DL Lab 2

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In [9]:
```
import pandas as pd
import numpy as np
df = pd.read_csv("liver_patient.csv")
df.head()
```

Out[9]:

	Age	Gender	Total_Bilirubin	Direct_Bilirubin	Alkaline_Phosphotase	Alamine_Aminotransferase	Aspartate_Aminotransferase	Total_Proti
0	65	Female	0.7	0.1	187	16	18	
1	62	Male	10.9	5.5	699	64	100	
2	62	Male	7.3	4.1	490	60	68	
3	58	Male	1.0	0.4	182	14	20	
4	72	Male	3.9	2.0	195	27	59	

Question 1

Preprocessing

In [10]:
```
df.drop('Gender', axis=1, inplace=True)
df
```

Out[10]:

	Age	Total_Bilirubin	Direct_Bilirubin	Alkaline_Phosphotase	Alamine_Aminotransferase	Aspartate_Aminotransferase	Total_Protiens	A
0	65	0.7	0.1	187	16	18	6.8	
1	62	10.9	5.5	699	64	100	7.5	
2	62	7.3	4.1	490	60	68	7.0	
3	58	1.0	0.4	182	14	20	6.8	
4	72	3.9	2.0	195	27	59	7.3	
...	...	...	...	...	...	...	...	
578	60	0.5	0.1	500	20	34	5.9	
579	40	0.6	0.1	98	35	31	6.0	
580	52	0.8	0.2	245	48	49	6.4	
581	31	1.3	0.5	184	29	32	6.8	
582	38	1.0	0.3	216	21	24	7.3	

583 rows × 10 columns

In [11]:
```
from sklearn.preprocessing import MinMaxScaler
MM = MinMaxScaler()
x = MM.fit_transform(df)
x
```

Out[11]:
```
array([[0.70930233, 0.00402145, 0.        , ..., 0.52173913, 0.24      ,
         1.        ],
       [0.6744186 , 0.14075067, 0.2755102 , ..., 0.5       , 0.176     ,
         1.        ],
       [0.6744186 , 0.0924933 , 0.20408163, ..., 0.52173913, 0.236     ,
         1.        ],
       ...,
       [0.55813953, 0.00536193, 0.00510204, ..., 0.5       , 0.28      ,
         1.        ],
       [0.31395349, 0.01206434, 0.02040816, ..., 0.54347826, 0.28      ,
         1.        ],
       [0.39534884, 0.0080429 , 0.01020408, ..., 0.76086957, 0.48      ,
         0.        ]])
```

In [12]:
```
from sklearn.model_selection import train_test_split
X = x[:, 0:9]
Y = x[:, 9]
X_train, X_test, y_train, y_test = train_test_split(X, Y, test_size = 0.2, random_state=1)
```

Train using LogisticRegression

In [13]:
```
from sklearn.linear_model import LogisticRegression
LR = LogisticRegression()
LR.fit(X_train, y_train)
print(LR.predict(X_test))
```

```
[1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 0. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.
 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.
 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.
 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.
 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.]
```

In [14]:
```
from sklearn.metrics import accuracy_score
print(accuracy_score(LR.predict(X_test), y_test))
```

```
0.717948717948718
```

Train using Keras

In [15]:
```
import keras
from keras.models import Sequential
from keras.layers import Dense
```

In [16]:
```
model = Sequential()
model.add(Dense(1, activation='sigmoid', input_shape=(9,)))
model.summary()
```

```
e:\VIT Study Materials\SEM 3\Deep Learning\LAB\.venv\Lib\site-packages\keras\src\layers\core\dense.py:93: UserWarning: Do not p
ass an `input_shape`/`input_dim` argument to a layer. When using Sequential models, prefer using an `Input(shape)` object as th
e first layer in the model instead.
  super().__init__(activity_regularizer=activity_regularizer, **kwargs)
```

Model: "sequential"

Layer (type)	Output Shape	Param #
dense (Dense)	(None, 1)	10

Total params: 10 (40.00 B)

Trainable params: 10 (40.00 B)

Non-trainable params: 0 (0.00 B)

In [17]:
```
from keras.optimizers import SGD
model.compile(loss='BinaryCrossentropy', optimizer='SGD', metrics= ['accuracy'])
model.fit(X_train, y_train, batch_size=50, epochs = 100, verbose = 1, validation_data= (X_test, y_test))
```

```
Epoch 1/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 1s 20ms/step - accuracy: 0.6891 - loss: 0.6291 - val_accuracy: 0.6838 - val_loss: 0.6397
Epoch 2/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6835 - loss: 0.6367 - val_accuracy: 0.6923 - val_loss: 0.6378
Epoch 3/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6715 - loss: 0.6420 - val_accuracy: 0.6923 - val_loss: 0.6362
Epoch 4/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6577 - loss: 0.6447 - val_accuracy: 0.7009 - val_loss: 0.6343
Epoch 5/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6706 - loss: 0.6287 - val_accuracy: 0.7009 - val_loss: 0.6328
Epoch 6/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7018 - loss: 0.6253 - val_accuracy: 0.7009 - val_loss: 0.6316
Epoch 7/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6786 - loss: 0.6270 - val_accuracy: 0.7009 - val_loss: 0.6302
Epoch 8/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6756 - loss: 0.6337 - val_accuracy: 0.7009 - val_loss: 0.6288
Epoch 9/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6760 - loss: 0.6369 - val_accuracy: 0.7009 - val_loss: 0.6277
Epoch 10/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6747 - loss: 0.6401 - val_accuracy: 0.7094 - val_loss: 0.6267
Epoch 11/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7012 - loss: 0.6214 - val_accuracy: 0.7094 - val_loss: 0.6259
Epoch 12/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7084 - loss: 0.6063 - val_accuracy: 0.7094 - val_loss: 0.6249
Epoch 13/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7129 - loss: 0.6064 - val_accuracy: 0.7094 - val_loss: 0.6241
Epoch 14/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6926 - loss: 0.6236 - val_accuracy: 0.7094 - val_loss: 0.6234
Epoch 15/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7170 - loss: 0.6003 - val_accuracy: 0.7094 - val_loss: 0.6226
Epoch 16/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6944 - loss: 0.6188 - val_accuracy: 0.7094 - val_loss: 0.6221
Epoch 17/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6939 - loss: 0.6235 - val_accuracy: 0.7094 - val_loss: 0.6216
Epoch 18/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6890 - loss: 0.6225 - val_accuracy: 0.7094 - val_loss: 0.6210
Epoch 19/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7441 - loss: 0.5944 - val_accuracy: 0.7094 - val_loss: 0.6205
Epoch 20/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7045 - loss: 0.6116 - val_accuracy: 0.7094 - val_loss: 0.6199
Epoch 21/100
```

```
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6832 - loss: 0.6285 - val_accuracy: 0.7094 - val_loss: 0.6195
Epoch 22/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7174 - loss: 0.6007 - val_accuracy: 0.7094 - val_loss: 0.6191
Epoch 23/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7144 - loss: 0.6070 - val_accuracy: 0.7094 - val_loss: 0.6187
Epoch 24/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7267 - loss: 0.5962 - val_accuracy: 0.7094 - val_loss: 0.6182
Epoch 25/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7155 - loss: 0.6046 - val_accuracy: 0.7094 - val_loss: 0.6179
Epoch 26/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7054 - loss: 0.6093 - val_accuracy: 0.7094 - val_loss: 0.6174
Epoch 27/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7088 - loss: 0.6090 - val_accuracy: 0.7094 - val_loss: 0.6171
Epoch 28/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7176 - loss: 0.6025 - val_accuracy: 0.7094 - val_loss: 0.6167
Epoch 29/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6848 - loss: 0.6231 - val_accuracy: 0.7094 - val_loss: 0.6164
Epoch 30/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7018 - loss: 0.6183 - val_accuracy: 0.7094 - val_loss: 0.6161
Epoch 31/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7198 - loss: 0.6014 - val_accuracy: 0.7094 - val_loss: 0.6158
Epoch 32/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7115 - loss: 0.6050 - val_accuracy: 0.7094 - val_loss: 0.6156
Epoch 33/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7026 - loss: 0.6120 - val_accuracy: 0.7094 - val_loss: 0.6153
Epoch 34/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7082 - loss: 0.6052 - val_accuracy: 0.7094 - val_loss: 0.6151
Epoch 35/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7268 - loss: 0.5945 - val_accuracy: 0.7094 - val_loss: 0.6149
Epoch 36/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7305 - loss: 0.5980 - val_accuracy: 0.7094 - val_loss: 0.6148
Epoch 37/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6910 - loss: 0.6183 - val_accuracy: 0.7094 - val_loss: 0.6146
Epoch 38/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6954 - loss: 0.6184 - val_accuracy: 0.7094 - val_loss: 0.6144
Epoch 39/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7107 - loss: 0.6028 - val_accuracy: 0.7094 - val_loss: 0.6141
Epoch 40/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7167 - loss: 0.6019 - val_accuracy: 0.7094 - val_loss: 0.6139
Epoch 41/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7130 - loss: 0.6073 - val_accuracy: 0.7094 - val_loss: 0.6137
```

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Epoch 42/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6888 - loss: 0.6271 - val_accuracy: 0.7094 - val_loss: 0.6136
Epoch 43/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7114 - loss: 0.6049 - val_accuracy: 0.7094 - val_loss: 0.6134
Epoch 44/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7203 - loss: 0.6032 - val_accuracy: 0.7094 - val_loss: 0.6132
Epoch 45/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7214 - loss: 0.5961 - val_accuracy: 0.7094 - val_loss: 0.6131
Epoch 46/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6636 - loss: 0.6459 - val_accuracy: 0.7094 - val_loss: 0.6129
Epoch 47/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7254 - loss: 0.5874 - val_accuracy: 0.7094 - val_loss: 0.6127
Epoch 48/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7024 - loss: 0.6100 - val_accuracy: 0.7094 - val_loss: 0.6126
Epoch 49/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6742 - loss: 0.6381 - val_accuracy: 0.7094 - val_loss: 0.6124
Epoch 50/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7325 - loss: 0.5887 - val_accuracy: 0.7094 - val_loss: 0.6123
Epoch 51/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7042 - loss: 0.6069 - val_accuracy: 0.7094 - val_loss: 0.6122
Epoch 52/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7038 - loss: 0.6059 - val_accuracy: 0.7094 - val_loss: 0.6121
Epoch 53/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7225 - loss: 0.5914 - val_accuracy: 0.7094 - val_loss: 0.6120
Epoch 54/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7123 - loss: 0.6018 - val_accuracy: 0.7094 - val_loss: 0.6119
Epoch 55/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7239 - loss: 0.5888 - val_accuracy: 0.7094 - val_loss: 0.6118
Epoch 56/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7036 - loss: 0.6104 - val_accuracy: 0.7094 - val_loss: 0.6116
Epoch 57/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6939 - loss: 0.6146 - val_accuracy: 0.7094 - val_loss: 0.6115
Epoch 58/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6982 - loss: 0.6149 - val_accuracy: 0.7094 - val_loss: 0.6114
Epoch 59/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7070 - loss: 0.6046 - val_accuracy: 0.7094 - val_loss: 0.6113
Epoch 60/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7108 - loss: 0.6088 - val_accuracy: 0.7094 - val_loss: 0.6112
Epoch 61/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7300 - loss: 0.5905 - val_accuracy: 0.7094 - val_loss: 0.6111
Epoch 62/100
```

```
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7002 - loss: 0.6122 - val_accuracy: 0.7094 - val_loss: 0.6109
Epoch 63/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7118 - loss: 0.6021 - val_accuracy: 0.7094 - val_loss: 0.6108
Epoch 64/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7211 - loss: 0.6016 - val_accuracy: 0.7094 - val_loss: 0.6107
Epoch 65/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7235 - loss: 0.5927 - val_accuracy: 0.7094 - val_loss: 0.6106
Epoch 66/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7372 - loss: 0.5837 - val_accuracy: 0.7094 - val_loss: 0.6105
Epoch 67/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7215 - loss: 0.5939 - val_accuracy: 0.7094 - val_loss: 0.6104
Epoch 68/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7087 - loss: 0.6103 - val_accuracy: 0.7094 - val_loss: 0.6103
Epoch 69/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6848 - loss: 0.6230 - val_accuracy: 0.7094 - val_loss: 0.6102
Epoch 70/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7294 - loss: 0.5922 - val_accuracy: 0.7094 - val_loss: 0.6101
Epoch 71/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6821 - loss: 0.6306 - val_accuracy: 0.7094 - val_loss: 0.6100
Epoch 72/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7088 - loss: 0.6088 - val_accuracy: 0.7094 - val_loss: 0.6099
Epoch 73/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7190 - loss: 0.5946 - val_accuracy: 0.7094 - val_loss: 0.6097
Epoch 74/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.6997 - loss: 0.6109 - val_accuracy: 0.7094 - val_loss: 0.6096
Epoch 75/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7066 - loss: 0.6068 - val_accuracy: 0.7094 - val_loss: 0.6095
Epoch 76/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7052 - loss: 0.6145 - val_accuracy: 0.7094 - val_loss: 0.6094
Epoch 77/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7050 - loss: 0.6155 - val_accuracy: 0.7094 - val_loss: 0.6093
Epoch 78/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7119 - loss: 0.6102 - val_accuracy: 0.7094 - val_loss: 0.6093
Epoch 79/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7393 - loss: 0.5805 - val_accuracy: 0.7094 - val_loss: 0.6092
Epoch 80/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7054 - loss: 0.6109 - val_accuracy: 0.7094 - val_loss: 0.6091
Epoch 81/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6922 - loss: 0.6202 - val_accuracy: 0.7094 - val_loss: 0.6090
Epoch 82/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7300 - loss: 0.5835 - val_accuracy: 0.7094 - val_loss: 0.6089
```

```
Epoch 83/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7070 - loss: 0.6015 - val_accuracy: 0.7094 - val_loss: 0.6088
Epoch 84/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7048 - loss: 0.6084 - val_accuracy: 0.7094 - val_loss: 0.6087
Epoch 85/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7243 - loss: 0.5916 - val_accuracy: 0.7094 - val_loss: 0.6086
Epoch 86/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7001 - loss: 0.6123 - val_accuracy: 0.7094 - val_loss: 0.6085
Epoch 87/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7222 - loss: 0.6038 - val_accuracy: 0.7094 - val_loss: 0.6084
Epoch 88/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7008 - loss: 0.6133 - val_accuracy: 0.7094 - val_loss: 0.6083
Epoch 89/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6827 - loss: 0.6331 - val_accuracy: 0.7094 - val_loss: 0.6082
Epoch 90/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7074 - loss: 0.6043 - val_accuracy: 0.7094 - val_loss: 0.6081
Epoch 91/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7161 - loss: 0.5957 - val_accuracy: 0.7094 - val_loss: 0.6080
Epoch 92/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7054 - loss: 0.6077 - val_accuracy: 0.7094 - val_loss: 0.6080
Epoch 93/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7295 - loss: 0.5849 - val_accuracy: 0.7094 - val_loss: 0.6079
Epoch 94/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7279 - loss: 0.5918 - val_accuracy: 0.7094 - val_loss: 0.6078
Epoch 95/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7172 - loss: 0.6007 - val_accuracy: 0.7094 - val_loss: 0.6077
Epoch 96/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7093 - loss: 0.6070 - val_accuracy: 0.7094 - val_loss: 0.6076
Epoch 97/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7155 - loss: 0.6068 - val_accuracy: 0.7094 - val_loss: 0.6075
Epoch 98/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7312 - loss: 0.5890 - val_accuracy: 0.7094 - val_loss: 0.6074
Epoch 99/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7380 - loss: 0.5728 - val_accuracy: 0.7094 - val_loss: 0.6074
Epoch 100/100
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7443 - loss: 0.5715 - val_accuracy: 0.7094 - val_loss: 0.6073
```

Out[17]: <keras.src.callbacks.history.History at 0x1ed825acbc0>

Using 2 Layers

In [18]:
```
y_train2 = keras.utils.to_categorical(y_train, 2)
y_test2 = keras.utils.to_categorical(y_test, 2)

model2 = Sequential()
model2.add(Dense(2, activation='softmax', input_shape=(9,)))
# model2.add(Dense(1, activation='sigmoid'))
model2.summary()
```

Model: "sequential_1"

Layer (type)	Output Shape	Param #
dense_1 (Dense)	(None, 2)	20

Total params: 20 (80.00 B)

Trainable params: 20 (80.00 B)

Non-trainable params: 0 (0.00 B)

In [19]:
```
model2.compile(loss='CategoricalCrossentropy', optimizer='SGD', metrics=['accuracy'])
model2.fit(X_train, y_train2, batch_size=50, epochs=500, verbose=1, validation_data=(X_test, y_test2))
```

```
Epoch 1/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 21ms/step - accuracy: 0.6911 - loss: 0.6244 - val_accuracy: 0.7094 - val_loss: 0.6193
Epoch 2/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7041 - loss: 0.6175 - val_accuracy: 0.7094 - val_loss: 0.6168
Epoch 3/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6941 - loss: 0.6240 - val_accuracy: 0.7094 - val_loss: 0.6145
Epoch 4/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7067 - loss: 0.6168 - val_accuracy: 0.7094 - val_loss: 0.6124
Epoch 5/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6976 - loss: 0.6184 - val_accuracy: 0.7094 - val_loss: 0.6107
Epoch 6/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7156 - loss: 0.6093 - val_accuracy: 0.7094 - val_loss: 0.6092
Epoch 7/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7394 - loss: 0.5849 - val_accuracy: 0.7094 - val_loss: 0.6080
Epoch 8/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.6992 - loss: 0.6123 - val_accuracy: 0.7094 - val_loss: 0.6071
Epoch 9/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7314 - loss: 0.5948 - val_accuracy: 0.7094 - val_loss: 0.6063
Epoch 10/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6749 - loss: 0.6334 - val_accuracy: 0.7094 - val_loss: 0.6053
Epoch 11/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7068 - loss: 0.6093 - val_accuracy: 0.7094 - val_loss: 0.6045
Epoch 12/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7342 - loss: 0.5857 - val_accuracy: 0.7094 - val_loss: 0.6039
Epoch 13/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7067 - loss: 0.6024 - val_accuracy: 0.7094 - val_loss: 0.6033
Epoch 14/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7174 - loss: 0.5943 - val_accuracy: 0.7094 - val_loss: 0.6027
Epoch 15/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7260 - loss: 0.5931 - val_accuracy: 0.7094 - val_loss: 0.6024
Epoch 16/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7241 - loss: 0.5947 - val_accuracy: 0.7094 - val_loss: 0.6020
Epoch 17/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7070 - loss: 0.6033 - val_accuracy: 0.7094 - val_loss: 0.6015
Epoch 18/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7077 - loss: 0.6007 - val_accuracy: 0.7094 - val_loss: 0.6012
Epoch 19/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7244 - loss: 0.5873 - val_accuracy: 0.7094 - val_loss: 0.6009
Epoch 20/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7162 - loss: 0.5929 - val_accuracy: 0.7094 - val_loss: 0.6007
Epoch 21/500
```

