning Step 83900: Cost = 14.7245, Validation Accuracy 93.5179%
Epoch 480, Learning Step 84000: Cost = 14.8073, Validation Accuracy 93.5625%
Epoch 481, Learning Step 84100: Cost = 14.9024, Validation Accuracy 93.6964%
Epoch 482, Learning Step 84200: Cost = 14.9337, Validation Accuracy 93.6518%
Epoch 482, Learning Step 84300: Cost = 15.0372, Validation Accuracy 93.5446%
Epoch 483, Learning Step 84400: Cost = 15.1141, Validation Accuracy 93.5625%
Epoch 483, Learning Step 84500: Cost = 15.1963, Validation Accuracy 93.5625%
Epoch 484, Learning Step 84600: Cost = 15.2555, Validation Accuracy 93.5982%
Epoch 484, Learning Step 84700: Cost = 15.3401, Validation Accuracy 93.5446%
Epoch 485, Learning Step 84800: Cost = 15.4393, Validation Accuracy 93.6696%
Epoch 486, Learning Step 84900: Cost = 15.4734, Validation Accuracy 93.6518%
Epoch 486, Learning Step 85000: Cost = 15.5780, Validation Accuracy 93.5268%
Epoch 487, Learning Step 85100: Cost = 15.6567, Validation Accuracy 93.5893%
Epoch 487, Learning Step 85200: Cost = 15.7418, Validation Accuracy 93.6071%
Epoch 488, Learning Step 85300: Cost = 15.8054, Validation Accuracy 93.6161%
Epoch 488, Learning Step 85400: Cost = 15.8944, Validation Accuracy 93.5446%
Epoch 489, Learning Step 85500: Cost = 15.9947, Validation Accuracy 93.7054%
Epoch 490, Learning Step 85600: Cost = 16.0295, Validation Accuracy 93.6607%
Epoch 490, Learning Step 85700: Cost = 16.1385, Validation Accuracy 93.5268%
Epoch 491, Learning Step 85800: Cost = 16.2183, Validation Accuracy 93.5804%
Epoch 491, Learning Step 85900: Cost = 16.3065, Validation Accuracy 93.6250%
Epoch 492, Learning Step 86000: Cost = 16.3729, Validation Accuracy 93.6429%
Epoch 492, Learning Step 86100: Cost = 16.4641, Validation Accuracy 93.5357%
Epoch 493, Learning Step 86200: Cost = 16.5684, Validation Accuracy 93.7411%
Epoch 494, Learning Step 86300: Cost = 16.6065, Validation Accuracy 93.6786%
Epoch 494, Learning Step 86400: Cost = 16.7166, Validation Accuracy 93.5893%
Epoch 495, Learning Step 86500: Cost = 16.7997, Validation Accuracy 93.5893%
Epoch 495, Learning Step 86600: Cost = 16.8892, Validation Accuracy 93.6518%
Epoch 496, Learning Step 86700: Cost = 16.9581, Validation Accuracy 93.6339%
Epoch 496, Learning Step 86800: Cost = 17.0515, Validation Accuracy 93.5357%
Epoch 497, Learning Step 86900: Cost = 17.1578, Validation Accuracy 93.7143%
Epoch 498, Learning Step 87000: Cost = 17.1981, Validation Accuracy 93.6518%
Epoch 498, Learning Step 87100: Cost = 17.3120, Validation Accuracy 93.5625%
Epoch 499, Learning Step 87200: Cost = 17.3973, Validation Accuracy 93.6339%
Epoch 499, Learning Step 87300: Cost = 17.4892, Validation Accuracy 93.6518%
Epoch 500, Learning Step 87400: Cost = 17.5609, Validation Accuracy 93.5536%
Epoch 500, Learning Step 87500: Cost = 17.6576, Validation Accuracy 93.5446%
Epoch 501, Learning Step 87600: Cost = 17.7673, Validation Accuracy 93.7768%
Epoch 502, Learning Step 87700: Cost = 17.8103, Validation Accuracy 93.6875%
Epoch 502, Learning Step 87800: Cost = 17.9265, Validation Accuracy 93.5357%
Epoch 503, Learning Step 87900: Cost = 18.0122, Validation Accuracy 93.6071%