```
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7040 - loss: 0.6089 - val_accuracy: 0.7094 - val_loss: 0.6005
Epoch 22/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7146 - loss: 0.5943 - val_accuracy: 0.7094 - val_loss: 0.6002
Epoch 23/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7379 - loss: 0.5728 - val_accuracy: 0.7094 - val_loss: 0.6000
Epoch 24/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7099 - loss: 0.6046 - val_accuracy: 0.7094 - val_loss: 0.5997
Epoch 25/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7177 - loss: 0.5916 - val_accuracy: 0.7094 - val_loss: 0.5995
Epoch 26/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7104 - loss: 0.5950 - val_accuracy: 0.7094 - val_loss: 0.5993
Epoch 27/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7200 - loss: 0.5931 - val_accuracy: 0.7094 - val_loss: 0.5991
Epoch 28/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7041 - loss: 0.6007 - val_accuracy: 0.7094 - val_loss: 0.5990
Epoch 29/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.6911 - loss: 0.6164 - val_accuracy: 0.7094 - val_loss: 0.5988
Epoch 30/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7078 - loss: 0.6022 - val_accuracy: 0.7094 - val_loss: 0.5986
Epoch 31/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7159 - loss: 0.5964 - val_accuracy: 0.7094 - val_loss: 0.5984
Epoch 32/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7167 - loss: 0.5889 - val_accuracy: 0.7094 - val_loss: 0.5982
Epoch 33/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7065 - loss: 0.6036 - val_accuracy: 0.7094 - val_loss: 0.5981
Epoch 34/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6730 - loss: 0.6303 - val_accuracy: 0.7094 - val_loss: 0.5979
Epoch 35/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7021 - loss: 0.6020 - val_accuracy: 0.7094 - val_loss: 0.5977
Epoch 36/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7220 - loss: 0.5872 - val_accuracy: 0.7094 - val_loss: 0.5976
Epoch 37/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6995 - loss: 0.6039 - val_accuracy: 0.7094 - val_loss: 0.5974
Epoch 38/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6887 - loss: 0.6171 - val_accuracy: 0.7094 - val_loss: 0.5973
Epoch 39/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7190 - loss: 0.5898 - val_accuracy: 0.7094 - val_loss: 0.5971
Epoch 40/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7160 - loss: 0.5915 - val_accuracy: 0.7094 - val_loss: 0.5970
Epoch 41/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7171 - loss: 0.5941 - val_accuracy: 0.7094 - val_loss: 0.5968
```