Epoch 503, Learning Step 88000: Cost = 18.1094, Validation Accuracy 93.6875%
Epoch 504, Learning Step 88100: Cost = 18.1819, Validation Accuracy 93.6339%
Epoch 504, Learning Step 88200: Cost = 18.2830, Validation Accuracy 93.5714%
Epoch 505, Learning Step 88300: Cost = 18.3943, Validation Accuracy 93.7857%
Epoch 506, Learning Step 88400: Cost = 18.4411, Validation Accuracy 93.7054%
Epoch 506, Learning Step 88500: Cost = 18.5606, Validation Accuracy 93.6071%
Epoch 507, Learning Step 88600: Cost = 18.6460, Validation Accuracy 93.6071%
Epoch 507, Learning Step 88700: Cost = 18.7439, Validation Accuracy 93.6518%
Epoch 508, Learning Step 88800: Cost = 18.8204, Validation Accuracy 93.5893%
Epoch 508, Learning Step 88900: Cost = 18.9234, Validation Accuracy 93.5893%
Epoch 509, Learning Step 89000: Cost = 19.0354, Validation Accuracy 93.7768%
Epoch 510, Learning Step 89100: Cost = 19.0833, Validation Accuracy 93.7054%
Epoch 510, Learning Step 89200: Cost = 19.2053, Validation Accuracy 93.5982%
Epoch 511, Learning Step 89300: Cost = 19.2935, Validation Accuracy 93.6161%
Epoch 511, Learning Step 89400: Cost = 19.3973, Validation Accuracy 93.6429%
Epoch 512, Learning Step 89500: Cost = 19.4769, Validation Accuracy 93.6339%
Epoch 512, Learning Step 89600: Cost = 19.5849, Validation Accuracy 93.6071%
Epoch 513, Learning Step 89700: Cost = 19.7014, Validation Accuracy 93.7857%
Epoch 514, Learning Step 89800: Cost = 19.7518, Validation Accuracy 93.6786%
Epoch 514, Learning Step 89900: Cost = 19.8791, Validation Accuracy 93.5446%

Epoch 515, Learning Step 90000: Cost = 19.9714, Validation Accuracy 93.6429%
Epoch 515, Learning Step 90100: Cost = 20.0749, Validation Accuracy 93.6518%
Epoch 516, Learning Step 90200: Cost = 20.1587, Validation Accuracy 93.6696%
Epoch 516, Learning Step 90300: Cost = 20.2708, Validation Accuracy 93.6250%
Epoch 517, Learning Step 90400: Cost = 20.3891, Validation Accuracy 93.7857%
Epoch 518, Learning Step 90500: Cost = 20.4415, Validation Accuracy 93.7143%
Epoch 518, Learning Step 90600: Cost = 20.5724, Validation Accuracy 93.5714%
Epoch 519, Learning Step 90700: Cost = 20.6671, Validation Accuracy 93.6161%
Epoch 519, Learning Step 90800: Cost = 20.7762, Validation Accuracy 93.6786%
Epoch 520, Learning Step 90900: Cost = 20.8634, Validation Accuracy 93.6607%
Epoch 520, Learning Step 91000: Cost = 20.9773, Validation Accuracy 93.6071%
Epoch 521, Learning Step 91100: Cost = 21.1011, Validation Accuracy 93.7679%
Epoch 522, Learning Step 91200: Cost = 21.1583, Validation Accuracy 93.7143%
Epoch 522, Learning Step 91300: Cost = 21.2918, Validation Accuracy 93.5357%
Epoch 523, Learning Step 91400: Cost = 21.3881, Validation Accuracy 93.6607%
Epoch 523, Learning Step 91500: Cost = 21.5022, Validation Accuracy 93.7411%
Epoch 524, Learning Step 91600: Cost = 21.5910, Validation Accuracy 93.6429%
Epoch 524, Learning Step 91700: Cost = 21.7091, Validation Accuracy 93.6071%
Epoch 525, Learning Step 91800: Cost = 21.8341, Validation Accuracy 93.7946%
Epoch 526, Learning Step 91900: Cost = 21.8961, Validation Accuracy 93.7768%
Epoch 526, Learning Step 92000: Cost = 22.0319, Validation Accuracy 93.5268%