```
Epoch 42/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7360 - loss: 0.5714 - val_accuracy: 0.7094 - val_loss: 0.5967
Epoch 43/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7080 - loss: 0.5966 - val_accuracy: 0.7094 - val_loss: 0.5965
Epoch 44/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6905 - loss: 0.6110 - val_accuracy: 0.7094 - val_loss: 0.5964
Epoch 45/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7086 - loss: 0.5979 - val_accuracy: 0.7094 - val_loss: 0.5962
Epoch 46/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7097 - loss: 0.5916 - val_accuracy: 0.7094 - val_loss: 0.5961
Epoch 47/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6996 - loss: 0.5992 - val_accuracy: 0.7094 - val_loss: 0.5959
Epoch 48/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7124 - loss: 0.5931 - val_accuracy: 0.7094 - val_loss: 0.5958
Epoch 49/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7008 - loss: 0.6064 - val_accuracy: 0.7094 - val_loss: 0.5956
Epoch 50/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7353 - loss: 0.5722 - val_accuracy: 0.7094 - val_loss: 0.5955
Epoch 51/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7170 - loss: 0.5889 - val_accuracy: 0.7094 - val_loss: 0.5953
Epoch 52/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7273 - loss: 0.5832 - val_accuracy: 0.7094 - val_loss: 0.5952
Epoch 53/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7447 - loss: 0.5640 - val_accuracy: 0.7094 - val_loss: 0.5951
Epoch 54/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6916 - loss: 0.6170 - val_accuracy: 0.7094 - val_loss: 0.5950
Epoch 55/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7236 - loss: 0.5832 - val_accuracy: 0.7094 - val_loss: 0.5948
Epoch 56/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6677 - loss: 0.6278 - val_accuracy: 0.7094 - val_loss: 0.5947
Epoch 57/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7124 - loss: 0.5884 - val_accuracy: 0.7094 - val_loss: 0.5945
Epoch 58/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7053 - loss: 0.5978 - val_accuracy: 0.7094 - val_loss: 0.5944
Epoch 59/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7254 - loss: 0.5757 - val_accuracy: 0.7094 - val_loss: 0.5942
Epoch 60/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7012 - loss: 0.5977 - val_accuracy: 0.7094 - val_loss: 0.5941
Epoch 61/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7058 - loss: 0.5989 - val_accuracy: 0.7094 - val_loss: 0.5940
Epoch 62/500
```

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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7116 - loss: 0.5909 - val_accuracy: 0.7094 - val_loss: 0.5938
Epoch 63/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7508 - loss: 0.5675 - val_accuracy: 0.7094 - val_loss: 0.5937
Epoch 64/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6942 - loss: 0.6095 - val_accuracy: 0.7094 - val_loss: 0.5935
Epoch 65/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7031 - loss: 0.5953 - val_accuracy: 0.7094 - val_loss: 0.5934
Epoch 66/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7265 - loss: 0.5769 - val_accuracy: 0.7094 - val_loss: 0.5933
Epoch 67/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7182 - loss: 0.5842 - val_accuracy: 0.7094 - val_loss: 0.5932
Epoch 68/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7144 - loss: 0.5901 - val_accuracy: 0.7094 - val_loss: 0.5930
Epoch 69/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7259 - loss: 0.5799 - val_accuracy: 0.7094 - val_loss: 0.5929
Epoch 70/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7133 - loss: 0.5848 - val_accuracy: 0.7094 - val_loss: 0.5927
Epoch 71/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6874 - loss: 0.6130 - val_accuracy: 0.7094 - val_loss: 0.5926
Epoch 72/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7235 - loss: 0.5840 - val_accuracy: 0.7094 - val_loss: 0.5925
Epoch 73/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7352 - loss: 0.5714 - val_accuracy: 0.7094 - val_loss: 0.5924
Epoch 74/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7255 - loss: 0.5798 - val_accuracy: 0.7094 - val_loss: 0.5923
Epoch 75/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7232 - loss: 0.5800 - val_accuracy: 0.7094 - val_loss: 0.5921
Epoch 76/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7184 - loss: 0.5872 - val_accuracy: 0.7094 - val_loss: 0.5919
Epoch 77/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7008 - loss: 0.6010 - val_accuracy: 0.7094 - val_loss: 0.5918
Epoch 78/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7355 - loss: 0.5687 - val_accuracy: 0.7094 - val_loss: 0.5917
Epoch 79/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7026 - loss: 0.5935 - val_accuracy: 0.7094 - val_loss: 0.5916
Epoch 80/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7386 - loss: 0.5628 - val_accuracy: 0.7094 - val_loss: 0.5915
Epoch 81/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7468 - loss: 0.5621 - val_accuracy: 0.7094 - val_loss: 0.5913
Epoch 82/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7184 - loss: 0.5809 - val_accuracy: 0.7094 - val_loss: 0.5912
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Epoch 83/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7375 - loss: 0.5649 - val_accuracy: 0.7094 - val_loss: 0.5910
Epoch 84/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6983 - loss: 0.5998 - val_accuracy: 0.7094 - val_loss: 0.5909
Epoch 85/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7410 - loss: 0.5601 - val_accuracy: 0.7094 - val_loss: 0.5908
Epoch 86/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7162 - loss: 0.5896 - val_accuracy: 0.7094 - val_loss: 0.5907
Epoch 87/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7082 - loss: 0.5934 - val_accuracy: 0.7094 - val_loss: 0.5905
Epoch 88/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7167 - loss: 0.5852 - val_accuracy: 0.7094 - val_loss: 0.5904
Epoch 89/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7229 - loss: 0.5795 - val_accuracy: 0.7094 - val_loss: 0.5903
Epoch 90/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7029 - loss: 0.5994 - val_accuracy: 0.7094 - val_loss: 0.5902
Epoch 91/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7037 - loss: 0.5956 - val_accuracy: 0.7094 - val_loss: 0.5901
Epoch 92/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7449 - loss: 0.5568 - val_accuracy: 0.7094 - val_loss: 0.5899
Epoch 93/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7241 - loss: 0.5763 - val_accuracy: 0.7094 - val_loss: 0.5898
Epoch 94/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7239 - loss: 0.5742 - val_accuracy: 0.7094 - val_loss: 0.5897
Epoch 95/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7359 - loss: 0.5692 - val_accuracy: 0.7094 - val_loss: 0.5896
Epoch 96/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6990 - loss: 0.5983 - val_accuracy: 0.7094 - val_loss: 0.5894
Epoch 97/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7096 - loss: 0.5906 - val_accuracy: 0.7094 - val_loss: 0.5893
Epoch 98/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7052 - loss: 0.5948 - val_accuracy: 0.7094 - val_loss: 0.5892
Epoch 99/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7199 - loss: 0.5812 - val_accuracy: 0.7094 - val_loss: 0.5891
Epoch 100/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7138 - loss: 0.5817 - val_accuracy: 0.7094 - val_loss: 0.5890
Epoch 101/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7124 - loss: 0.5802 - val_accuracy: 0.7094 - val_loss: 0.5889
Epoch 102/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7337 - loss: 0.5618 - val_accuracy: 0.7094 - val_loss: 0.5887
Epoch 103/500
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7286 - loss: 0.5776 - val_accuracy: 0.7094 - val_loss: 0.5886
Epoch 104/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7263 - loss: 0.5717 - val_accuracy: 0.7094 - val_loss: 0.5885
Epoch 105/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7012 - loss: 0.5993 - val_accuracy: 0.7094 - val_loss: 0.5883
Epoch 106/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7132 - loss: 0.5836 - val_accuracy: 0.7094 - val_loss: 0.5882
Epoch 107/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6870 - loss: 0.6094 - val_accuracy: 0.7094 - val_loss: 0.5881
Epoch 108/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6984 - loss: 0.5965 - val_accuracy: 0.7094 - val_loss: 0.5880
Epoch 109/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7246 - loss: 0.5751 - val_accuracy: 0.7094 - val_loss: 0.5879
Epoch 110/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6907 - loss: 0.6061 - val_accuracy: 0.7094 - val_loss: 0.5878
Epoch 111/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7028 - loss: 0.5932 - val_accuracy: 0.7094 - val_loss: 0.5877
Epoch 112/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7367 - loss: 0.5641 - val_accuracy: 0.7094 - val_loss: 0.5875
Epoch 113/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7021 - loss: 0.5894 - val_accuracy: 0.7094 - val_loss: 0.5874
Epoch 114/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7059 - loss: 0.5885 - val_accuracy: 0.7094 - val_loss: 0.5873
Epoch 115/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7013 - loss: 0.5971 - val_accuracy: 0.7094 - val_loss: 0.5872
Epoch 116/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7060 - loss: 0.5918 - val_accuracy: 0.7094 - val_loss: 0.5871
Epoch 117/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7107 - loss: 0.5890 - val_accuracy: 0.7094 - val_loss: 0.5870
Epoch 118/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7372 - loss: 0.5646 - val_accuracy: 0.7094 - val_loss: 0.5869
Epoch 119/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7217 - loss: 0.5764 - val_accuracy: 0.7094 - val_loss: 0.5868
Epoch 120/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7515 - loss: 0.5463 - val_accuracy: 0.7094 - val_loss: 0.5867
Epoch 121/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7131 - loss: 0.5808 - val_accuracy: 0.7094 - val_loss: 0.5865
Epoch 122/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7038 - loss: 0.5899 - val_accuracy: 0.7094 - val_loss: 0.5864
Epoch 123/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6983 - loss: 0.5960 - val_accuracy: 0.7094 - val_loss: 0.5863
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Epoch 124/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6988 - loss: 0.5930 - val_accuracy: 0.7094 - val_loss: 0.5862
Epoch 125/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6697 - loss: 0.6248 - val_accuracy: 0.7094 - val_loss: 0.5861
Epoch 126/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7281 - loss: 0.5700 - val_accuracy: 0.7094 - val_loss: 0.5859
Epoch 127/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7044 - loss: 0.5910 - val_accuracy: 0.7094 - val_loss: 0.5858
Epoch 128/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7050 - loss: 0.5903 - val_accuracy: 0.7094 - val_loss: 0.5857
Epoch 129/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6998 - loss: 0.5907 - val_accuracy: 0.7094 - val_loss: 0.5856
Epoch 130/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6980 - loss: 0.5964 - val_accuracy: 0.7094 - val_loss: 0.5855
Epoch 131/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7420 - loss: 0.5570 - val_accuracy: 0.7094 - val_loss: 0.5853
Epoch 132/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7189 - loss: 0.5777 - val_accuracy: 0.7094 - val_loss: 0.5852
Epoch 133/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7160 - loss: 0.5821 - val_accuracy: 0.7094 - val_loss: 0.5851
Epoch 134/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7358 - loss: 0.5610 - val_accuracy: 0.7094 - val_loss: 0.5850
Epoch 135/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7264 - loss: 0.5692 - val_accuracy: 0.7094 - val_loss: 0.5850
Epoch 136/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6822 - loss: 0.6115 - val_accuracy: 0.7094 - val_loss: 0.5849
Epoch 137/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7352 - loss: 0.5614 - val_accuracy: 0.7094 - val_loss: 0.5848
Epoch 138/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7195 - loss: 0.5773 - val_accuracy: 0.7094 - val_loss: 0.5847
Epoch 139/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7043 - loss: 0.5845 - val_accuracy: 0.7094 - val_loss: 0.5846
Epoch 140/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7087 - loss: 0.5857 - val_accuracy: 0.7094 - val_loss: 0.5845
Epoch 141/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7078 - loss: 0.5864 - val_accuracy: 0.7094 - val_loss: 0.5844
Epoch 142/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7119 - loss: 0.5788 - val_accuracy: 0.7094 - val_loss: 0.5843
Epoch 143/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7135 - loss: 0.5805 - val_accuracy: 0.7094 - val_loss: 0.5842
Epoch 144/500
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7287 - loss: 0.5619 - val_accuracy: 0.7094 - val_loss: 0.5841
Epoch 145/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7035 - loss: 0.5858 - val_accuracy: 0.7094 - val_loss: 0.5839
Epoch 146/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7154 - loss: 0.5792 - val_accuracy: 0.7094 - val_loss: 0.5839
Epoch 147/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7043 - loss: 0.5858 - val_accuracy: 0.7094 - val_loss: 0.5838
Epoch 148/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7002 - loss: 0.5917 - val_accuracy: 0.7094 - val_loss: 0.5837
Epoch 149/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7094 - loss: 0.5884 - val_accuracy: 0.7094 - val_loss: 0.5835
Epoch 150/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7017 - loss: 0.5952 - val_accuracy: 0.7094 - val_loss: 0.5834
Epoch 151/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7037 - loss: 0.5886 - val_accuracy: 0.7094 - val_loss: 0.5833
Epoch 152/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7068 - loss: 0.5861 - val_accuracy: 0.7094 - val_loss: 0.5832
Epoch 153/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6907 - loss: 0.5956 - val_accuracy: 0.7094 - val_loss: 0.5831
Epoch 154/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7075 - loss: 0.5836 - val_accuracy: 0.7094 - val_loss: 0.5830
Epoch 155/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6956 - loss: 0.5974 - val_accuracy: 0.7094 - val_loss: 0.5829
Epoch 156/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7163 - loss: 0.5812 - val_accuracy: 0.7094 - val_loss: 0.5829
Epoch 157/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7013 - loss: 0.5867 - val_accuracy: 0.7094 - val_loss: 0.5828
Epoch 158/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7203 - loss: 0.5750 - val_accuracy: 0.7094 - val_loss: 0.5827
Epoch 159/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7095 - loss: 0.5784 - val_accuracy: 0.7094 - val_loss: 0.5826
Epoch 160/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7024 - loss: 0.5864 - val_accuracy: 0.7094 - val_loss: 0.5824
Epoch 161/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7258 - loss: 0.5703 - val_accuracy: 0.7094 - val_loss: 0.5823
Epoch 162/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7236 - loss: 0.5733 - val_accuracy: 0.7094 - val_loss: 0.5822
Epoch 163/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7344 - loss: 0.5594 - val_accuracy: 0.7094 - val_loss: 0.5821
Epoch 164/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6975 - loss: 0.5938 - val_accuracy: 0.7094 - val_loss: 0.5820
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Epoch 165/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7227 - loss: 0.5702 - val_accuracy: 0.7094 - val_loss: 0.5819
Epoch 166/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7095 - loss: 0.5781 - val_accuracy: 0.7094 - val_loss: 0.5818
Epoch 167/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6965 - loss: 0.5937 - val_accuracy: 0.7094 - val_loss: 0.5818
Epoch 168/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7001 - loss: 0.5910 - val_accuracy: 0.7094 - val_loss: 0.5817
Epoch 169/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7344 - loss: 0.5686 - val_accuracy: 0.7094 - val_loss: 0.5815
Epoch 170/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7235 - loss: 0.5687 - val_accuracy: 0.7094 - val_loss: 0.5814
Epoch 171/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6974 - loss: 0.5916 - val_accuracy: 0.7094 - val_loss: 0.5814
Epoch 172/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7057 - loss: 0.5844 - val_accuracy: 0.7094 - val_loss: 0.5813
Epoch 173/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6941 - loss: 0.5908 - val_accuracy: 0.7094 - val_loss: 0.5812
Epoch 174/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7079 - loss: 0.5852 - val_accuracy: 0.7094 - val_loss: 0.5811
Epoch 175/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7113 - loss: 0.5809 - val_accuracy: 0.7094 - val_loss: 0.5811
Epoch 176/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7294 - loss: 0.5578 - val_accuracy: 0.7094 - val_loss: 0.5809
Epoch 177/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7141 - loss: 0.5740 - val_accuracy: 0.7094 - val_loss: 0.5808
Epoch 178/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7233 - loss: 0.5676 - val_accuracy: 0.7094 - val_loss: 0.5807
Epoch 179/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7146 - loss: 0.5780 - val_accuracy: 0.7094 - val_loss: 0.5807
Epoch 180/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7096 - loss: 0.5761 - val_accuracy: 0.7094 - val_loss: 0.5806
Epoch 181/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7194 - loss: 0.5733 - val_accuracy: 0.7094 - val_loss: 0.5804
Epoch 182/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7083 - loss: 0.5762 - val_accuracy: 0.7094 - val_loss: 0.5804
Epoch 183/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7268 - loss: 0.5601 - val_accuracy: 0.7094 - val_loss: 0.5803
Epoch 184/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7137 - loss: 0.5753 - val_accuracy: 0.7094 - val_loss: 0.5802
Epoch 185/500
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7192 - loss: 0.5652 - val_accuracy: 0.7094 - val_loss: 0.5801
Epoch 186/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6979 - loss: 0.5891 - val_accuracy: 0.7094 - val_loss: 0.5800
Epoch 187/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7093 - loss: 0.5875 - val_accuracy: 0.7094 - val_loss: 0.5799
Epoch 188/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7079 - loss: 0.5800 - val_accuracy: 0.7094 - val_loss: 0.5799
Epoch 189/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7207 - loss: 0.5686 - val_accuracy: 0.7094 - val_loss: 0.5798
Epoch 190/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7156 - loss: 0.5757 - val_accuracy: 0.7094 - val_loss: 0.5797
Epoch 191/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7285 - loss: 0.5670 - val_accuracy: 0.7094 - val_loss: 0.5796
Epoch 192/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6929 - loss: 0.5959 - val_accuracy: 0.7094 - val_loss: 0.5795
Epoch 193/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7200 - loss: 0.5684 - val_accuracy: 0.7094 - val_loss: 0.5795
Epoch 194/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7215 - loss: 0.5734 - val_accuracy: 0.7094 - val_loss: 0.5794
Epoch 195/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7218 - loss: 0.5683 - val_accuracy: 0.7094 - val_loss: 0.5793
Epoch 196/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7173 - loss: 0.5680 - val_accuracy: 0.7094 - val_loss: 0.5792
Epoch 197/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7231 - loss: 0.5707 - val_accuracy: 0.7094 - val_loss: 0.5791
Epoch 198/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7154 - loss: 0.5733 - val_accuracy: 0.7094 - val_loss: 0.5790
Epoch 199/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7154 - loss: 0.5752 - val_accuracy: 0.7094 - val_loss: 0.5789
Epoch 200/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7230 - loss: 0.5619 - val_accuracy: 0.7094 - val_loss: 0.5788
Epoch 201/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7078 - loss: 0.5846 - val_accuracy: 0.7094 - val_loss: 0.5787
Epoch 202/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7180 - loss: 0.5734 - val_accuracy: 0.7094 - val_loss: 0.5786
Epoch 203/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7043 - loss: 0.5829 - val_accuracy: 0.7094 - val_loss: 0.5785
Epoch 204/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7145 - loss: 0.5747 - val_accuracy: 0.7094 - val_loss: 0.5784
Epoch 205/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7051 - loss: 0.5776 - val_accuracy: 0.7094 - val_loss: 0.5783
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Epoch 206/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7060 - loss: 0.5800 - val_accuracy: 0.7094 - val_loss: 0.5782
Epoch 207/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7241 - loss: 0.5663 - val_accuracy: 0.7094 - val_loss: 0.5782
Epoch 208/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7098 - loss: 0.5786 - val_accuracy: 0.7094 - val_loss: 0.5781
Epoch 209/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6956 - loss: 0.5876 - val_accuracy: 0.7094 - val_loss: 0.5781
Epoch 210/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7086 - loss: 0.5784 - val_accuracy: 0.7094 - val_loss: 0.5780
Epoch 211/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7312 - loss: 0.5592 - val_accuracy: 0.7094 - val_loss: 0.5779
Epoch 212/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7067 - loss: 0.5812 - val_accuracy: 0.7094 - val_loss: 0.5778
Epoch 213/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6989 - loss: 0.5855 - val_accuracy: 0.7094 - val_loss: 0.5777
Epoch 214/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6997 - loss: 0.5810 - val_accuracy: 0.7094 - val_loss: 0.5776
Epoch 215/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7204 - loss: 0.5727 - val_accuracy: 0.7094 - val_loss: 0.5776
Epoch 216/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7155 - loss: 0.5717 - val_accuracy: 0.7094 - val_loss: 0.5775
Epoch 217/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7269 - loss: 0.5587 - val_accuracy: 0.7094 - val_loss: 0.5775
Epoch 218/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7170 - loss: 0.5697 - val_accuracy: 0.7094 - val_loss: 0.5774
Epoch 219/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7119 - loss: 0.5786 - val_accuracy: 0.7094 - val_loss: 0.5773
Epoch 220/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7305 - loss: 0.5625 - val_accuracy: 0.7094 - val_loss: 0.5772
Epoch 221/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7246 - loss: 0.5652 - val_accuracy: 0.7094 - val_loss: 0.5771
Epoch 222/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7199 - loss: 0.5674 - val_accuracy: 0.7094 - val_loss: 0.5770
Epoch 223/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7178 - loss: 0.5658 - val_accuracy: 0.7094 - val_loss: 0.5769
Epoch 224/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7149 - loss: 0.5703 - val_accuracy: 0.7094 - val_loss: 0.5769
Epoch 225/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7215 - loss: 0.5648 - val_accuracy: 0.7094 - val_loss: 0.5768
Epoch 226/500
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7119 - loss: 0.5776 - val_accuracy: 0.7094 - val_loss: 0.5767
Epoch 227/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7207 - loss: 0.5643 - val_accuracy: 0.7094 - val_loss: 0.5766
Epoch 228/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7118 - loss: 0.5780 - val_accuracy: 0.7094 - val_loss: 0.5765
Epoch 229/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7287 - loss: 0.5602 - val_accuracy: 0.7094 - val_loss: 0.5765
Epoch 230/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7179 - loss: 0.5611 - val_accuracy: 0.7094 - val_loss: 0.5764
Epoch 231/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7078 - loss: 0.5741 - val_accuracy: 0.7094 - val_loss: 0.5764
Epoch 232/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7187 - loss: 0.5700 - val_accuracy: 0.7094 - val_loss: 0.5763
Epoch 233/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7247 - loss: 0.5593 - val_accuracy: 0.7094 - val_loss: 0.5763
Epoch 234/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7205 - loss: 0.5586 - val_accuracy: 0.7094 - val_loss: 0.5762
Epoch 235/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7061 - loss: 0.5740 - val_accuracy: 0.7094 - val_loss: 0.5761
Epoch 236/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7048 - loss: 0.5758 - val_accuracy: 0.7094 - val_loss: 0.5761
Epoch 237/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6662 - loss: 0.6078 - val_accuracy: 0.7094 - val_loss: 0.5760
Epoch 238/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7231 - loss: 0.5583 - val_accuracy: 0.7094 - val_loss: 0.5759
Epoch 239/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6994 - loss: 0.5855 - val_accuracy: 0.7094 - val_loss: 0.5758
Epoch 240/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7104 - loss: 0.5744 - val_accuracy: 0.7094 - val_loss: 0.5757
Epoch 241/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7116 - loss: 0.5742 - val_accuracy: 0.7094 - val_loss: 0.5757
Epoch 242/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7199 - loss: 0.5641 - val_accuracy: 0.7094 - val_loss: 0.5756
Epoch 243/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7218 - loss: 0.5607 - val_accuracy: 0.7094 - val_loss: 0.5755
Epoch 244/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7112 - loss: 0.5724 - val_accuracy: 0.7094 - val_loss: 0.5754
Epoch 245/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7204 - loss: 0.5627 - val_accuracy: 0.7094 - val_loss: 0.5753
Epoch 246/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7278 - loss: 0.5614 - val_accuracy: 0.7094 - val_loss: 0.5752
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Epoch 247/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6919 - loss: 0.5871 - val_accuracy: 0.7094 - val_loss: 0.5751
Epoch 248/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7330 - loss: 0.5492 - val_accuracy: 0.7094 - val_loss: 0.5750
Epoch 249/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7194 - loss: 0.5681 - val_accuracy: 0.7094 - val_loss: 0.5749
Epoch 250/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7178 - loss: 0.5678 - val_accuracy: 0.7094 - val_loss: 0.5749
Epoch 251/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7173 - loss: 0.5687 - val_accuracy: 0.7094 - val_loss: 0.5748
Epoch 252/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7294 - loss: 0.5623 - val_accuracy: 0.7094 - val_loss: 0.5748
Epoch 253/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7091 - loss: 0.5671 - val_accuracy: 0.7094 - val_loss: 0.5747
Epoch 254/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7147 - loss: 0.5700 - val_accuracy: 0.7094 - val_loss: 0.5746
Epoch 255/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7081 - loss: 0.5749 - val_accuracy: 0.7094 - val_loss: 0.5745
Epoch 256/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7332 - loss: 0.5538 - val_accuracy: 0.7094 - val_loss: 0.5745
Epoch 257/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7040 - loss: 0.5856 - val_accuracy: 0.7094 - val_loss: 0.5744
Epoch 258/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7215 - loss: 0.5564 - val_accuracy: 0.7094 - val_loss: 0.5743
Epoch 259/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6808 - loss: 0.5945 - val_accuracy: 0.7094 - val_loss: 0.5743
Epoch 260/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7283 - loss: 0.5563 - val_accuracy: 0.7094 - val_loss: 0.5742
Epoch 261/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7016 - loss: 0.5841 - val_accuracy: 0.7094 - val_loss: 0.5742
Epoch 262/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7021 - loss: 0.5801 - val_accuracy: 0.7094 - val_loss: 0.5742
Epoch 263/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7050 - loss: 0.5719 - val_accuracy: 0.7094 - val_loss: 0.5741
Epoch 264/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7396 - loss: 0.5505 - val_accuracy: 0.7094 - val_loss: 0.5739
Epoch 265/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6995 - loss: 0.5749 - val_accuracy: 0.7094 - val_loss: 0.5739
Epoch 266/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7174 - loss: 0.5681 - val_accuracy: 0.7094 - val_loss: 0.5737
Epoch 267/500
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 12ms/step - accuracy: 0.7126 - loss: 0.5694 - val_accuracy: 0.7094 - val_loss: 0.5737
Epoch 268/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7097 - loss: 0.5625 - val_accuracy: 0.7094 - val_loss: 0.5736
Epoch 269/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7067 - loss: 0.5715 - val_accuracy: 0.7094 - val_loss: 0.5735
Epoch 270/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6915 - loss: 0.5822 - val_accuracy: 0.7094 - val_loss: 0.5734
Epoch 271/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7166 - loss: 0.5663 - val_accuracy: 0.7094 - val_loss: 0.5734
Epoch 272/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7193 - loss: 0.5679 - val_accuracy: 0.7094 - val_loss: 0.5733
Epoch 273/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6873 - loss: 0.5850 - val_accuracy: 0.7094 - val_loss: 0.5733
Epoch 274/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6882 - loss: 0.5919 - val_accuracy: 0.7094 - val_loss: 0.5732