Epoch 527, Learning Step 92100: Cost = 22.1294, Validation Accuracy 93.6786%
Epoch 527, Learning Step 92200: Cost = 22.2503, Validation Accuracy 93.7321%
Epoch 528, Learning Step 92300: Cost = 22.3443, Validation Accuracy 93.6607%
Epoch 528, Learning Step 92400: Cost = 22.4662, Validation Accuracy 93.6429%
Epoch 529, Learning Step 92500: Cost = 22.5936, Validation Accuracy 93.7321%
Epoch 530, Learning Step 92600: Cost = 22.6607, Validation Accuracy 93.7411%
Epoch 530, Learning Step 92700: Cost = 22.7996, Validation Accuracy 93.5089%
Epoch 531, Learning Step 92800: Cost = 22.9026, Validation Accuracy 93.6696%
Epoch 531, Learning Step 92900: Cost = 23.0260, Validation Accuracy 93.7500%
Epoch 532, Learning Step 93000: Cost = 23.1243, Validation Accuracy 93.6696%
Epoch 532, Learning Step 93100: Cost = 23.2517, Validation Accuracy 93.6786%
Epoch 533, Learning Step 93200: Cost = 23.3853, Validation Accuracy 93.7946%
Epoch 534, Learning Step 93300: Cost = 23.4554, Validation Accuracy 93.8036%
Epoch 534, Learning Step 93400: Cost = 23.5990, Validation Accuracy 93.5357%
Epoch 535, Learning Step 93500: Cost = 23.7055, Validation Accuracy 93.7054%
Epoch 535, Learning Step 93600: Cost = 23.8316, Validation Accuracy 93.7411%
Epoch 536, Learning Step 93700: Cost = 23.9332, Validation Accuracy 93.6339%
Epoch 536, Learning Step 93800: Cost = 24.0659, Validation Accuracy 93.7143%
Epoch 537, Learning Step 93900: Cost = 24.2006, Validation Accuracy 93.8393%
Epoch 538, Learning Step 94000: Cost = 24.2773, Validation Accuracy 93.7679%
Epoch 538, Learning Step 94100: Cost = 24.4265, Validation Accuracy 93.5446%
Epoch 539, Learning Step 94200: Cost = 24.5377, Validation Accuracy 93.6875%
Epoch 539, Learning Step 94300: Cost = 24.6705, Validation Accuracy 93.7321%
Epoch 540, Learning Step 94400: Cost = 24.7777, Validation Accuracy 93.5893%
Epoch 540, Learning Step 94500: Cost = 24.9141, Validation Accuracy 93.6786%
Epoch 541, Learning Step 94600: Cost = 25.0522, Validation Accuracy 93.7768%
Epoch 542, Learning Step 94700: Cost = 25.1318, Validation Accuracy 93.7411%
Epoch 542, Learning Step 94800: Cost = 25.2831, Validation Accuracy 93.5268%
Epoch 543, Learning Step 94900: Cost = 25.3952, Validation Accuracy 93.7232%
Epoch 543, Learning Step 95000: Cost = 25.5323, Validation Accuracy 93.7411%
Epoch 544, Learning Step 95100: Cost = 25.6402, Validation Accuracy 93.6250%
Epoch 544, Learning Step 95200: Cost = 25.7812, Validation Accuracy 93.7589%
Epoch 545, Learning Step 95300: Cost = 25.9209, Validation Accuracy 93.7589%
Epoch 546, Learning Step 95400: Cost = 26.0035, Validation Accuracy 93.7054%
Epoch 546, Learning Step 95500: Cost = 26.1610, Validation Accuracy 93.4911%
Epoch 547, Learning Step 95600: Cost = 26.2771, Validation Accuracy 93.7679%
Epoch 547, Learning Step 95700: Cost = 26.4183, Validation Accuracy 93.6786%
Epoch 548, Learning Step 95800: Cost = 26.5307, Validation Accuracy 93.6518%
Epoch 548, Learning Step 95900: Cost = 26.6775, Validation Accuracy 93.7500%
Epoch 549, Learning Step 96000: Cost = 26.8236, Validation Accuracy 93.7679%
Epoch 550, Learning Step 96100: Cost = 26.9111, Validation Accuracy 93.7411%
Epoch 550, Learning Step 96200: Cost = 27.0701, Validation Accuracy 93.5179%
Epoch 551, Learning Step 96300: Cost = 27.1879, Validation Accuracy 93.7679%

Epoch 551, Learning Step 96400: Cost = 27.3340, Validation Accuracy 93.7411%
Epoch 552, Learning Step 96500: Cost = 27.4520, Validation Accuracy 93.6607%
Epoch 552, Learning Step 96600: Cost = 27.6035, Validation Accuracy 93.7589%
Epoch 553, Learning Step 96700: Cost = 27.7491, Validation Accuracy 93.7589%
Epoch 554, Learning Step 96800: Cost = 27.8414, Validation Accuracy 93.6964%
Epoch 554, Learning Step 96900: Cost = 28.0078, Validation Accuracy 93.4732%
Epoch 555, Learning Step 97000: Cost = 28.1304, Validation Accuracy 93.7232%
Epoch 555, Learning Step 97100: Cost = 28.2816, Validation Accuracy 93.7054%
Epoch 556, Learning Step 97200: Cost = 28.4028, Validation Accuracy 93.6786%
Epoch 556, Learning Step 97300: Cost = 28.5581, Validation Accuracy 93.7411%
Epoch 557, Learning Step 97400: Cost = 28.7092, Validation Accuracy 93.8393%
Epoch 558, Learning Step 97500: Cost = 28.8043, Validation Accuracy 93.7321%
Epoch 558, Learning Step 97600: Cost = 28.9735, Validation Accuracy 93.5179%
Epoch 559, Learning Step 97700: Cost = 29.1013, Validation Accuracy 93.7679%
Epoch 559, Learning Step 97800: Cost = 29.2568, Validation Accuracy 93.7232%
Epoch 560, Learning Step 97900: Cost = 29.3805, Validation Accuracy 93.6964%
Epoch 560, Learning Step 98000: Cost = 29.5406, Validation Accuracy 93.7054%
Epoch 561, Learning Step 98100: Cost = 29.6964, Validation Accuracy 93.8125%
Epoch 562, Learning Step 98200: Cost = 29.7978, Validation Accuracy 93.7500%
Epoch 562, Learning Step 98300: Cost = 29.9721, Validation Accuracy 93.4732%
Epoch 563, Learning Step 98400: Cost = 30.1004, Validation Accuracy 93.7500%
Epoch 563, Learning Step 98500: Cost = 30.2601, Validation Accuracy 93.7500%
Epoch 564, Learning Step 98600: Cost = 30.3875, Validation Accuracy 93.6786%
Epoch 564, Learning Step 98700: Cost = 30.5530, Validation Accuracy 93.7232%
Epoch 565, Learning Step 98800: Cost = 30.7122, Validation Accuracy 93.8125%
Epoch 566, Learning Step 98900: Cost = 30.8153, Validation Accuracy 93.7143%
Epoch 566, Learning Step 99000: Cost = 30.9934, Validation Accuracy 93.4375%
Epoch 567, Learning Step 99100: Cost = 31.1256, Validation Accuracy 93.7589%
Epoch 567, Learning Step 99200: Cost = 31.2945, Validation Accuracy 93.7232%
Epoch 568, Learning Step 99300: Cost = 31.4257, Validation Accuracy 93.7143%
Epoch 568, Learning Step 99400: Cost = 31.5970, Validation Accuracy 93.7054%
Epoch 569, Learning Step 99500: Cost = 31.7591, Validation Accuracy 93.8125%
Epoch 570, Learning Step 99600: Cost = 31.8683, Validation Accuracy 93.7321%
Epoch 570, Learning Step 99700: Cost = 32.0495, Validation Accuracy 93.4643%
Epoch 571, Learning Step 99800: Cost = 32.1850, Validation Accuracy 93.7768%
Epoch 571, Learning Step 99900: Cost = 32.3549, Validation Accuracy 93.7411%
Epoch 572, Learning Step 100000: Cost = 32.4907, Validation Accuracy 93.7321%
Epoch 572, Learning Step 100100: Cost = 32.6673, Validation Accuracy 93.7321%
Epoch 573, Learning Step 100200: Cost = 32.8336, Validation Accuracy 93.8125%
Epoch 574, Learning Step 100300: Cost = 32.9496, Validation Accuracy 93.7321%