Epoch 275/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7045 - loss: 0.5704 - val_accuracy: 0.7094 - val_loss: 0.5732
Epoch 276/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6888 - loss: 0.5916 - val_accuracy: 0.7094 - val_loss: 0.5731
Epoch 277/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7243 - loss: 0.5610 - val_accuracy: 0.7094 - val_loss: 0.5730
Epoch 278/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7109 - loss: 0.5685 - val_accuracy: 0.7094 - val_loss: 0.5730
Epoch 279/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7195 - loss: 0.5675 - val_accuracy: 0.7094 - val_loss: 0.5729
Epoch 280/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7291 - loss: 0.5591 - val_accuracy: 0.7094 - val_loss: 0.5728
Epoch 281/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7126 - loss: 0.5656 - val_accuracy: 0.7094 - val_loss: 0.5728
Epoch 282/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7026 - loss: 0.5772 - val_accuracy: 0.7094 - val_loss: 0.5727
Epoch 283/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7023 - loss: 0.5757 - val_accuracy: 0.7094 - val_loss: 0.5727
Epoch 284/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7143 - loss: 0.5619 - val_accuracy: 0.7094 - val_loss: 0.5726
Epoch 285/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7255 - loss: 0.5563 - val_accuracy: 0.7094 - val_loss: 0.5725
Epoch 286/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7322 - loss: 0.5514 - val_accuracy: 0.7094 - val_loss: 0.5724
Epoch 287/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6941 - loss: 0.5886 - val_accuracy: 0.7094 - val_loss: 0.5723
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Epoch 288/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7046 - loss: 0.5742 - val_accuracy: 0.7094 - val_loss: 0.5723
Epoch 289/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7092 - loss: 0.5662 - val_accuracy: 0.7094 - val_loss: 0.5722
Epoch 290/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7314 - loss: 0.5482 - val_accuracy: 0.7094 - val_loss: 0.5722
Epoch 291/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7118 - loss: 0.5686 - val_accuracy: 0.7094 - val_loss: 0.5721
Epoch 292/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7303 - loss: 0.5492 - val_accuracy: 0.7094 - val_loss: 0.5720
Epoch 293/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7215 - loss: 0.5615 - val_accuracy: 0.7094 - val_loss: 0.5720
Epoch 294/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7069 - loss: 0.5718 - val_accuracy: 0.7094 - val_loss: 0.5719
Epoch 295/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7021 - loss: 0.5812 - val_accuracy: 0.7094 - val_loss: 0.5719
Epoch 296/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6910 - loss: 0.5818 - val_accuracy: 0.7094 - val_loss: 0.5718
Epoch 297/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7449 - loss: 0.5376 - val_accuracy: 0.7094 - val_loss: 0.5718
Epoch 298/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7038 - loss: 0.5725 - val_accuracy: 0.7094 - val_loss: 0.5717
Epoch 299/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7173 - loss: 0.5666 - val_accuracy: 0.7094 - val_loss: 0.5716
Epoch 300/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7070 - loss: 0.5670 - val_accuracy: 0.7094 - val_loss: 0.5716
Epoch 301/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7073 - loss: 0.5721 - val_accuracy: 0.7094 - val_loss: 0.5716
Epoch 302/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7219 - loss: 0.5579 - val_accuracy: 0.7094 - val_loss: 0.5715
Epoch 303/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7216 - loss: 0.5618 - val_accuracy: 0.7094 - val_loss: 0.5715
Epoch 304/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7169 - loss: 0.5586 - val_accuracy: 0.7094 - val_loss: 0.5713
Epoch 305/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6926 - loss: 0.5829 - val_accuracy: 0.7094 - val_loss: 0.5713
Epoch 306/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7042 - loss: 0.5758 - val_accuracy: 0.7094 - val_loss: 0.5712
Epoch 307/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7407 - loss: 0.5404 - val_accuracy: 0.7094 - val_loss: 0.5711
Epoch 308/500
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7241 - loss: 0.5475 - val_accuracy: 0.7094 - val_loss: 0.5710
Epoch 309/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7251 - loss: 0.5569 - val_accuracy: 0.7094 - val_loss: 0.5709
Epoch 310/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6881 - loss: 0.5886 - val_accuracy: 0.7094 - val_loss: 0.5708
Epoch 311/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7097 - loss: 0.5717 - val_accuracy: 0.7094 - val_loss: 0.5708
Epoch 312/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7292 - loss: 0.5522 - val_accuracy: 0.7094 - val_loss: 0.5708
Epoch 313/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7023 - loss: 0.5829 - val_accuracy: 0.7094 - val_loss: 0.5707
Epoch 314/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7377 - loss: 0.5428 - val_accuracy: 0.7094 - val_loss: 0.5706
Epoch 315/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7037 - loss: 0.5739 - val_accuracy: 0.7094 - val_loss: 0.5705
Epoch 316/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7468 - loss: 0.5330 - val_accuracy: 0.7094 - val_loss: 0.5704
Epoch 317/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6955 - loss: 0.5777 - val_accuracy: 0.7094 - val_loss: 0.5704
Epoch 318/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7274 - loss: 0.5547 - val_accuracy: 0.7094 - val_loss: 0.5703
Epoch 319/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7016 - loss: 0.5755 - val_accuracy: 0.7094 - val_loss: 0.5703
Epoch 320/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7333 - loss: 0.5452 - val_accuracy: 0.7094 - val_loss: 0.5702
Epoch 321/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6979 - loss: 0.5828 - val_accuracy: 0.7094 - val_loss: 0.5702
Epoch 322/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7063 - loss: 0.5672 - val_accuracy: 0.7094 - val_loss: 0.5702
Epoch 323/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7278 - loss: 0.5491 - val_accuracy: 0.7094 - val_loss: 0.5701
Epoch 324/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7267 - loss: 0.5516 - val_accuracy: 0.7094 - val_loss: 0.5700
Epoch 325/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7209 - loss: 0.5621 - val_accuracy: 0.7094 - val_loss: 0.5700
Epoch 326/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7033 - loss: 0.5759 - val_accuracy: 0.7094 - val_loss: 0.5699
Epoch 327/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7211 - loss: 0.5523 - val_accuracy: 0.7094 - val_loss: 0.5698
Epoch 328/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6897 - loss: 0.5815 - val_accuracy: 0.7094 - val_loss: 0.5698
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Epoch 329/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 12ms/step - accuracy: 0.7132 - loss: 0.5630 - val_accuracy: 0.7094 - val_loss: 0.5697
Epoch 330/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7097 - loss: 0.5671 - val_accuracy: 0.7094 - val_loss: 0.5697
Epoch 331/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7358 - loss: 0.5473 - val_accuracy: 0.7094 - val_loss: 0.5696
Epoch 332/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7475 - loss: 0.5379 - val_accuracy: 0.7094 - val_loss: 0.5696
Epoch 333/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7235 - loss: 0.5568 - val_accuracy: 0.7094 - val_loss: 0.5695
Epoch 334/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7114 - loss: 0.5660 - val_accuracy: 0.7094 - val_loss: 0.5695
Epoch 335/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7039 - loss: 0.5688 - val_accuracy: 0.7094 - val_loss: 0.5694
Epoch 336/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7073 - loss: 0.5681 - val_accuracy: 0.7094 - val_loss: 0.5693
Epoch 337/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7003 - loss: 0.5717 - val_accuracy: 0.7094 - val_loss: 0.5693
Epoch 338/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7410 - loss: 0.5430 - val_accuracy: 0.7094 - val_loss: 0.5692
Epoch 339/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7103 - loss: 0.5628 - val_accuracy: 0.7094 - val_loss: 0.5692
Epoch 340/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6893 - loss: 0.5878 - val_accuracy: 0.7094 - val_loss: 0.5691
Epoch 341/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7002 - loss: 0.5783 - val_accuracy: 0.7094 - val_loss: 0.5690
Epoch 342/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7019 - loss: 0.5733 - val_accuracy: 0.7094 - val_loss: 0.5690
Epoch 343/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7100 - loss: 0.5603 - val_accuracy: 0.7094 - val_loss: 0.5689
Epoch 344/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7089 - loss: 0.5644 - val_accuracy: 0.7094 - val_loss: 0.5688
Epoch 345/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.6866 - loss: 0.5908 - val_accuracy: 0.7094 - val_loss: 0.5688
Epoch 346/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7028 - loss: 0.5701 - val_accuracy: 0.7094 - val_loss: 0.5688
Epoch 347/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7178 - loss: 0.5598 - val_accuracy: 0.7094 - val_loss: 0.5687
Epoch 348/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7192 - loss: 0.5508 - val_accuracy: 0.7094 - val_loss: 0.5686
Epoch 349/500
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7208 - loss: 0.5574 - val_accuracy: 0.7094 - val_loss: 0.5686
Epoch 350/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7191 - loss: 0.5530 - val_accuracy: 0.7094 - val_loss: 0.5685
Epoch 351/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7200 - loss: 0.5585 - val_accuracy: 0.7094 - val_loss: 0.5685
Epoch 352/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7093 - loss: 0.5671 - val_accuracy: 0.7094 - val_loss: 0.5684
Epoch 353/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7219 - loss: 0.5517 - val_accuracy: 0.7094 - val_loss: 0.5683
Epoch 354/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7158 - loss: 0.5620 - val_accuracy: 0.7094 - val_loss: 0.5683
Epoch 355/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7252 - loss: 0.5532 - val_accuracy: 0.7094 - val_loss: 0.5682
Epoch 356/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7258 - loss: 0.5525 - val_accuracy: 0.7094 - val_loss: 0.5682
Epoch 357/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7068 - loss: 0.5726 - val_accuracy: 0.7094 - val_loss: 0.5681
Epoch 358/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7169 - loss: 0.5592 - val_accuracy: 0.7094 - val_loss: 0.5681
Epoch 359/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6870 - loss: 0.5840 - val_accuracy: 0.7094 - val_loss: 0.5680
Epoch 360/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7194 - loss: 0.5578 - val_accuracy: 0.7094 - val_loss: 0.5680
Epoch 361/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7090 - loss: 0.5675 - val_accuracy: 0.7094 - val_loss: 0.5680
Epoch 362/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6970 - loss: 0.5713 - val_accuracy: 0.7094 - val_loss: 0.5679
Epoch 363/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7010 - loss: 0.5809 - val_accuracy: 0.7094 - val_loss: 0.5679
Epoch 364/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7275 - loss: 0.5516 - val_accuracy: 0.7094 - val_loss: 0.5678
Epoch 365/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7319 - loss: 0.5498 - val_accuracy: 0.7094 - val_loss: 0.5678
Epoch 366/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6874 - loss: 0.5830 - val_accuracy: 0.7094 - val_loss: 0.5677
Epoch 367/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7380 - loss: 0.5442 - val_accuracy: 0.7094 - val_loss: 0.5677
Epoch 368/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6988 - loss: 0.5772 - val_accuracy: 0.7094 - val_loss: 0.5676
Epoch 369/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6970 - loss: 0.5700 - val_accuracy: 0.7094 - val_loss: 0.5676
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Epoch 370/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 14ms/step - accuracy: 0.7321 - loss: 0.5518 - val_accuracy: 0.7094 - val_loss: 0.5675
Epoch 371/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7229 - loss: 0.5514 - val_accuracy: 0.7094 - val_loss: 0.5675
Epoch 372/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7020 - loss: 0.5661 - val_accuracy: 0.7094 - val_loss: 0.5674
Epoch 373/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7113 - loss: 0.5638 - val_accuracy: 0.7094 - val_loss: 0.5674
Epoch 374/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7055 - loss: 0.5632 - val_accuracy: 0.7094 - val_loss: 0.5673
Epoch 375/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7088 - loss: 0.5700 - val_accuracy: 0.7094 - val_loss: 0.5673
Epoch 376/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7364 - loss: 0.5344 - val_accuracy: 0.7094 - val_loss: 0.5672
Epoch 377/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7059 - loss: 0.5667 - val_accuracy: 0.7094 - val_loss: 0.5672
Epoch 378/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6784 - loss: 0.5906 - val_accuracy: 0.7094 - val_loss: 0.5672
Epoch 379/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6763 - loss: 0.5952 - val_accuracy: 0.7094 - val_loss: 0.5671
Epoch 380/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7276 - loss: 0.5455 - val_accuracy: 0.7094 - val_loss: 0.5670
Epoch 381/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7049 - loss: 0.5684 - val_accuracy: 0.7094 - val_loss: 0.5670
Epoch 382/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7112 - loss: 0.5613 - val_accuracy: 0.7094 - val_loss: 0.5669
Epoch 383/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7324 - loss: 0.5476 - val_accuracy: 0.7094 - val_loss: 0.5669
Epoch 384/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7233 - loss: 0.5555 - val_accuracy: 0.7094 - val_loss: 0.5669
Epoch 385/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6934 - loss: 0.5799 - val_accuracy: 0.7094 - val_loss: 0.5668
Epoch 386/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7301 - loss: 0.5493 - val_accuracy: 0.7094 - val_loss: 0.5668
Epoch 387/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7032 - loss: 0.5683 - val_accuracy: 0.7094 - val_loss: 0.5667
Epoch 388/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7200 - loss: 0.5545 - val_accuracy: 0.7094 - val_loss: 0.5667
Epoch 389/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7376 - loss: 0.5354 - val_accuracy: 0.7094 - val_loss: 0.5666
Epoch 390/500
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7208 - loss: 0.5578 - val_accuracy: 0.7094 - val_loss: 0.5665
Epoch 391/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7302 - loss: 0.5400 - val_accuracy: 0.7094 - val_loss: 0.5665
Epoch 392/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6960 - loss: 0.5734 - val_accuracy: 0.7094 - val_loss: 0.5664
Epoch 393/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7571 - loss: 0.5127 - val_accuracy: 0.7094 - val_loss: 0.5664
Epoch 394/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7082 - loss: 0.5607 - val_accuracy: 0.7094 - val_loss: 0.5663
Epoch 395/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7141 - loss: 0.5635 - val_accuracy: 0.7094 - val_loss: 0.5663
Epoch 396/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7045 - loss: 0.5720 - val_accuracy: 0.7094 - val_loss: 0.5662
Epoch 397/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6858 - loss: 0.5790 - val_accuracy: 0.7094 - val_loss: 0.5662
Epoch 398/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7238 - loss: 0.5450 - val_accuracy: 0.7094 - val_loss: 0.5661
Epoch 399/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7134 - loss: 0.5501 - val_accuracy: 0.7094 - val_loss: 0.5661
Epoch 400/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7214 - loss: 0.5493 - val_accuracy: 0.7094 - val_loss: 0.5661
Epoch 401/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7418 - loss: 0.5368 - val_accuracy: 0.7094 - val_loss: 0.5660
Epoch 402/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6955 - loss: 0.5730 - val_accuracy: 0.7094 - val_loss: 0.5660
Epoch 403/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7341 - loss: 0.5417 - val_accuracy: 0.7094 - val_loss: 0.5659
Epoch 404/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7166 - loss: 0.5615 - val_accuracy: 0.7094 - val_loss: 0.5658
Epoch 405/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7144 - loss: 0.5535 - val_accuracy: 0.7094 - val_loss: 0.5657
Epoch 406/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7056 - loss: 0.5588 - val_accuracy: 0.7094 - val_loss: 0.5657
Epoch 407/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6946 - loss: 0.5736 - val_accuracy: 0.7094 - val_loss: 0.5656
Epoch 408/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7350 - loss: 0.5420 - val_accuracy: 0.7094 - val_loss: 0.5656
Epoch 409/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7007 - loss: 0.5676 - val_accuracy: 0.7094 - val_loss: 0.5655
Epoch 410/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7099 - loss: 0.5741 - val_accuracy: 0.7094 - val_loss: 0.5655
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Epoch 411/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7202 - loss: 0.5499 - val_accuracy: 0.7094 - val_loss: 0.5655
Epoch 412/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7284 - loss: 0.5525 - val_accuracy: 0.7094 - val_loss: 0.5654
Epoch 413/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7026 - loss: 0.5743 - val_accuracy: 0.7094 - val_loss: 0.5654
Epoch 414/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7193 - loss: 0.5531 - val_accuracy: 0.7094 - val_loss: 0.5654
Epoch 415/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6983 - loss: 0.5816 - val_accuracy: 0.7094 - val_loss: 0.5653
Epoch 416/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7001 - loss: 0.5705 - val_accuracy: 0.7094 - val_loss: 0.5653
Epoch 417/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6975 - loss: 0.5693 - val_accuracy: 0.7094 - val_loss: 0.5652
Epoch 418/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7062 - loss: 0.5557 - val_accuracy: 0.7094 - val_loss: 0.5652
Epoch 419/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7081 - loss: 0.5573 - val_accuracy: 0.7094 - val_loss: 0.5651
Epoch 420/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7191 - loss: 0.5505 - val_accuracy: 0.7094 - val_loss: 0.5650
Epoch 421/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7183 - loss: 0.5579 - val_accuracy: 0.7094 - val_loss: 0.5650
Epoch 422/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7386 - loss: 0.5385 - val_accuracy: 0.7094 - val_loss: 0.5649
Epoch 423/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7229 - loss: 0.5429 - val_accuracy: 0.7094 - val_loss: 0.5649
Epoch 424/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7292 - loss: 0.5474 - val_accuracy: 0.7094 - val_loss: 0.5648
Epoch 425/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7330 - loss: 0.5395 - val_accuracy: 0.7094 - val_loss: 0.5647
Epoch 426/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7139 - loss: 0.5544 - val_accuracy: 0.7094 - val_loss: 0.5647
Epoch 427/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7258 - loss: 0.5537 - val_accuracy: 0.7094 - val_loss: 0.5647
Epoch 428/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7107 - loss: 0.5600 - val_accuracy: 0.7094 - val_loss: 0.5646
Epoch 429/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7102 - loss: 0.5578 - val_accuracy: 0.7094 - val_loss: 0.5646
Epoch 430/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7106 - loss: 0.5522 - val_accuracy: 0.7094 - val_loss: 0.5645
Epoch 431/500
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7254 - loss: 0.5483 - val_accuracy: 0.7094 - val_loss: 0.5645
Epoch 432/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6932 - loss: 0.5767 - val_accuracy: 0.7094 - val_loss: 0.5645
Epoch 433/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7300 - loss: 0.5438 - val_accuracy: 0.7094 - val_loss: 0.5644
Epoch 434/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7378 - loss: 0.5365 - val_accuracy: 0.7094 - val_loss: 0.5644
Epoch 435/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7210 - loss: 0.5576 - val_accuracy: 0.7094 - val_loss: 0.5643
Epoch 436/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7231 - loss: 0.5420 - val_accuracy: 0.7094 - val_loss: 0.5643
Epoch 437/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7413 - loss: 0.5407 - val_accuracy: 0.7094 - val_loss: 0.5642
Epoch 438/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7243 - loss: 0.5471 - val_accuracy: 0.7094 - val_loss: 0.5642
Epoch 439/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6848 - loss: 0.5769 - val_accuracy: 0.7094 - val_loss: 0.5642
Epoch 440/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7245 - loss: 0.5478 - val_accuracy: 0.7094 - val_loss: 0.5641
Epoch 441/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7199 - loss: 0.5517 - val_accuracy: 0.7094 - val_loss: 0.5640
Epoch 442/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7084 - loss: 0.5532 - val_accuracy: 0.7094 - val_loss: 0.5640
Epoch 443/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7176 - loss: 0.5525 - val_accuracy: 0.7094 - val_loss: 0.5639
Epoch 444/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7225 - loss: 0.5512 - val_accuracy: 0.7094 - val_loss: 0.5640
Epoch 445/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7339 - loss: 0.5462 - val_accuracy: 0.7094 - val_loss: 0.5639
Epoch 446/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7075 - loss: 0.5638 - val_accuracy: 0.7094 - val_loss: 0.5638
Epoch 447/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7119 - loss: 0.5585 - val_accuracy: 0.7094 - val_loss: 0.5637
Epoch 448/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7044 - loss: 0.5596 - val_accuracy: 0.7094 - val_loss: 0.5637
Epoch 449/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7344 - loss: 0.5437 - val_accuracy: 0.7094 - val_loss: 0.5637
Epoch 450/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7157 - loss: 0.5581 - val_accuracy: 0.7094 - val_loss: 0.5637
Epoch 451/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7298 - loss: 0.5486 - val_accuracy: 0.7094 - val_loss: 0.5636
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Epoch 452/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7253 - loss: 0.5392 - val_accuracy: 0.7094 - val_loss: 0.5635
Epoch 453/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7443 - loss: 0.5287 - val_accuracy: 0.7094 - val_loss: 0.5635
Epoch 454/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7151 - loss: 0.5610 - val_accuracy: 0.7094 - val_loss: 0.5635
Epoch 455/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7367 - loss: 0.5413 - val_accuracy: 0.7094 - val_loss: 0.5634
Epoch 456/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7190 - loss: 0.5516 - val_accuracy: 0.7094 - val_loss: 0.5634
Epoch 457/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6963 - loss: 0.5733 - val_accuracy: 0.7094 - val_loss: 0.5634
Epoch 458/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7266 - loss: 0.5462 - val_accuracy: 0.7094 - val_loss: 0.5633
Epoch 459/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7321 - loss: 0.5392 - val_accuracy: 0.7094 - val_loss: 0.5633
Epoch 460/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7203 - loss: 0.5526 - val_accuracy: 0.7094 - val_loss: 0.5633
Epoch 461/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7163 - loss: 0.5548 - val_accuracy: 0.7094 - val_loss: 0.5632
Epoch 462/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7166 - loss: 0.5584 - val_accuracy: 0.7094 - val_loss: 0.5632
Epoch 463/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6920 - loss: 0.5823 - val_accuracy: 0.7094 - val_loss: 0.5632
Epoch 464/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7130 - loss: 0.5553 - val_accuracy: 0.7094 - val_loss: 0.5631
Epoch 465/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7304 - loss: 0.5410 - val_accuracy: 0.7094 - val_loss: 0.5631
Epoch 466/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7095 - loss: 0.5513 - val_accuracy: 0.7094 - val_loss: 0.5631
Epoch 467/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7197 - loss: 0.5513 - val_accuracy: 0.7094 - val_loss: 0.5630
Epoch 468/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6978 - loss: 0.5764 - val_accuracy: 0.7094 - val_loss: 0.5630
Epoch 469/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7267 - loss: 0.5425 - val_accuracy: 0.7094 - val_loss: 0.5630
Epoch 470/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7178 - loss: 0.5575 - val_accuracy: 0.7094 - val_loss: 0.5629
Epoch 471/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7290 - loss: 0.5389 - val_accuracy: 0.7094 - val_loss: 0.5628
Epoch 472/500
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7384 - loss: 0.5488 - val_accuracy: 0.7094 - val_loss: 0.5628
Epoch 473/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7226 - loss: 0.5503 - val_accuracy: 0.7094 - val_loss: 0.5628
Epoch 474/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7161 - loss: 0.5572 - val_accuracy: 0.7094 - val_loss: 0.5627
Epoch 475/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7077 - loss: 0.5599 - val_accuracy: 0.7094 - val_loss: 0.5627
Epoch 476/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7397 - loss: 0.5353 - val_accuracy: 0.7094 - val_loss: 0.5626
Epoch 477/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7194 - loss: 0.5435 - val_accuracy: 0.7094 - val_loss: 0.5626
Epoch 478/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7244 - loss: 0.5450 - val_accuracy: 0.7094 - val_loss: 0.5626
Epoch 479/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7265 - loss: 0.5415 - val_accuracy: 0.7094 - val_loss: 0.5625
Epoch 480/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7277 - loss: 0.5472 - val_accuracy: 0.7094 - val_loss: 0.5625
Epoch 481/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6959 - loss: 0.5713 - val_accuracy: 0.7094 - val_loss: 0.5625
Epoch 482/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7203 - loss: 0.5505 - val_accuracy: 0.7094 - val_loss: 0.5625
Epoch 483/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7092 - loss: 0.5629 - val_accuracy: 0.7094 - val_loss: 0.5624
Epoch 484/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7194 - loss: 0.5484 - val_accuracy: 0.7094 - val_loss: 0.5624
Epoch 485/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7162 - loss: 0.5538 - val_accuracy: 0.7094 - val_loss: 0.5623
Epoch 486/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7194 - loss: 0.5473 - val_accuracy: 0.7094 - val_loss: 0.5622
Epoch 487/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7121 - loss: 0.5597 - val_accuracy: 0.7094 - val_loss: 0.5622
Epoch 488/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7201 - loss: 0.5520 - val_accuracy: 0.7094 - val_loss: 0.5622
Epoch 489/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6955 - loss: 0.5710 - val_accuracy: 0.7094 - val_loss: 0.5621
Epoch 490/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7035 - loss: 0.5614 - val_accuracy: 0.7094 - val_loss: 0.5620
Epoch 491/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6984 - loss: 0.5707 - val_accuracy: 0.7094 - val_loss: 0.5620
Epoch 492/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7185 - loss: 0.5546 - val_accuracy: 0.7094 - val_loss: 0.5619
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Epoch 493/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7065 - loss: 0.5620 - val_accuracy: 0.7094 - val_loss: 0.5619
Epoch 494/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7118 - loss: 0.5532 - val_accuracy: 0.7094 - val_loss: 0.5618
Epoch 495/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7200 - loss: 0.5575 - val_accuracy: 0.7094 - val_loss: 0.5617
Epoch 496/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7092 - loss: 0.5543 - val_accuracy: 0.7094 - val_loss: 0.5617
Epoch 497/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7057 - loss: 0.5681 - val_accuracy: 0.7094 - val_loss: 0.5617
Epoch 498/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6986 - loss: 0.5582 - val_accuracy: 0.7094 - val_loss: 0.5616
Epoch 499/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7205 - loss: 0.5460 - val_accuracy: 0.7094 - val_loss: 0.5616
Epoch 500/500
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6984 - loss: 0.5575 - val_accuracy: 0.7094 - val_loss: 0.5616
```

```
Out[19]: <keras.src.callbacks.history.History at 0x1ed82831eb0>
```

```
In [20]: y_pred = np.argmax(model2.predict(X_test), axis=1)
         y_pred
```

```
4/4 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step
```

```
Out[20]: array([1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
                1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
                1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
                1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
                1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,
                1, 1, 1, 1, 1, 1, 1])
```

```
In [21]: model3 = Sequential()
         model3.add(Dense(10, activation='sigmoid', input_shape=(9,)))
         model3.add(Dense(1, activation = 'sigmoid'))
         model3.summary()
```

Model: "sequential_2"

Layer (type)	Output Shape	Param #
dense_2 (Dense)	(None, 10)	100
dense_3 (Dense)	(None, 1)	11

Total params: 111 (444.00 B)

Trainable params: 111 (444.00 B)

Non-trainable params: 0 (0.00 B)

In [22]:
```
model3.compile(loss='BinaryCrossentropy', optimizer='SGD', metrics=['accuracy'])
model3.fit(X_train, y_train, batch_size=10, epochs=100,verbose=1, validation_data=(X_test, y_test))
```

```
Epoch 1/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 1s 5ms/step - accuracy: 0.7527 - loss: 0.6043 - val_accuracy: 0.7094 - val_loss: 0.6133
Epoch 2/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7160 - loss: 0.6061 - val_accuracy: 0.7094 - val_loss: 0.6066
Epoch 3/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7048 - loss: 0.6084 - val_accuracy: 0.7094 - val_loss: 0.6038
Epoch 4/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7250 - loss: 0.5910 - val_accuracy: 0.7094 - val_loss: 0.6025
Epoch 5/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7079 - loss: 0.6030 - val_accuracy: 0.7094 - val_loss: 0.6018
Epoch 6/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7035 - loss: 0.6067 - val_accuracy: 0.7094 - val_loss: 0.6015
Epoch 7/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7282 - loss: 0.5851 - val_accuracy: 0.7094 - val_loss: 0.6014
Epoch 8/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7103 - loss: 0.5994 - val_accuracy: 0.7094 - val_loss: 0.6013
Epoch 9/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6864 - loss: 0.6205 - val_accuracy: 0.7094 - val_loss: 0.6013
Epoch 10/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6716 - loss: 0.6342 - val_accuracy: 0.7094 - val_loss: 0.6013
Epoch 11/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7163 - loss: 0.5940 - val_accuracy: 0.7094 - val_loss: 0.6013
Epoch 12/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.6921 - loss: 0.6159 - val_accuracy: 0.7094 - val_loss: 0.6012
Epoch 13/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7412 - loss: 0.5707 - val_accuracy: 0.7094 - val_loss: 0.6012
Epoch 14/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7277 - loss: 0.5840 - val_accuracy: 0.7094 - val_loss: 0.6011
Epoch 15/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7460 - loss: 0.5658 - val_accuracy: 0.7094 - val_loss: 0.6010
Epoch 16/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7200 - loss: 0.5910 - val_accuracy: 0.7094 - val_loss: 0.6010
Epoch 17/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7328 - loss: 0.5793 - val_accuracy: 0.7094 - val_loss: 0.6009
Epoch 18/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6842 - loss: 0.6222 - val_accuracy: 0.7094 - val_loss: 0.6009
Epoch 19/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.6849 - loss: 0.6223 - val_accuracy: 0.7094 - val_loss: 0.6009
Epoch 20/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.6656 - loss: 0.6398 - val_accuracy: 0.7094 - val_loss: 0.6009
Epoch 21/100
```

```
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7211 - loss: 0.5891 - val_accuracy: 0.7094 - val_loss: 0.6008
Epoch 22/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.6919 - loss: 0.6156 - val_accuracy: 0.7094 - val_loss: 0.6008
Epoch 23/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7254 - loss: 0.5853 - val_accuracy: 0.7094 - val_loss: 0.6007
Epoch 24/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7215 - loss: 0.5883 - val_accuracy: 0.7094 - val_loss: 0.6007
Epoch 25/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7281 - loss: 0.5829 - val_accuracy: 0.7094 - val_loss: 0.6006
Epoch 26/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7246 - loss: 0.5853 - val_accuracy: 0.7094 - val_loss: 0.6005
Epoch 27/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7033 - loss: 0.6049 - val_accuracy: 0.7094 - val_loss: 0.6005
Epoch 28/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7210 - loss: 0.5888 - val_accuracy: 0.7094 - val_loss: 0.6004
Epoch 29/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7324 - loss: 0.5799 - val_accuracy: 0.7094 - val_loss: 0.6004
Epoch 30/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6926 - loss: 0.6153 - val_accuracy: 0.7094 - val_loss: 0.6004
Epoch 31/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7106 - loss: 0.5991 - val_accuracy: 0.7094 - val_loss: 0.6004
Epoch 32/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6967 - loss: 0.6117 - val_accuracy: 0.7094 - val_loss: 0.6003
Epoch 33/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6990 - loss: 0.6085 - val_accuracy: 0.7094 - val_loss: 0.6003
Epoch 34/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7569 - loss: 0.5565 - val_accuracy: 0.7094 - val_loss: 0.6002
Epoch 35/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7492 - loss: 0.5637 - val_accuracy: 0.7094 - val_loss: 0.6001
Epoch 36/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7425 - loss: 0.5691 - val_accuracy: 0.7094 - val_loss: 0.6001
Epoch 37/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7040 - loss: 0.6037 - val_accuracy: 0.7094 - val_loss: 0.6001
Epoch 38/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7377 - loss: 0.5726 - val_accuracy: 0.7094 - val_loss: 0.6000
Epoch 39/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7122 - loss: 0.5961 - val_accuracy: 0.7094 - val_loss: 0.6000
Epoch 40/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7117 - loss: 0.5966 - val_accuracy: 0.7094 - val_loss: 0.6000
Epoch 41/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7137 - loss: 0.5948 - val_accuracy: 0.7094 - val_loss: 0.5999
```

```
Epoch 42/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7461 - loss: 0.5647 - val_accuracy: 0.7094 - val_loss: 0.5998
Epoch 43/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7277 - loss: 0.5816 - val_accuracy: 0.7094 - val_loss: 0.5998
Epoch 44/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7349 - loss: 0.5759 - val_accuracy: 0.7094 - val_loss: 0.5997
Epoch 45/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7327 - loss: 0.5788 - val_accuracy: 0.7094 - val_loss: 0.5997
Epoch 46/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6720 - loss: 0.6313 - val_accuracy: 0.7094 - val_loss: 0.5997
Epoch 47/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7186 - loss: 0.5903 - val_accuracy: 0.7094 - val_loss: 0.5996
Epoch 48/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7158 - loss: 0.5929 - val_accuracy: 0.7094 - val_loss: 0.5996
Epoch 49/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7120 - loss: 0.5953 - val_accuracy: 0.7094 - val_loss: 0.5995
Epoch 50/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7022 - loss: 0.6058 - val_accuracy: 0.7094 - val_loss: 0.5995
Epoch 51/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7151 - loss: 0.5933 - val_accuracy: 0.7094 - val_loss: 0.5995
Epoch 52/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7360 - loss: 0.5733 - val_accuracy: 0.7094 - val_loss: 0.5994
Epoch 53/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7381 - loss: 0.5722 - val_accuracy: 0.7094 - val_loss: 0.5993
Epoch 54/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.6882 - loss: 0.6182 - val_accuracy: 0.7094 - val_loss: 0.5993
Epoch 55/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7205 - loss: 0.5881 - val_accuracy: 0.7094 - val_loss: 0.5992
Epoch 56/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7007 - loss: 0.6077 - val_accuracy: 0.7094 - val_loss: 0.5992
Epoch 57/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.6941 - loss: 0.6107 - val_accuracy: 0.7094 - val_loss: 0.5991
Epoch 58/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7392 - loss: 0.5706 - val_accuracy: 0.7094 - val_loss: 0.5991
Epoch 59/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6853 - loss: 0.6194 - val_accuracy: 0.7094 - val_loss: 0.5991
Epoch 60/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7070 - loss: 0.6002 - val_accuracy: 0.7094 - val_loss: 0.5991
Epoch 61/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7076 - loss: 0.5997 - val_accuracy: 0.7094 - val_loss: 0.5990
Epoch 62/100
```

```
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6864 - loss: 0.6202 - val_accuracy: 0.7094 - val_loss: 0.5989
Epoch 63/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7151 - loss: 0.5926 - val_accuracy: 0.7094 - val_loss: 0.5989
Epoch 64/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7434 - loss: 0.5660 - val_accuracy: 0.7094 - val_loss: 0.5988
Epoch 65/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7203 - loss: 0.5877 - val_accuracy: 0.7094 - val_loss: 0.5988
Epoch 66/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6974 - loss: 0.6084 - val_accuracy: 0.7094 - val_loss: 0.5987
Epoch 67/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7143 - loss: 0.5930 - val_accuracy: 0.7094 - val_loss: 0.5987
Epoch 68/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7001 - loss: 0.6070 - val_accuracy: 0.7094 - val_loss: 0.5986
Epoch 69/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6778 - loss: 0.6249 - val_accuracy: 0.7094 - val_loss: 0.5986
Epoch 70/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6842 - loss: 0.6202 - val_accuracy: 0.7094 - val_loss: 0.5986
Epoch 71/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6858 - loss: 0.6183 - val_accuracy: 0.7094 - val_loss: 0.5985
Epoch 72/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7355 - loss: 0.5738 - val_accuracy: 0.7094 - val_loss: 0.5985
Epoch 73/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6798 - loss: 0.6249 - val_accuracy: 0.7094 - val_loss: 0.5984
Epoch 74/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7119 - loss: 0.5945 - val_accuracy: 0.7094 - val_loss: 0.5984
Epoch 75/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7088 - loss: 0.5970 - val_accuracy: 0.7094 - val_loss: 0.5983
Epoch 76/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7220 - loss: 0.5854 - val_accuracy: 0.7094 - val_loss: 0.5983
Epoch 77/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7770 - loss: 0.5339 - val_accuracy: 0.7094 - val_loss: 0.5982
Epoch 78/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6973 - loss: 0.6093 - val_accuracy: 0.7094 - val_loss: 0.5981
Epoch 79/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7357 - loss: 0.5735 - val_accuracy: 0.7094 - val_loss: 0.5981
Epoch 80/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7113 - loss: 0.5933 - val_accuracy: 0.7094 - val_loss: 0.5980
Epoch 81/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7231 - loss: 0.5853 - val_accuracy: 0.7094 - val_loss: 0.5980
Epoch 82/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6965 - loss: 0.6105 - val_accuracy: 0.7094 - val_loss: 0.5979
```

```
Epoch 83/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7228 - loss: 0.5850 - val_accuracy: 0.7094 - val_loss: 0.5979
Epoch 84/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7375 - loss: 0.5718 - val_accuracy: 0.7094 - val_loss: 0.5978
Epoch 85/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.6813 - loss: 0.6226 - val_accuracy: 0.7094 - val_loss: 0.5978
Epoch 86/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7048 - loss: 0.5994 - val_accuracy: 0.7094 - val_loss: 0.5978
Epoch 87/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7500 - loss: 0.5588 - val_accuracy: 0.7094 - val_loss: 0.5977
Epoch 88/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7122 - loss: 0.5919 - val_accuracy: 0.7094 - val_loss: 0.5976
Epoch 89/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7386 - loss: 0.5698 - val_accuracy: 0.7094 - val_loss: 0.5976
Epoch 90/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7150 - loss: 0.5911 - val_accuracy: 0.7094 - val_loss: 0.5975
Epoch 91/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7260 - loss: 0.5815 - val_accuracy: 0.7094 - val_loss: 0.5975
Epoch 92/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6909 - loss: 0.6109 - val_accuracy: 0.7094 - val_loss: 0.5974
Epoch 93/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7150 - loss: 0.5897 - val_accuracy: 0.7094 - val_loss: 0.5974
Epoch 94/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7116 - loss: 0.5949 - val_accuracy: 0.7094 - val_loss: 0.5974
Epoch 95/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.6862 - loss: 0.6177 - val_accuracy: 0.7094 - val_loss: 0.5974
Epoch 96/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7008 - loss: 0.6049 - val_accuracy: 0.7094 - val_loss: 0.5973
Epoch 97/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7098 - loss: 0.5964 - val_accuracy: 0.7094 - val_loss: 0.5972
Epoch 98/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7320 - loss: 0.5749 - val_accuracy: 0.7094 - val_loss: 0.5972
Epoch 99/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 2ms/step - accuracy: 0.7184 - loss: 0.5879 - val_accuracy: 0.7094 - val_loss: 0.5971
Epoch 100/100
47/47 ━━━━━━━━━━━━━━━━━━━━ 0s 3ms/step - accuracy: 0.7398 - loss: 0.5678 - val_accuracy: 0.7094 - val_loss: 0.5970
```

Out[22]: <keras.src.callbacks.history.History at 0x1ed8299dca0>

Question2: using reLu Activation

In [23]:
```
model4 = Sequential()
model4.add(Dense(10, activation='relu', input_shape=(9,)))
model4.add(Dense(1, activation = 'sigmoid'))
model4.summary()
```

Model: "sequential_3"

Layer (type)	Output Shape	Param #
dense_4 (Dense)	(None, 10)	100
dense_5 (Dense)	(None, 1)	11

Total params: 111 (444.00 B)

Trainable params: 111 (444.00 B)

Non-trainable params: 0 (0.00 B)