Epoch 574, Learning Step 100400: Cost = 33.1353, Validation Accuracy 93.5536%
Epoch 575, Learning Step 100500: Cost = 33.2754, Validation Accuracy 93.7589%
Epoch 575, Learning Step 100600: Cost = 33.4532, Validation Accuracy 93.7500%
Epoch 576, Learning Step 100700: Cost = 33.5921, Validation Accuracy 93.7679%
Epoch 576, Learning Step 100800: Cost = 33.7742, Validation Accuracy 93.7411%
Epoch 577, Learning Step 100900: Cost = 33.9431, Validation Accuracy 93.7768%
Epoch 578, Learning Step 101000: Cost = 34.0649, Validation Accuracy 93.7946%
Epoch 578, Learning Step 101100: Cost = 34.2572, Validation Accuracy 93.5268%
Epoch 579, Learning Step 101200: Cost = 34.4034, Validation Accuracy 93.7768%
Epoch 579, Learning Step 101300: Cost = 34.5873, Validation Accuracy 93.7321%
Epoch 580, Learning Step 101400: Cost = 34.7317, Validation Accuracy 93.7232%
Epoch 580, Learning Step 101500: Cost = 34.9198, Validation Accuracy 93.7500%
Epoch 581, Learning Step 101600: Cost = 35.0942, Validation Accuracy 93.8036%
Epoch 582, Learning Step 101700: Cost = 35.2222, Validation Accuracy 93.7232%
Epoch 582, Learning Step 101800: Cost = 35.4193, Validation Accuracy 93.4911%
Epoch 583, Learning Step 101900: Cost = 35.5697, Validation Accuracy 93.7500%
Epoch 583, Learning Step 102000: Cost = 35.7553, Validation Accuracy 93.7054%
Epoch 584, Learning Step 102100: Cost = 35.9044, Validation Accuracy 93.7500%
Epoch 584, Learning Step 102200: Cost = 36.0959, Validation Accuracy 93.7321%
Epoch 585, Learning Step 102300: Cost = 36.2755, Validation Accuracy 93.8036%
Epoch 586, Learning Step 102400: Cost = 36.4049, Validation Accuracy 93.7768%
Epoch 586, Learning Step 102500: Cost = 36.6070, Validation Accuracy 93.4464%
Epoch 587, Learning Step 102600: Cost = 36.7584, Validation Accuracy 93.7679%
Epoch 587, Learning Step 102700: Cost = 36.9515, Validation Accuracy 93.7232%

Epoch 588, Learning Step 102800: Cost = 37.1033, Validation Accuracy 93.7411%
Epoch 588, Learning Step 102900: Cost = 37.3014, Validation Accuracy 93.7589%
Epoch 589, Learning Step 103000: Cost = 37.4841, Validation Accuracy 93.8304%
Epoch 590, Learning Step 103100: Cost = 37.6196, Validation Accuracy 93.7500%
Epoch 590, Learning Step 103200: Cost = 37.8222, Validation Accuracy 93.4643%
Epoch 591, Learning Step 103300: Cost = 37.9754, Validation Accuracy 93.7768%
Epoch 591, Learning Step 103400: Cost = 38.1735, Validation Accuracy 93.6875%
Epoch 592, Learning Step 103500: Cost = 38.3300, Validation Accuracy 93.7946%
Epoch 592, Learning Step 103600: Cost = 38.5334, Validation Accuracy 93.7857%
Epoch 593, Learning Step 103700: Cost = 38.7176, Validation Accuracy 93.8214%
Epoch 594, Learning Step 103800: Cost = 38.8568, Validation Accuracy 93.7946%
Epoch 594, Learning Step 103900: Cost = 39.0667, Validation Accuracy 93.4911%
Stopping training - No improvement for 100 steps

Total epochs completed: 594 from 100000
Total batches completed: 104074 from 17500000
Best validation accuracy: 93.8393%
Final Report:
Training Time: 291.63 seconds (4.86 minutes)
Final Training Accuracy: 96.65%
Final Validation Accuracy: 93.49%
Final Test Accuracy: 93.46%