In [24]:
```
model4.compile(loss='BinaryCrossentropy', optimizer='SGD', metrics=['accuracy'])
model4.fit(X_train, y_train, batch_size=50, epochs=1000,verbose=1, validation_data=(X_test, y_test))
```

```
Epoch 1/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 1s 21ms/step - accuracy: 0.4941 - loss: 0.6944 - val_accuracy: 0.6068 - val_loss: 0.6844
Epoch 2/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.5855 - loss: 0.6794 - val_accuracy: 0.6667 - val_loss: 0.6728
Epoch 3/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7002 - loss: 0.6670 - val_accuracy: 0.6667 - val_loss: 0.6629
Epoch 4/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6914 - loss: 0.6580 - val_accuracy: 0.7094 - val_loss: 0.6537
Epoch 5/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7302 - loss: 0.6462 - val_accuracy: 0.7094 - val_loss: 0.6455
Epoch 6/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7076 - loss: 0.6421 - val_accuracy: 0.7094 - val_loss: 0.6389
Epoch 7/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7075 - loss: 0.6383 - val_accuracy: 0.7094 - val_loss: 0.6329
Epoch 8/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6920 - loss: 0.6380 - val_accuracy: 0.7094 - val_loss: 0.6276
Epoch 9/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6910 - loss: 0.6338 - val_accuracy: 0.7094 - val_loss: 0.6238
Epoch 10/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7219 - loss: 0.6174 - val_accuracy: 0.7094 - val_loss: 0.6206
Epoch 11/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7194 - loss: 0.6169 - val_accuracy: 0.7094 - val_loss: 0.6174
Epoch 12/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7377 - loss: 0.6030 - val_accuracy: 0.7094 - val_loss: 0.6147
Epoch 13/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7211 - loss: 0.6044 - val_accuracy: 0.7094 - val_loss: 0.6126
Epoch 14/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7325 - loss: 0.5981 - val_accuracy: 0.7094 - val_loss: 0.6108
Epoch 15/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7083 - loss: 0.6095 - val_accuracy: 0.7094 - val_loss: 0.6093
Epoch 16/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7593 - loss: 0.5772 - val_accuracy: 0.7094 - val_loss: 0.6077
Epoch 17/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7076 - loss: 0.6077 - val_accuracy: 0.7094 - val_loss: 0.6064
Epoch 18/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7252 - loss: 0.5994 - val_accuracy: 0.7094 - val_loss: 0.6054
Epoch 19/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7243 - loss: 0.5903 - val_accuracy: 0.7094 - val_loss: 0.6043
Epoch 20/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7256 - loss: 0.5930 - val_accuracy: 0.7094 - val_loss: 0.6035
Epoch 21/1000
```

```
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.6905 - loss: 0.6135 - val_accuracy: 0.7094 - val_loss: 0.6029
Epoch 22/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7220 - loss: 0.5941 - val_accuracy: 0.7094 - val_loss: 0.6022
Epoch 23/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7138 - loss: 0.5989 - val_accuracy: 0.7094 - val_loss: 0.6018
Epoch 24/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7039 - loss: 0.6055 - val_accuracy: 0.7094 - val_loss: 0.6014
Epoch 25/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7344 - loss: 0.5812 - val_accuracy: 0.7094 - val_loss: 0.6009
Epoch 26/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7123 - loss: 0.6007 - val_accuracy: 0.7094 - val_loss: 0.6005
Epoch 27/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7126 - loss: 0.5975 - val_accuracy: 0.7094 - val_loss: 0.6002
Epoch 28/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7122 - loss: 0.5968 - val_accuracy: 0.7094 - val_loss: 0.5999
Epoch 29/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7248 - loss: 0.5848 - val_accuracy: 0.7094 - val_loss: 0.5995
Epoch 30/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7193 - loss: 0.5881 - val_accuracy: 0.7094 - val_loss: 0.5993
Epoch 31/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7117 - loss: 0.5953 - val_accuracy: 0.7094 - val_loss: 0.5990
Epoch 32/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7322 - loss: 0.5785 - val_accuracy: 0.7094 - val_loss: 0.5988
Epoch 33/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7351 - loss: 0.5748 - val_accuracy: 0.7094 - val_loss: 0.5986
Epoch 34/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7004 - loss: 0.6052 - val_accuracy: 0.7094 - val_loss: 0.5984
Epoch 35/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7279 - loss: 0.5823 - val_accuracy: 0.7094 - val_loss: 0.5982
Epoch 36/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7358 - loss: 0.5773 - val_accuracy: 0.7094 - val_loss: 0.5980
Epoch 37/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7200 - loss: 0.5901 - val_accuracy: 0.7094 - val_loss: 0.5978
Epoch 38/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6922 - loss: 0.6117 - val_accuracy: 0.7094 - val_loss: 0.5977
Epoch 39/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6905 - loss: 0.6122 - val_accuracy: 0.7094 - val_loss: 0.5976
Epoch 40/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7114 - loss: 0.5944 - val_accuracy: 0.7094 - val_loss: 0.5974
Epoch 41/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7060 - loss: 0.5975 - val_accuracy: 0.7094 - val_loss: 0.5973
```

```
Epoch 42/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7055 - loss: 0.5943 - val_accuracy: 0.7094 - val_loss: 0.5971
Epoch 43/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6962 - loss: 0.6076 - val_accuracy: 0.7094 - val_loss: 0.5970
Epoch 44/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7176 - loss: 0.5889 - val_accuracy: 0.7094 - val_loss: 0.5969
Epoch 45/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7178 - loss: 0.5841 - val_accuracy: 0.7094 - val_loss: 0.5968
Epoch 46/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7066 - loss: 0.5969 - val_accuracy: 0.7094 - val_loss: 0.5966
Epoch 47/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7285 - loss: 0.5775 - val_accuracy: 0.7094 - val_loss: 0.5965
Epoch 48/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7368 - loss: 0.5699 - val_accuracy: 0.7094 - val_loss: 0.5964
Epoch 49/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6933 - loss: 0.6123 - val_accuracy: 0.7094 - val_loss: 0.5963
Epoch 50/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6934 - loss: 0.6095 - val_accuracy: 0.7094 - val_loss: 0.5962
Epoch 51/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7116 - loss: 0.5944 - val_accuracy: 0.7094 - val_loss: 0.5960
Epoch 52/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7513 - loss: 0.5574 - val_accuracy: 0.7094 - val_loss: 0.5959
Epoch 53/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7373 - loss: 0.5705 - val_accuracy: 0.7094 - val_loss: 0.5958
Epoch 54/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7211 - loss: 0.5857 - val_accuracy: 0.7094 - val_loss: 0.5956
Epoch 55/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 12ms/step - accuracy: 0.6999 - loss: 0.6018 - val_accuracy: 0.7094 - val_loss: 0.5955
Epoch 56/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6909 - loss: 0.6105 - val_accuracy: 0.7094 - val_loss: 0.5954
Epoch 57/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7225 - loss: 0.5787 - val_accuracy: 0.7094 - val_loss: 0.5953
Epoch 58/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6991 - loss: 0.6031 - val_accuracy: 0.7094 - val_loss: 0.5952
Epoch 59/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7085 - loss: 0.5925 - val_accuracy: 0.7094 - val_loss: 0.5950
Epoch 60/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7255 - loss: 0.5793 - val_accuracy: 0.7094 - val_loss: 0.5949
Epoch 61/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7171 - loss: 0.5824 - val_accuracy: 0.7094 - val_loss: 0.5948
Epoch 62/1000
```

```
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.6932 - loss: 0.6084 - val_accuracy: 0.7094 - val_loss: 0.5947
Epoch 63/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7148 - loss: 0.5830 - val_accuracy: 0.7094 - val_loss: 0.5946
Epoch 64/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7273 - loss: 0.5778 - val_accuracy: 0.7094 - val_loss: 0.5945
Epoch 65/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7288 - loss: 0.5753 - val_accuracy: 0.7094 - val_loss: 0.5944
Epoch 66/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7046 - loss: 0.5909 - val_accuracy: 0.7094 - val_loss: 0.5943
Epoch 67/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7292 - loss: 0.5732 - val_accuracy: 0.7094 - val_loss: 0.5941
Epoch 68/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7374 - loss: 0.5689 - val_accuracy: 0.7094 - val_loss: 0.5940
Epoch 69/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7193 - loss: 0.5821 - val_accuracy: 0.7094 - val_loss: 0.5939
Epoch 70/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7293 - loss: 0.5737 - val_accuracy: 0.7094 - val_loss: 0.5938
Epoch 71/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7191 - loss: 0.5817 - val_accuracy: 0.7094 - val_loss: 0.5937
Epoch 72/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7270 - loss: 0.5776 - val_accuracy: 0.7094 - val_loss: 0.5935
Epoch 73/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7145 - loss: 0.5870 - val_accuracy: 0.7094 - val_loss: 0.5934
Epoch 74/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7198 - loss: 0.5814 - val_accuracy: 0.7094 - val_loss: 0.5933
Epoch 75/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7000 - loss: 0.6022 - val_accuracy: 0.7094 - val_loss: 0.5932
Epoch 76/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7070 - loss: 0.5912 - val_accuracy: 0.7094 - val_loss: 0.5931
Epoch 77/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7507 - loss: 0.5565 - val_accuracy: 0.7094 - val_loss: 0.5930
Epoch 78/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7160 - loss: 0.5849 - val_accuracy: 0.7094 - val_loss: 0.5928
Epoch 79/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 15ms/step - accuracy: 0.7073 - loss: 0.5909 - val_accuracy: 0.7094 - val_loss: 0.5927
Epoch 80/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7064 - loss: 0.5891 - val_accuracy: 0.7094 - val_loss: 0.5926
Epoch 81/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7162 - loss: 0.5818 - val_accuracy: 0.7094 - val_loss: 0.5925
Epoch 82/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 12ms/step - accuracy: 0.7297 - loss: 0.5735 - val_accuracy: 0.7094 - val_loss: 0.5924
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Epoch 83/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7350 - loss: 0.5661 - val_accuracy: 0.7094 - val_loss: 0.5923
Epoch 84/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7229 - loss: 0.5782 - val_accuracy: 0.7094 - val_loss: 0.5921
Epoch 85/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7054 - loss: 0.5890 - val_accuracy: 0.7094 - val_loss: 0.5920
Epoch 86/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7197 - loss: 0.5804 - val_accuracy: 0.7094 - val_loss: 0.5919
Epoch 87/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7183 - loss: 0.5853 - val_accuracy: 0.7094 - val_loss: 0.5918
Epoch 88/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6935 - loss: 0.6033 - val_accuracy: 0.7094 - val_loss: 0.5917
Epoch 89/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7009 - loss: 0.5965 - val_accuracy: 0.7094 - val_loss: 0.5916
Epoch 90/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7295 - loss: 0.5725 - val_accuracy: 0.7094 - val_loss: 0.5915
Epoch 91/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7042 - loss: 0.5902 - val_accuracy: 0.7094 - val_loss: 0.5914
Epoch 92/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 12ms/step - accuracy: 0.7058 - loss: 0.5947 - val_accuracy: 0.7094 - val_loss: 0.5913
Epoch 93/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7397 - loss: 0.5613 - val_accuracy: 0.7094 - val_loss: 0.5911
Epoch 94/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7038 - loss: 0.5972 - val_accuracy: 0.7094 - val_loss: 0.5910
Epoch 95/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7172 - loss: 0.5835 - val_accuracy: 0.7094 - val_loss: 0.5909
Epoch 96/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7027 - loss: 0.5942 - val_accuracy: 0.7094 - val_loss: 0.5908
Epoch 97/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7225 - loss: 0.5753 - val_accuracy: 0.7094 - val_loss: 0.5907
Epoch 98/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7273 - loss: 0.5704 - val_accuracy: 0.7094 - val_loss: 0.5906
Epoch 99/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6997 - loss: 0.5967 - val_accuracy: 0.7094 - val_loss: 0.5905
Epoch 100/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7120 - loss: 0.5870 - val_accuracy: 0.7094 - val_loss: 0.5903
Epoch 101/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7146 - loss: 0.5831 - val_accuracy: 0.7094 - val_loss: 0.5903
Epoch 102/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6780 - loss: 0.6128 - val_accuracy: 0.7094 - val_loss: 0.5902
Epoch 103/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7046 - loss: 0.5919 - val_accuracy: 0.7094 - val_loss: 0.5901
Epoch 104/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7419 - loss: 0.5558 - val_accuracy: 0.7094 - val_loss: 0.5899
Epoch 105/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7127 - loss: 0.5838 - val_accuracy: 0.7094 - val_loss: 0.5898
Epoch 106/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6970 - loss: 0.5972 - val_accuracy: 0.7094 - val_loss: 0.5897
Epoch 107/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 13ms/step - accuracy: 0.7235 - loss: 0.5776 - val_accuracy: 0.7094 - val_loss: 0.5896
Epoch 108/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7250 - loss: 0.5743 - val_accuracy: 0.7094 - val_loss: 0.5895
Epoch 109/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7023 - loss: 0.5912 - val_accuracy: 0.7094 - val_loss: 0.5894
Epoch 110/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7287 - loss: 0.5703 - val_accuracy: 0.7094 - val_loss: 0.5892
Epoch 111/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7207 - loss: 0.5797 - val_accuracy: 0.7094 - val_loss: 0.5891
Epoch 112/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7124 - loss: 0.5826 - val_accuracy: 0.7094 - val_loss: 0.5890
Epoch 113/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7335 - loss: 0.5623 - val_accuracy: 0.7094 - val_loss: 0.5889
Epoch 114/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7091 - loss: 0.5862 - val_accuracy: 0.7094 - val_loss: 0.5888
Epoch 115/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7028 - loss: 0.5878 - val_accuracy: 0.7094 - val_loss: 0.5887
Epoch 116/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7041 - loss: 0.5864 - val_accuracy: 0.7094 - val_loss: 0.5886
Epoch 117/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7217 - loss: 0.5762 - val_accuracy: 0.7094 - val_loss: 0.5885
Epoch 118/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7151 - loss: 0.5820 - val_accuracy: 0.7094 - val_loss: 0.5883
Epoch 119/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7024 - loss: 0.5919 - val_accuracy: 0.7094 - val_loss: 0.5882
Epoch 120/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7107 - loss: 0.5900 - val_accuracy: 0.7094 - val_loss: 0.5881
Epoch 121/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7152 - loss: 0.5770 - val_accuracy: 0.7094 - val_loss: 0.5880
Epoch 122/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6945 - loss: 0.5990 - val_accuracy: 0.7094 - val_loss: 0.5879
Epoch 123/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7165 - loss: 0.5740 - val_accuracy: 0.7094 - val_loss: 0.5878
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Epoch 124/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7129 - loss: 0.5828 - val_accuracy: 0.7094 - val_loss: 0.5877
Epoch 125/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7120 - loss: 0.5792 - val_accuracy: 0.7094 - val_loss: 0.5876
Epoch 126/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7016 - loss: 0.5903 - val_accuracy: 0.7094 - val_loss: 0.5875
Epoch 127/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7207 - loss: 0.5722 - val_accuracy: 0.7094 - val_loss: 0.5873
Epoch 128/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7131 - loss: 0.5831 - val_accuracy: 0.7094 - val_loss: 0.5873
Epoch 129/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7220 - loss: 0.5735 - val_accuracy: 0.7094 - val_loss: 0.5871
Epoch 130/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7342 - loss: 0.5599 - val_accuracy: 0.7094 - val_loss: 0.5870
Epoch 131/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7050 - loss: 0.5833 - val_accuracy: 0.7094 - val_loss: 0.5869
Epoch 132/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6965 - loss: 0.5900 - val_accuracy: 0.7094 - val_loss: 0.5868
Epoch 133/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7156 - loss: 0.5804 - val_accuracy: 0.7094 - val_loss: 0.5867
Epoch 134/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6942 - loss: 0.5981 - val_accuracy: 0.7094 - val_loss: 0.5866
Epoch 135/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7260 - loss: 0.5721 - val_accuracy: 0.7094 - val_loss: 0.5865
Epoch 136/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7121 - loss: 0.5814 - val_accuracy: 0.7094 - val_loss: 0.5864
Epoch 137/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7268 - loss: 0.5665 - val_accuracy: 0.7094 - val_loss: 0.5863
Epoch 138/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7237 - loss: 0.5716 - val_accuracy: 0.7094 - val_loss: 0.5861
Epoch 139/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6894 - loss: 0.6014 - val_accuracy: 0.7094 - val_loss: 0.5861
Epoch 140/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7089 - loss: 0.5811 - val_accuracy: 0.7094 - val_loss: 0.5860
Epoch 141/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7068 - loss: 0.5870 - val_accuracy: 0.7094 - val_loss: 0.5859
Epoch 142/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7032 - loss: 0.5913 - val_accuracy: 0.7094 - val_loss: 0.5859
Epoch 143/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7001 - loss: 0.5924 - val_accuracy: 0.7094 - val_loss: 0.5857
Epoch 144/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7385 - loss: 0.5547 - val_accuracy: 0.7094 - val_loss: 0.5856
Epoch 145/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7201 - loss: 0.5694 - val_accuracy: 0.7094 - val_loss: 0.5855
Epoch 146/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7041 - loss: 0.5852 - val_accuracy: 0.7094 - val_loss: 0.5854
Epoch 147/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.6722 - loss: 0.6182 - val_accuracy: 0.7094 - val_loss: 0.5853
Epoch 148/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7213 - loss: 0.5684 - val_accuracy: 0.7094 - val_loss: 0.5852
Epoch 149/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7019 - loss: 0.5873 - val_accuracy: 0.7094 - val_loss: 0.5851
Epoch 150/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7136 - loss: 0.5753 - val_accuracy: 0.7094 - val_loss: 0.5850
Epoch 151/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6701 - loss: 0.6171 - val_accuracy: 0.7094 - val_loss: 0.5850
Epoch 152/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7078 - loss: 0.5802 - val_accuracy: 0.7094 - val_loss: 0.5849
Epoch 153/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6974 - loss: 0.5913 - val_accuracy: 0.7094 - val_loss: 0.5848
Epoch 154/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7081 - loss: 0.5828 - val_accuracy: 0.7094 - val_loss: 0.5847
Epoch 155/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7268 - loss: 0.5619 - val_accuracy: 0.7094 - val_loss: 0.5846
Epoch 156/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7232 - loss: 0.5751 - val_accuracy: 0.7094 - val_loss: 0.5844
Epoch 157/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7387 - loss: 0.5558 - val_accuracy: 0.7094 - val_loss: 0.5843
Epoch 158/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7192 - loss: 0.5732 - val_accuracy: 0.7094 - val_loss: 0.5843
Epoch 159/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7449 - loss: 0.5496 - val_accuracy: 0.7094 - val_loss: 0.5842
Epoch 160/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7003 - loss: 0.5824 - val_accuracy: 0.7094 - val_loss: 0.5840
Epoch 161/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7050 - loss: 0.5867 - val_accuracy: 0.7094 - val_loss: 0.5839
Epoch 162/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7111 - loss: 0.5801 - val_accuracy: 0.7094 - val_loss: 0.5838
Epoch 163/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7094 - loss: 0.5827 - val_accuracy: 0.7094 - val_loss: 0.5838
Epoch 164/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6778 - loss: 0.6040 - val_accuracy: 0.7094 - val_loss: 0.5837
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Epoch 165/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7057 - loss: 0.5827 - val_accuracy: 0.7094 - val_loss: 0.5836
Epoch 166/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7094 - loss: 0.5777 - val_accuracy: 0.7094 - val_loss: 0.5835
Epoch 167/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7038 - loss: 0.5836 - val_accuracy: 0.7094 - val_loss: 0.5834
Epoch 168/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6873 - loss: 0.5936 - val_accuracy: 0.7094 - val_loss: 0.5833
Epoch 169/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7085 - loss: 0.5808 - val_accuracy: 0.7094 - val_loss: 0.5831
Epoch 170/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7325 - loss: 0.5589 - val_accuracy: 0.7094 - val_loss: 0.5831
Epoch 171/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6963 - loss: 0.5857 - val_accuracy: 0.7094 - val_loss: 0.5830
Epoch 172/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7195 - loss: 0.5708 - val_accuracy: 0.7094 - val_loss: 0.5829
Epoch 173/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7104 - loss: 0.5735 - val_accuracy: 0.7094 - val_loss: 0.5829
Epoch 174/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7261 - loss: 0.5680 - val_accuracy: 0.7094 - val_loss: 0.5828
Epoch 175/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7282 - loss: 0.5632 - val_accuracy: 0.7094 - val_loss: 0.5826
Epoch 176/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7175 - loss: 0.5678 - val_accuracy: 0.7094 - val_loss: 0.5825
Epoch 177/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6910 - loss: 0.5919 - val_accuracy: 0.7094 - val_loss: 0.5824
Epoch 178/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7325 - loss: 0.5570 - val_accuracy: 0.7094 - val_loss: 0.5823
Epoch 179/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7253 - loss: 0.5667 - val_accuracy: 0.7094 - val_loss: 0.5822
Epoch 180/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7185 - loss: 0.5694 - val_accuracy: 0.7094 - val_loss: 0.5820
Epoch 181/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7178 - loss: 0.5696 - val_accuracy: 0.7094 - val_loss: 0.5819
Epoch 182/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7047 - loss: 0.5826 - val_accuracy: 0.7094 - val_loss: 0.5818
Epoch 183/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7057 - loss: 0.5778 - val_accuracy: 0.7094 - val_loss: 0.5817
Epoch 184/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7341 - loss: 0.5564 - val_accuracy: 0.7094 - val_loss: 0.5816
Epoch 185/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6928 - loss: 0.5864 - val_accuracy: 0.7094 - val_loss: 0.5815
Epoch 186/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7396 - loss: 0.5562 - val_accuracy: 0.7094 - val_loss: 0.5814
Epoch 187/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7082 - loss: 0.5804 - val_accuracy: 0.7094 - val_loss: 0.5813
Epoch 188/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7145 - loss: 0.5707 - val_accuracy: 0.7094 - val_loss: 0.5812
Epoch 189/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7448 - loss: 0.5435 - val_accuracy: 0.7094 - val_loss: 0.5811
Epoch 190/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7226 - loss: 0.5655 - val_accuracy: 0.7094 - val_loss: 0.5811
Epoch 191/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7130 - loss: 0.5711 - val_accuracy: 0.7094 - val_loss: 0.5810
Epoch 192/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7095 - loss: 0.5750 - val_accuracy: 0.7094 - val_loss: 0.5809
Epoch 193/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 12ms/step - accuracy: 0.6957 - loss: 0.5882 - val_accuracy: 0.7094 - val_loss: 0.5808
Epoch 194/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7046 - loss: 0.5767 - val_accuracy: 0.7094 - val_loss: 0.5807
Epoch 195/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6913 - loss: 0.5948 - val_accuracy: 0.7094 - val_loss: 0.5806
Epoch 196/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7101 - loss: 0.5691 - val_accuracy: 0.7094 - val_loss: 0.5805
Epoch 197/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7077 - loss: 0.5796 - val_accuracy: 0.7094 - val_loss: 0.5804
Epoch 198/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7467 - loss: 0.5426 - val_accuracy: 0.7094 - val_loss: 0.5802
Epoch 199/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7371 - loss: 0.5518 - val_accuracy: 0.7094 - val_loss: 0.5802
Epoch 200/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7061 - loss: 0.5776 - val_accuracy: 0.7094 - val_loss: 0.5801
Epoch 201/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.6965 - loss: 0.5872 - val_accuracy: 0.7094 - val_loss: 0.5800
Epoch 202/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7195 - loss: 0.5643 - val_accuracy: 0.7094 - val_loss: 0.5799
Epoch 203/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7260 - loss: 0.5553 - val_accuracy: 0.7094 - val_loss: 0.5798
Epoch 204/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7055 - loss: 0.5764 - val_accuracy: 0.7094 - val_loss: 0.5797
Epoch 205/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7007 - loss: 0.5799 - val_accuracy: 0.7094 - val_loss: 0.5796
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Epoch 206/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7151 - loss: 0.5639 - val_accuracy: 0.7094 - val_loss: 0.5795
Epoch 207/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7444 - loss: 0.5459 - val_accuracy: 0.7094 - val_loss: 0.5794
Epoch 208/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6971 - loss: 0.5829 - val_accuracy: 0.7094 - val_loss: 0.5793
Epoch 209/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7370 - loss: 0.5519 - val_accuracy: 0.7094 - val_loss: 0.5793
Epoch 210/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7252 - loss: 0.5607 - val_accuracy: 0.7094 - val_loss: 0.5792
Epoch 211/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7045 - loss: 0.5756 - val_accuracy: 0.7094 - val_loss: 0.5791
Epoch 212/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7291 - loss: 0.5546 - val_accuracy: 0.7094 - val_loss: 0.5789
Epoch 213/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7157 - loss: 0.5657 - val_accuracy: 0.7094 - val_loss: 0.5789
Epoch 214/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7150 - loss: 0.5671 - val_accuracy: 0.7094 - val_loss: 0.5788
Epoch 215/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7307 - loss: 0.5565 - val_accuracy: 0.7094 - val_loss: 0.5787
Epoch 216/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7117 - loss: 0.5685 - val_accuracy: 0.7094 - val_loss: 0.5786
Epoch 217/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7024 - loss: 0.5738 - val_accuracy: 0.7094 - val_loss: 0.5785
Epoch 218/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7055 - loss: 0.5747 - val_accuracy: 0.7094 - val_loss: 0.5784
Epoch 219/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7148 - loss: 0.5676 - val_accuracy: 0.7094 - val_loss: 0.5784
Epoch 220/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7053 - loss: 0.5761 - val_accuracy: 0.7094 - val_loss: 0.5782
Epoch 221/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 15ms/step - accuracy: 0.6895 - loss: 0.5886 - val_accuracy: 0.7094 - val_loss: 0.5781
Epoch 222/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7509 - loss: 0.5344 - val_accuracy: 0.7094 - val_loss: 0.5780
Epoch 223/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6973 - loss: 0.5777 - val_accuracy: 0.7094 - val_loss: 0.5779
Epoch 224/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7069 - loss: 0.5752 - val_accuracy: 0.7094 - val_loss: 0.5778
Epoch 225/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7330 - loss: 0.5488 - val_accuracy: 0.7094 - val_loss: 0.5777
Epoch 226/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7008 - loss: 0.5807 - val_accuracy: 0.7094 - val_loss: 0.5776
Epoch 227/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7176 - loss: 0.5673 - val_accuracy: 0.7094 - val_loss: 0.5775
Epoch 228/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7123 - loss: 0.5708 - val_accuracy: 0.7094 - val_loss: 0.5774
Epoch 229/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7109 - loss: 0.5653 - val_accuracy: 0.7094 - val_loss: 0.5773
Epoch 230/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7281 - loss: 0.5544 - val_accuracy: 0.7094 - val_loss: 0.5773
Epoch 231/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7052 - loss: 0.5717 - val_accuracy: 0.7094 - val_loss: 0.5772
Epoch 232/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7130 - loss: 0.5666 - val_accuracy: 0.7094 - val_loss: 0.5770
Epoch 233/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7190 - loss: 0.5596 - val_accuracy: 0.7094 - val_loss: 0.5769
Epoch 234/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7165 - loss: 0.5709 - val_accuracy: 0.7094 - val_loss: 0.5768
Epoch 235/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7190 - loss: 0.5646 - val_accuracy: 0.7094 - val_loss: 0.5767
Epoch 236/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7450 - loss: 0.5414 - val_accuracy: 0.7094 - val_loss: 0.5766
Epoch 237/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7158 - loss: 0.5624 - val_accuracy: 0.7094 - val_loss: 0.5765
Epoch 238/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7220 - loss: 0.5609 - val_accuracy: 0.7094 - val_loss: 0.5765
Epoch 239/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6951 - loss: 0.5779 - val_accuracy: 0.7094 - val_loss: 0.5764
Epoch 240/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6990 - loss: 0.5793 - val_accuracy: 0.7094 - val_loss: 0.5763
Epoch 241/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7122 - loss: 0.5653 - val_accuracy: 0.7094 - val_loss: 0.5762
Epoch 242/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7050 - loss: 0.5740 - val_accuracy: 0.7094 - val_loss: 0.5761
Epoch 243/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7412 - loss: 0.5436 - val_accuracy: 0.7094 - val_loss: 0.5760
Epoch 244/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6803 - loss: 0.5961 - val_accuracy: 0.7094 - val_loss: 0.5760
Epoch 245/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 13ms/step - accuracy: 0.7376 - loss: 0.5446 - val_accuracy: 0.7094 - val_loss: 0.5759
Epoch 246/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7031 - loss: 0.5724 - val_accuracy: 0.7094 - val_loss: 0.5758
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Epoch 247/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6983 - loss: 0.5827 - val_accuracy: 0.7094 - val_loss: 0.5756
Epoch 248/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7151 - loss: 0.5587 - val_accuracy: 0.7094 - val_loss: 0.5755
Epoch 249/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7047 - loss: 0.5752 - val_accuracy: 0.7094 - val_loss: 0.5755
Epoch 250/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7189 - loss: 0.5584 - val_accuracy: 0.7094 - val_loss: 0.5753
Epoch 251/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7229 - loss: 0.5522 - val_accuracy: 0.7094 - val_loss: 0.5753
Epoch 252/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7072 - loss: 0.5718 - val_accuracy: 0.7094 - val_loss: 0.5751
Epoch 253/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 12ms/step - accuracy: 0.7314 - loss: 0.5535 - val_accuracy: 0.7094 - val_loss: 0.5751
Epoch 254/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7178 - loss: 0.5615 - val_accuracy: 0.7094 - val_loss: 0.5750
Epoch 255/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6843 - loss: 0.5880 - val_accuracy: 0.7094 - val_loss: 0.5749
Epoch 256/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 13ms/step - accuracy: 0.7215 - loss: 0.5582 - val_accuracy: 0.7094 - val_loss: 0.5748
Epoch 257/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.6823 - loss: 0.5869 - val_accuracy: 0.7094 - val_loss: 0.5748
Epoch 258/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7243 - loss: 0.5511 - val_accuracy: 0.7094 - val_loss: 0.5747
Epoch 259/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7239 - loss: 0.5572 - val_accuracy: 0.7094 - val_loss: 0.5747
Epoch 260/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7188 - loss: 0.5591 - val_accuracy: 0.7094 - val_loss: 0.5746
Epoch 261/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7182 - loss: 0.5594 - val_accuracy: 0.7094 - val_loss: 0.5744
Epoch 262/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7043 - loss: 0.5753 - val_accuracy: 0.7094 - val_loss: 0.5744
Epoch 263/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7033 - loss: 0.5724 - val_accuracy: 0.7094 - val_loss: 0.5743
Epoch 264/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7273 - loss: 0.5526 - val_accuracy: 0.7094 - val_loss: 0.5742
Epoch 265/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7060 - loss: 0.5659 - val_accuracy: 0.7094 - val_loss: 0.5742
Epoch 266/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7104 - loss: 0.5696 - val_accuracy: 0.7094 - val_loss: 0.5741
Epoch 267/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7267 - loss: 0.5474 - val_accuracy: 0.7094 - val_loss: 0.5740
Epoch 268/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7137 - loss: 0.5604 - val_accuracy: 0.7094 - val_loss: 0.5739
Epoch 269/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7231 - loss: 0.5555 - val_accuracy: 0.7094 - val_loss: 0.5738
Epoch 270/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7237 - loss: 0.5576 - val_accuracy: 0.7094 - val_loss: 0.5737
Epoch 271/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7110 - loss: 0.5648 - val_accuracy: 0.7094 - val_loss: 0.5736
Epoch 272/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7156 - loss: 0.5611 - val_accuracy: 0.7094 - val_loss: 0.5734
Epoch 273/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7247 - loss: 0.5621 - val_accuracy: 0.7094 - val_loss: 0.5734
Epoch 274/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7174 - loss: 0.5604 - val_accuracy: 0.7094 - val_loss: 0.5733
Epoch 275/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7287 - loss: 0.5475 - val_accuracy: 0.7094 - val_loss: 0.5733
Epoch 276/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7168 - loss: 0.5628 - val_accuracy: 0.7094 - val_loss: 0.5731
Epoch 277/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7180 - loss: 0.5642 - val_accuracy: 0.7094 - val_loss: 0.5730
Epoch 278/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7170 - loss: 0.5536 - val_accuracy: 0.7094 - val_loss: 0.5730
Epoch 279/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7015 - loss: 0.5702 - val_accuracy: 0.7094 - val_loss: 0.5730
Epoch 280/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7016 - loss: 0.5709 - val_accuracy: 0.7094 - val_loss: 0.5729
Epoch 281/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7158 - loss: 0.5646 - val_accuracy: 0.7094 - val_loss: 0.5728
Epoch 282/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7316 - loss: 0.5419 - val_accuracy: 0.7094 - val_loss: 0.5727
Epoch 283/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7208 - loss: 0.5551 - val_accuracy: 0.7094 - val_loss: 0.5726
Epoch 284/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7204 - loss: 0.5654 - val_accuracy: 0.7094 - val_loss: 0.5725
Epoch 285/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7256 - loss: 0.5472 - val_accuracy: 0.7094 - val_loss: 0.5724
Epoch 286/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7209 - loss: 0.5593 - val_accuracy: 0.7094 - val_loss: 0.5724
Epoch 287/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7199 - loss: 0.5577 - val_accuracy: 0.7094 - val_loss: 0.5723
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Epoch 288/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7238 - loss: 0.5558 - val_accuracy: 0.7094 - val_loss: 0.5722
Epoch 289/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6979 - loss: 0.5693 - val_accuracy: 0.7094 - val_loss: 0.5722
Epoch 290/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7120 - loss: 0.5631 - val_accuracy: 0.7094 - val_loss: 0.5720
Epoch 291/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7288 - loss: 0.5485 - val_accuracy: 0.7094 - val_loss: 0.5718
Epoch 292/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7107 - loss: 0.5695 - val_accuracy: 0.7094 - val_loss: 0.5718
Epoch 293/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7124 - loss: 0.5601 - val_accuracy: 0.7094 - val_loss: 0.5718
Epoch 294/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7282 - loss: 0.5502 - val_accuracy: 0.7094 - val_loss: 0.5717
Epoch 295/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6926 - loss: 0.5770 - val_accuracy: 0.7094 - val_loss: 0.5716
Epoch 296/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7233 - loss: 0.5574 - val_accuracy: 0.7094 - val_loss: 0.5715
Epoch 297/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7169 - loss: 0.5608 - val_accuracy: 0.7094 - val_loss: 0.5714
Epoch 298/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7130 - loss: 0.5586 - val_accuracy: 0.7094 - val_loss: 0.5713
Epoch 299/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7150 - loss: 0.5642 - val_accuracy: 0.7094 - val_loss: 0.5712
Epoch 300/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7265 - loss: 0.5511 - val_accuracy: 0.7094 - val_loss: 0.5712
Epoch 301/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7049 - loss: 0.5647 - val_accuracy: 0.7094 - val_loss: 0.5710
Epoch 302/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7168 - loss: 0.5564 - val_accuracy: 0.7094 - val_loss: 0.5710
Epoch 303/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7387 - loss: 0.5389 - val_accuracy: 0.7094 - val_loss: 0.5710
Epoch 304/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7159 - loss: 0.5599 - val_accuracy: 0.7094 - val_loss: 0.5708
Epoch 305/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6964 - loss: 0.5815 - val_accuracy: 0.7094 - val_loss: 0.5707
Epoch 306/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7132 - loss: 0.5601 - val_accuracy: 0.7094 - val_loss: 0.5707
Epoch 307/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7189 - loss: 0.5613 - val_accuracy: 0.7094 - val_loss: 0.5706
Epoch 308/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7428 - loss: 0.5320 - val_accuracy: 0.7094 - val_loss: 0.5704
Epoch 309/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7058 - loss: 0.5665 - val_accuracy: 0.7094 - val_loss: 0.5704
Epoch 310/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7059 - loss: 0.5651 - val_accuracy: 0.7094 - val_loss: 0.5704
Epoch 311/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7078 - loss: 0.5603 - val_accuracy: 0.7094 - val_loss: 0.5703
Epoch 312/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7109 - loss: 0.5626 - val_accuracy: 0.7094 - val_loss: 0.5702
Epoch 313/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7176 - loss: 0.5561 - val_accuracy: 0.7094 - val_loss: 0.5701
Epoch 314/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7218 - loss: 0.5536 - val_accuracy: 0.7094 - val_loss: 0.5700
Epoch 315/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7109 - loss: 0.5579 - val_accuracy: 0.7094 - val_loss: 0.5699
Epoch 316/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7154 - loss: 0.5558 - val_accuracy: 0.7094 - val_loss: 0.5699
Epoch 317/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7567 - loss: 0.5205 - val_accuracy: 0.7094 - val_loss: 0.5698
Epoch 318/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7147 - loss: 0.5604 - val_accuracy: 0.7094 - val_loss: 0.5696
Epoch 319/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7124 - loss: 0.5531 - val_accuracy: 0.7094 - val_loss: 0.5696
Epoch 320/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7142 - loss: 0.5571 - val_accuracy: 0.7094 - val_loss: 0.5695
Epoch 321/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7160 - loss: 0.5572 - val_accuracy: 0.7094 - val_loss: 0.5694
Epoch 322/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6865 - loss: 0.5793 - val_accuracy: 0.7094 - val_loss: 0.5694
Epoch 323/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7004 - loss: 0.5664 - val_accuracy: 0.7094 - val_loss: 0.5694
Epoch 324/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7350 - loss: 0.5387 - val_accuracy: 0.7094 - val_loss: 0.5693
Epoch 325/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7138 - loss: 0.5523 - val_accuracy: 0.7094 - val_loss: 0.5692
Epoch 326/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7276 - loss: 0.5541 - val_accuracy: 0.7094 - val_loss: 0.5691
Epoch 327/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7334 - loss: 0.5398 - val_accuracy: 0.7094 - val_loss: 0.5691
Epoch 328/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7334 - loss: 0.5418 - val_accuracy: 0.7094 - val_loss: 0.5690
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Epoch 329/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7254 - loss: 0.5451 - val_accuracy: 0.7094 - val_loss: 0.5689
Epoch 330/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7156 - loss: 0.5664 - val_accuracy: 0.7094 - val_loss: 0.5688
Epoch 331/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7272 - loss: 0.5449 - val_accuracy: 0.7094 - val_loss: 0.5688
Epoch 332/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7277 - loss: 0.5444 - val_accuracy: 0.7094 - val_loss: 0.5686
Epoch 333/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7047 - loss: 0.5704 - val_accuracy: 0.7094 - val_loss: 0.5685
Epoch 334/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7192 - loss: 0.5528 - val_accuracy: 0.7094 - val_loss: 0.5685
Epoch 335/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7049 - loss: 0.5674 - val_accuracy: 0.7094 - val_loss: 0.5684
Epoch 336/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6848 - loss: 0.5801 - val_accuracy: 0.7094 - val_loss: 0.5683
Epoch 337/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7264 - loss: 0.5442 - val_accuracy: 0.7094 - val_loss: 0.5683
Epoch 338/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7011 - loss: 0.5682 - val_accuracy: 0.7094 - val_loss: 0.5682
Epoch 339/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6856 - loss: 0.5812 - val_accuracy: 0.7094 - val_loss: 0.5681
Epoch 340/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7046 - loss: 0.5573 - val_accuracy: 0.7094 - val_loss: 0.5680
Epoch 341/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7095 - loss: 0.5657 - val_accuracy: 0.7094 - val_loss: 0.5680
Epoch 342/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7055 - loss: 0.5693 - val_accuracy: 0.7094 - val_loss: 0.5679
Epoch 343/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7128 - loss: 0.5528 - val_accuracy: 0.7094 - val_loss: 0.5679
Epoch 344/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7348 - loss: 0.5367 - val_accuracy: 0.7094 - val_loss: 0.5678
Epoch 345/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7326 - loss: 0.5437 - val_accuracy: 0.7094 - val_loss: 0.5676
Epoch 346/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7131 - loss: 0.5511 - val_accuracy: 0.7094 - val_loss: 0.5675
Epoch 347/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.6956 - loss: 0.5725 - val_accuracy: 0.7094 - val_loss: 0.5675
Epoch 348/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7394 - loss: 0.5365 - val_accuracy: 0.7094 - val_loss: 0.5674
Epoch 349/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6909 - loss: 0.5753 - val_accuracy: 0.7094 - val_loss: 0.5673
Epoch 350/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6952 - loss: 0.5759 - val_accuracy: 0.7094 - val_loss: 0.5673
Epoch 351/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7149 - loss: 0.5506 - val_accuracy: 0.7094 - val_loss: 0.5672
Epoch 352/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7018 - loss: 0.5685 - val_accuracy: 0.7094 - val_loss: 0.5671
Epoch 353/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7077 - loss: 0.5531 - val_accuracy: 0.7094 - val_loss: 0.5671
Epoch 354/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7121 - loss: 0.5550 - val_accuracy: 0.7094 - val_loss: 0.5671
Epoch 355/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7233 - loss: 0.5521 - val_accuracy: 0.7094 - val_loss: 0.5669
Epoch 356/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6969 - loss: 0.5629 - val_accuracy: 0.7094 - val_loss: 0.5668
Epoch 357/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7065 - loss: 0.5637 - val_accuracy: 0.7094 - val_loss: 0.5668
Epoch 358/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7281 - loss: 0.5420 - val_accuracy: 0.7094 - val_loss: 0.5667
Epoch 359/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7077 - loss: 0.5610 - val_accuracy: 0.7094 - val_loss: 0.5666
Epoch 360/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6990 - loss: 0.5787 - val_accuracy: 0.7094 - val_loss: 0.5665
Epoch 361/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7252 - loss: 0.5515 - val_accuracy: 0.7094 - val_loss: 0.5664
Epoch 362/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7034 - loss: 0.5661 - val_accuracy: 0.7094 - val_loss: 0.5664
Epoch 363/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7226 - loss: 0.5456 - val_accuracy: 0.7094 - val_loss: 0.5663
Epoch 364/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7115 - loss: 0.5546 - val_accuracy: 0.7094 - val_loss: 0.5662
Epoch 365/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7180 - loss: 0.5503 - val_accuracy: 0.7094 - val_loss: 0.5662
Epoch 366/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6974 - loss: 0.5643 - val_accuracy: 0.7094 - val_loss: 0.5661
Epoch 367/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7057 - loss: 0.5638 - val_accuracy: 0.7094 - val_loss: 0.5661
Epoch 368/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7061 - loss: 0.5514 - val_accuracy: 0.7094 - val_loss: 0.5659
Epoch 369/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7192 - loss: 0.5534 - val_accuracy: 0.7094 - val_loss: 0.5659
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Epoch 370/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7089 - loss: 0.5603 - val_accuracy: 0.7094 - val_loss: 0.5658
Epoch 371/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7091 - loss: 0.5522 - val_accuracy: 0.7094 - val_loss: 0.5657
Epoch 372/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7176 - loss: 0.5500 - val_accuracy: 0.7094 - val_loss: 0.5656
Epoch 373/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7305 - loss: 0.5343 - val_accuracy: 0.7094 - val_loss: 0.5655
Epoch 374/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7336 - loss: 0.5367 - val_accuracy: 0.7094 - val_loss: 0.5654
Epoch 375/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7158 - loss: 0.5475 - val_accuracy: 0.7094 - val_loss: 0.5654
Epoch 376/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7283 - loss: 0.5355 - val_accuracy: 0.7094 - val_loss: 0.5653
Epoch 377/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7249 - loss: 0.5480 - val_accuracy: 0.7094 - val_loss: 0.5653
Epoch 378/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7056 - loss: 0.5573 - val_accuracy: 0.7094 - val_loss: 0.5652
Epoch 379/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6893 - loss: 0.5841 - val_accuracy: 0.7094 - val_loss: 0.5651
Epoch 380/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7241 - loss: 0.5416 - val_accuracy: 0.7094 - val_loss: 0.5650
Epoch 381/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7156 - loss: 0.5508 - val_accuracy: 0.7094 - val_loss: 0.5649
Epoch 382/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7243 - loss: 0.5386 - val_accuracy: 0.7094 - val_loss: 0.5648
Epoch 383/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7482 - loss: 0.5314 - val_accuracy: 0.7094 - val_loss: 0.5647
Epoch 384/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7202 - loss: 0.5478 - val_accuracy: 0.7094 - val_loss: 0.5646
Epoch 385/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7013 - loss: 0.5564 - val_accuracy: 0.7094 - val_loss: 0.5646
Epoch 386/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7251 - loss: 0.5487 - val_accuracy: 0.7094 - val_loss: 0.5645
Epoch 387/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7177 - loss: 0.5458 - val_accuracy: 0.7094 - val_loss: 0.5644
Epoch 388/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7108 - loss: 0.5518 - val_accuracy: 0.7094 - val_loss: 0.5643
Epoch 389/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7168 - loss: 0.5485 - val_accuracy: 0.7094 - val_loss: 0.5643
Epoch 390/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7135 - loss: 0.5509 - val_accuracy: 0.7094 - val_loss: 0.5643
Epoch 391/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7008 - loss: 0.5700 - val_accuracy: 0.7094 - val_loss: 0.5642
Epoch 392/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7394 - loss: 0.5272 - val_accuracy: 0.7094 - val_loss: 0.5641
Epoch 393/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7154 - loss: 0.5481 - val_accuracy: 0.7094 - val_loss: 0.5640
Epoch 394/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7060 - loss: 0.5520 - val_accuracy: 0.7094 - val_loss: 0.5639
Epoch 395/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7226 - loss: 0.5522 - val_accuracy: 0.7094 - val_loss: 0.5639
Epoch 396/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7033 - loss: 0.5630 - val_accuracy: 0.7094 - val_loss: 0.5638
Epoch 397/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7141 - loss: 0.5486 - val_accuracy: 0.7094 - val_loss: 0.5637
Epoch 398/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7542 - loss: 0.5183 - val_accuracy: 0.7094 - val_loss: 0.5636
Epoch 399/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7292 - loss: 0.5396 - val_accuracy: 0.7094 - val_loss: 0.5635
Epoch 400/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7275 - loss: 0.5364 - val_accuracy: 0.7094 - val_loss: 0.5634
Epoch 401/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7141 - loss: 0.5487 - val_accuracy: 0.7094 - val_loss: 0.5633
Epoch 402/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7143 - loss: 0.5439 - val_accuracy: 0.7094 - val_loss: 0.5633
Epoch 403/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7261 - loss: 0.5389 - val_accuracy: 0.7094 - val_loss: 0.5632
Epoch 404/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6881 - loss: 0.5688 - val_accuracy: 0.7094 - val_loss: 0.5632
Epoch 405/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7138 - loss: 0.5533 - val_accuracy: 0.7094 - val_loss: 0.5631
Epoch 406/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7184 - loss: 0.5436 - val_accuracy: 0.7094 - val_loss: 0.5630
Epoch 407/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7306 - loss: 0.5376 - val_accuracy: 0.7094 - val_loss: 0.5629
Epoch 408/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7111 - loss: 0.5557 - val_accuracy: 0.7094 - val_loss: 0.5629
Epoch 409/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7220 - loss: 0.5380 - val_accuracy: 0.7094 - val_loss: 0.5628
Epoch 410/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7039 - loss: 0.5639 - val_accuracy: 0.7094 - val_loss: 0.5628
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Epoch 411/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7238 - loss: 0.5414 - val_accuracy: 0.7094 - val_loss: 0.5628
Epoch 412/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7298 - loss: 0.5355 - val_accuracy: 0.7094 - val_loss: 0.5627
Epoch 413/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7230 - loss: 0.5428 - val_accuracy: 0.7094 - val_loss: 0.5626
Epoch 414/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7101 - loss: 0.5490 - val_accuracy: 0.7094 - val_loss: 0.5625
Epoch 415/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7155 - loss: 0.5491 - val_accuracy: 0.7009 - val_loss: 0.5624
Epoch 416/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7074 - loss: 0.5555 - val_accuracy: 0.7009 - val_loss: 0.5623
Epoch 417/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7206 - loss: 0.5387 - val_accuracy: 0.7094 - val_loss: 0.5623
Epoch 418/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6894 - loss: 0.5738 - val_accuracy: 0.7094 - val_loss: 0.5622
Epoch 419/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7143 - loss: 0.5415 - val_accuracy: 0.7094 - val_loss: 0.5622
Epoch 420/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7237 - loss: 0.5318 - val_accuracy: 0.7094 - val_loss: 0.5622
Epoch 421/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7079 - loss: 0.5555 - val_accuracy: 0.7094 - val_loss: 0.5621
Epoch 422/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7003 - loss: 0.5653 - val_accuracy: 0.7094 - val_loss: 0.5621
Epoch 423/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6951 - loss: 0.5578 - val_accuracy: 0.7094 - val_loss: 0.5621
Epoch 424/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7038 - loss: 0.5692 - val_accuracy: 0.7094 - val_loss: 0.5620
Epoch 425/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7064 - loss: 0.5546 - val_accuracy: 0.7094 - val_loss: 0.5620
Epoch 426/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7242 - loss: 0.5442 - val_accuracy: 0.7094 - val_loss: 0.5619
Epoch 427/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7181 - loss: 0.5477 - val_accuracy: 0.7094 - val_loss: 0.5619
Epoch 428/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7515 - loss: 0.5147 - val_accuracy: 0.7094 - val_loss: 0.5617
Epoch 429/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7517 - loss: 0.5162 - val_accuracy: 0.7094 - val_loss: 0.5617
Epoch 430/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7108 - loss: 0.5433 - val_accuracy: 0.7094 - val_loss: 0.5617
Epoch 431/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7207 - loss: 0.5411 - val_accuracy: 0.7094 - val_loss: 0.5616
Epoch 432/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7022 - loss: 0.5621 - val_accuracy: 0.7094 - val_loss: 0.5615
Epoch 433/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6990 - loss: 0.5676 - val_accuracy: 0.7094 - val_loss: 0.5614
Epoch 434/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7078 - loss: 0.5503 - val_accuracy: 0.7094 - val_loss: 0.5614
Epoch 435/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7190 - loss: 0.5372 - val_accuracy: 0.7094 - val_loss: 0.5613
Epoch 436/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7080 - loss: 0.5526 - val_accuracy: 0.7094 - val_loss: 0.5613
Epoch 437/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7378 - loss: 0.5346 - val_accuracy: 0.7094 - val_loss: 0.5613
Epoch 438/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6980 - loss: 0.5610 - val_accuracy: 0.7094 - val_loss: 0.5610
Epoch 439/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7183 - loss: 0.5413 - val_accuracy: 0.7094 - val_loss: 0.5610
Epoch 440/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7311 - loss: 0.5361 - val_accuracy: 0.7094 - val_loss: 0.5610
Epoch 441/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7191 - loss: 0.5322 - val_accuracy: 0.7094 - val_loss: 0.5608
Epoch 442/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7221 - loss: 0.5429 - val_accuracy: 0.7094 - val_loss: 0.5607
Epoch 443/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7260 - loss: 0.5359 - val_accuracy: 0.7094 - val_loss: 0.5606
Epoch 444/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7278 - loss: 0.5251 - val_accuracy: 0.7094 - val_loss: 0.5606
Epoch 445/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6931 - loss: 0.5537 - val_accuracy: 0.7094 - val_loss: 0.5606
Epoch 446/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7001 - loss: 0.5529 - val_accuracy: 0.7094 - val_loss: 0.5606
Epoch 447/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7064 - loss: 0.5635 - val_accuracy: 0.7094 - val_loss: 0.5605
Epoch 448/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7012 - loss: 0.5613 - val_accuracy: 0.7094 - val_loss: 0.5605
Epoch 449/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6952 - loss: 0.5585 - val_accuracy: 0.7094 - val_loss: 0.5605
Epoch 450/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7209 - loss: 0.5480 - val_accuracy: 0.7094 - val_loss: 0.5604
Epoch 451/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7218 - loss: 0.5388 - val_accuracy: 0.7094 - val_loss: 0.5603
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Epoch 452/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6987 - loss: 0.5670 - val_accuracy: 0.7094 - val_loss: 0.5603
Epoch 453/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7256 - loss: 0.5348 - val_accuracy: 0.7094 - val_loss: 0.5601
Epoch 454/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7264 - loss: 0.5398 - val_accuracy: 0.7094 - val_loss: 0.5600
Epoch 455/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7295 - loss: 0.5403 - val_accuracy: 0.7094 - val_loss: 0.5599
Epoch 456/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7147 - loss: 0.5433 - val_accuracy: 0.7094 - val_loss: 0.5599
Epoch 457/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7091 - loss: 0.5554 - val_accuracy: 0.7094 - val_loss: 0.5599
Epoch 458/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7167 - loss: 0.5444 - val_accuracy: 0.7094 - val_loss: 0.5597
Epoch 459/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6805 - loss: 0.5599 - val_accuracy: 0.7094 - val_loss: 0.5597
Epoch 460/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6901 - loss: 0.5658 - val_accuracy: 0.7094 - val_loss: 0.5596
Epoch 461/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7003 - loss: 0.5488 - val_accuracy: 0.7094 - val_loss: 0.5596
Epoch 462/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6874 - loss: 0.5698 - val_accuracy: 0.7094 - val_loss: 0.5596
Epoch 463/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 13ms/step - accuracy: 0.7080 - loss: 0.5460 - val_accuracy: 0.7094 - val_loss: 0.5596
Epoch 464/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7141 - loss: 0.5401 - val_accuracy: 0.7094 - val_loss: 0.5595
Epoch 465/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7344 - loss: 0.5332 - val_accuracy: 0.7094 - val_loss: 0.5595
Epoch 466/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7065 - loss: 0.5570 - val_accuracy: 0.7094 - val_loss: 0.5595
Epoch 467/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7003 - loss: 0.5508 - val_accuracy: 0.7094 - val_loss: 0.5594
Epoch 468/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7065 - loss: 0.5543 - val_accuracy: 0.7094 - val_loss: 0.5594
Epoch 469/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7362 - loss: 0.5335 - val_accuracy: 0.7094 - val_loss: 0.5593
Epoch 470/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6993 - loss: 0.5463 - val_accuracy: 0.7094 - val_loss: 0.5594
Epoch 471/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7264 - loss: 0.5455 - val_accuracy: 0.7094 - val_loss: 0.5593
Epoch 472/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7086 - loss: 0.5474 - val_accuracy: 0.7094 - val_loss: 0.5592
Epoch 473/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6966 - loss: 0.5588 - val_accuracy: 0.7094 - val_loss: 0.5592
Epoch 474/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7148 - loss: 0.5379 - val_accuracy: 0.7094 - val_loss: 0.5591
Epoch 475/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6984 - loss: 0.5582 - val_accuracy: 0.7094 - val_loss: 0.5590
Epoch 476/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7159 - loss: 0.5478 - val_accuracy: 0.7094 - val_loss: 0.5589
Epoch 477/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7355 - loss: 0.5251 - val_accuracy: 0.7094 - val_loss: 0.5587
Epoch 478/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7074 - loss: 0.5520 - val_accuracy: 0.7094 - val_loss: 0.5588
Epoch 479/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7065 - loss: 0.5377 - val_accuracy: 0.7094 - val_loss: 0.5587
Epoch 480/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.6900 - loss: 0.5586 - val_accuracy: 0.7094 - val_loss: 0.5587
Epoch 481/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7128 - loss: 0.5413 - val_accuracy: 0.7094 - val_loss: 0.5585
Epoch 482/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7306 - loss: 0.5292 - val_accuracy: 0.7094 - val_loss: 0.5584
Epoch 483/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7154 - loss: 0.5447 - val_accuracy: 0.7094 - val_loss: 0.5583
Epoch 484/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7310 - loss: 0.5260 - val_accuracy: 0.7094 - val_loss: 0.5583
Epoch 485/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7338 - loss: 0.5231 - val_accuracy: 0.7094 - val_loss: 0.5584
Epoch 486/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7027 - loss: 0.5437 - val_accuracy: 0.7094 - val_loss: 0.5583
Epoch 487/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7274 - loss: 0.5330 - val_accuracy: 0.7094 - val_loss: 0.5583
Epoch 488/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7243 - loss: 0.5327 - val_accuracy: 0.7094 - val_loss: 0.5582
Epoch 489/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7119 - loss: 0.5330 - val_accuracy: 0.7094 - val_loss: 0.5581
Epoch 490/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7133 - loss: 0.5412 - val_accuracy: 0.7094 - val_loss: 0.5581
Epoch 491/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7433 - loss: 0.5151 - val_accuracy: 0.7094 - val_loss: 0.5581
Epoch 492/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7099 - loss: 0.5520 - val_accuracy: 0.7094 - val_loss: 0.5579
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Epoch 493/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7135 - loss: 0.5536 - val_accuracy: 0.7094 - val_loss: 0.5579
Epoch 494/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6993 - loss: 0.5555 - val_accuracy: 0.7094 - val_loss: 0.5579
Epoch 495/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7231 - loss: 0.5324 - val_accuracy: 0.7094 - val_loss: 0.5580
Epoch 496/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7083 - loss: 0.5487 - val_accuracy: 0.7094 - val_loss: 0.5578
Epoch 497/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6944 - loss: 0.5626 - val_accuracy: 0.7094 - val_loss: 0.5577
Epoch 498/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7209 - loss: 0.5397 - val_accuracy: 0.7094 - val_loss: 0.5576
Epoch 499/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7322 - loss: 0.5240 - val_accuracy: 0.7094 - val_loss: 0.5574
Epoch 500/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7179 - loss: 0.5434 - val_accuracy: 0.7094 - val_loss: 0.5573
Epoch 501/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7343 - loss: 0.5259 - val_accuracy: 0.7094 - val_loss: 0.5572
Epoch 502/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6956 - loss: 0.5483 - val_accuracy: 0.7094 - val_loss: 0.5572
Epoch 503/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7141 - loss: 0.5455 - val_accuracy: 0.7094 - val_loss: 0.5571
Epoch 504/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7193 - loss: 0.5383 - val_accuracy: 0.7094 - val_loss: 0.5572
Epoch 505/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7158 - loss: 0.5371 - val_accuracy: 0.7094 - val_loss: 0.5570
Epoch 506/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7158 - loss: 0.5387 - val_accuracy: 0.7094 - val_loss: 0.5571
Epoch 507/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7158 - loss: 0.5491 - val_accuracy: 0.7094 - val_loss: 0.5569
Epoch 508/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6761 - loss: 0.5682 - val_accuracy: 0.7094 - val_loss: 0.5569
Epoch 509/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7105 - loss: 0.5574 - val_accuracy: 0.7094 - val_loss: 0.5569
Epoch 510/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7534 - loss: 0.5086 - val_accuracy: 0.7094 - val_loss: 0.5567
Epoch 511/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7021 - loss: 0.5548 - val_accuracy: 0.7094 - val_loss: 0.5567
Epoch 512/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7021 - loss: 0.5529 - val_accuracy: 0.7094 - val_loss: 0.5568
Epoch 513/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7044 - loss: 0.5500 - val_accuracy: 0.7094 - val_loss: 0.5566
Epoch 514/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7080 - loss: 0.5496 - val_accuracy: 0.7094 - val_loss: 0.5565
Epoch 515/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6973 - loss: 0.5646 - val_accuracy: 0.7094 - val_loss: 0.5567
Epoch 516/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7209 - loss: 0.5406 - val_accuracy: 0.7094 - val_loss: 0.5564
Epoch 517/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7139 - loss: 0.5317 - val_accuracy: 0.7094 - val_loss: 0.5564
Epoch 518/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.6946 - loss: 0.5557 - val_accuracy: 0.7094 - val_loss: 0.5564
Epoch 519/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6913 - loss: 0.5496 - val_accuracy: 0.7094 - val_loss: 0.5563
Epoch 520/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7108 - loss: 0.5489 - val_accuracy: 0.7094 - val_loss: 0.5561
Epoch 521/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6990 - loss: 0.5537 - val_accuracy: 0.7094 - val_loss: 0.5561
Epoch 522/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6834 - loss: 0.5695 - val_accuracy: 0.7094 - val_loss: 0.5561
Epoch 523/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7242 - loss: 0.5364 - val_accuracy: 0.7094 - val_loss: 0.5560
Epoch 524/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6904 - loss: 0.5514 - val_accuracy: 0.7094 - val_loss: 0.5560
Epoch 525/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7259 - loss: 0.5186 - val_accuracy: 0.7094 - val_loss: 0.5560
Epoch 526/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7029 - loss: 0.5473 - val_accuracy: 0.7094 - val_loss: 0.5558
Epoch 527/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7010 - loss: 0.5533 - val_accuracy: 0.7094 - val_loss: 0.5559
Epoch 528/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6972 - loss: 0.5585 - val_accuracy: 0.7094 - val_loss: 0.5559
Epoch 529/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7006 - loss: 0.5438 - val_accuracy: 0.7094 - val_loss: 0.5558
Epoch 530/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7261 - loss: 0.5359 - val_accuracy: 0.7094 - val_loss: 0.5557
Epoch 531/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6949 - loss: 0.5487 - val_accuracy: 0.7094 - val_loss: 0.5557
Epoch 532/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7195 - loss: 0.5371 - val_accuracy: 0.7094 - val_loss: 0.5557
Epoch 533/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.6951 - loss: 0.5490 - val_accuracy: 0.7094 - val_loss: 0.5557
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Epoch 534/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7201 - loss: 0.5254 - val_accuracy: 0.7094 - val_loss: 0.5557
Epoch 535/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6931 - loss: 0.5544 - val_accuracy: 0.7094 - val_loss: 0.5556
Epoch 536/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7235 - loss: 0.5360 - val_accuracy: 0.7094 - val_loss: 0.5555
Epoch 537/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7367 - loss: 0.5156 - val_accuracy: 0.7094 - val_loss: 0.5554
Epoch 538/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6988 - loss: 0.5488 - val_accuracy: 0.7094 - val_loss: 0.5555
Epoch 539/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6976 - loss: 0.5462 - val_accuracy: 0.7094 - val_loss: 0.5554
Epoch 540/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7133 - loss: 0.5431 - val_accuracy: 0.7094 - val_loss: 0.5553
Epoch 541/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 13ms/step - accuracy: 0.7525 - loss: 0.5023 - val_accuracy: 0.7094 - val_loss: 0.5552
Epoch 542/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6986 - loss: 0.5505 - val_accuracy: 0.7094 - val_loss: 0.5551
Epoch 543/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7141 - loss: 0.5317 - val_accuracy: 0.7094 - val_loss: 0.5550
Epoch 544/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7090 - loss: 0.5354 - val_accuracy: 0.7094 - val_loss: 0.5550
Epoch 545/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7110 - loss: 0.5373 - val_accuracy: 0.7094 - val_loss: 0.5549
Epoch 546/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7191 - loss: 0.5404 - val_accuracy: 0.7094 - val_loss: 0.5548
Epoch 547/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7018 - loss: 0.5322 - val_accuracy: 0.7094 - val_loss: 0.5548
Epoch 548/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7120 - loss: 0.5407 - val_accuracy: 0.7094 - val_loss: 0.5548
Epoch 549/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7055 - loss: 0.5455 - val_accuracy: 0.7094 - val_loss: 0.5548
Epoch 550/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6958 - loss: 0.5452 - val_accuracy: 0.7094 - val_loss: 0.5547
Epoch 551/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7057 - loss: 0.5473 - val_accuracy: 0.7094 - val_loss: 0.5547
Epoch 552/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7178 - loss: 0.5414 - val_accuracy: 0.7094 - val_loss: 0.5546
Epoch 553/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.6949 - loss: 0.5455 - val_accuracy: 0.7094 - val_loss: 0.5546
Epoch 554/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 12ms/step - accuracy: 0.7079 - loss: 0.5487 - val_accuracy: 0.7094 - val_loss: 0.5544
Epoch 555/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7294 - loss: 0.5200 - val_accuracy: 0.7094 - val_loss: 0.5543
Epoch 556/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7174 - loss: 0.5308 - val_accuracy: 0.7094 - val_loss: 0.5542
Epoch 557/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7332 - loss: 0.5212 - val_accuracy: 0.7094 - val_loss: 0.5542
Epoch 558/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6952 - loss: 0.5553 - val_accuracy: 0.7094 - val_loss: 0.5542
Epoch 559/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7025 - loss: 0.5554 - val_accuracy: 0.7094 - val_loss: 0.5542
Epoch 560/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6883 - loss: 0.5466 - val_accuracy: 0.7094 - val_loss: 0.5541
Epoch 561/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7160 - loss: 0.5310 - val_accuracy: 0.7094 - val_loss: 0.5540
Epoch 562/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6936 - loss: 0.5552 - val_accuracy: 0.7094 - val_loss: 0.5539
Epoch 563/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7028 - loss: 0.5347 - val_accuracy: 0.7094 - val_loss: 0.5538
Epoch 564/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7102 - loss: 0.5408 - val_accuracy: 0.7094 - val_loss: 0.5538
Epoch 565/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7087 - loss: 0.5451 - val_accuracy: 0.7094 - val_loss: 0.5537
Epoch 566/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7065 - loss: 0.5382 - val_accuracy: 0.7094 - val_loss: 0.5538
Epoch 567/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7118 - loss: 0.5402 - val_accuracy: 0.7094 - val_loss: 0.5538
Epoch 568/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7193 - loss: 0.5300 - val_accuracy: 0.7094 - val_loss: 0.5538
Epoch 569/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7291 - loss: 0.5224 - val_accuracy: 0.7094 - val_loss: 0.5536
Epoch 570/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7142 - loss: 0.5356 - val_accuracy: 0.7094 - val_loss: 0.5536
Epoch 571/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6953 - loss: 0.5449 - val_accuracy: 0.7094 - val_loss: 0.5536
Epoch 572/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7151 - loss: 0.5478 - val_accuracy: 0.7094 - val_loss: 0.5536
Epoch 573/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6873 - loss: 0.5545 - val_accuracy: 0.7094 - val_loss: 0.5535
Epoch 574/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7004 - loss: 0.5515 - val_accuracy: 0.7094 - val_loss: 0.5536
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Epoch 575/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6899 - loss: 0.5504 - val_accuracy: 0.7094 - val_loss: 0.5536
Epoch 576/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7000 - loss: 0.5452 - val_accuracy: 0.7094 - val_loss: 0.5535
Epoch 577/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7068 - loss: 0.5371 - val_accuracy: 0.7094 - val_loss: 0.5535
Epoch 578/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7069 - loss: 0.5321 - val_accuracy: 0.7094 - val_loss: 0.5535
Epoch 579/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7035 - loss: 0.5407 - val_accuracy: 0.7094 - val_loss: 0.5535
Epoch 580/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7240 - loss: 0.5242 - val_accuracy: 0.7094 - val_loss: 0.5533
Epoch 581/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7205 - loss: 0.5267 - val_accuracy: 0.7094 - val_loss: 0.5531
Epoch 582/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7090 - loss: 0.5432 - val_accuracy: 0.7179 - val_loss: 0.5529
Epoch 583/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6874 - loss: 0.5680 - val_accuracy: 0.7094 - val_loss: 0.5530
Epoch 584/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7204 - loss: 0.5411 - val_accuracy: 0.7094 - val_loss: 0.5529
Epoch 585/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7309 - loss: 0.5256 - val_accuracy: 0.7094 - val_loss: 0.5528
Epoch 586/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6967 - loss: 0.5500 - val_accuracy: 0.7094 - val_loss: 0.5528
Epoch 587/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6858 - loss: 0.5695 - val_accuracy: 0.7094 - val_loss: 0.5528
Epoch 588/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7161 - loss: 0.5329 - val_accuracy: 0.7094 - val_loss: 0.5527
Epoch 589/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7104 - loss: 0.5407 - val_accuracy: 0.7179 - val_loss: 0.5525
Epoch 590/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7057 - loss: 0.5428 - val_accuracy: 0.7179 - val_loss: 0.5524
Epoch 591/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7336 - loss: 0.5218 - val_accuracy: 0.7179 - val_loss: 0.5524
Epoch 592/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7287 - loss: 0.5319 - val_accuracy: 0.7179 - val_loss: 0.5523
Epoch 593/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7158 - loss: 0.5457 - val_accuracy: 0.7179 - val_loss: 0.5522
Epoch 594/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7306 - loss: 0.5381 - val_accuracy: 0.7179 - val_loss: 0.5522
Epoch 595/1000
```

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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7133 - loss: 0.5411 - val_accuracy: 0.7179 - val_loss: 0.5521
Epoch 596/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7140 - loss: 0.5344 - val_accuracy: 0.7179 - val_loss: 0.5520
Epoch 597/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7260 - loss: 0.5407 - val_accuracy: 0.7179 - val_loss: 0.5521
Epoch 598/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7286 - loss: 0.5302 - val_accuracy: 0.7179 - val_loss: 0.5521
Epoch 599/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7270 - loss: 0.5315 - val_accuracy: 0.7179 - val_loss: 0.5520
Epoch 600/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6962 - loss: 0.5589 - val_accuracy: 0.7179 - val_loss: 0.5519
Epoch 601/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7082 - loss: 0.5490 - val_accuracy: 0.7179 - val_loss: 0.5520
Epoch 602/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7247 - loss: 0.5283 - val_accuracy: 0.7179 - val_loss: 0.5519
Epoch 603/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7207 - loss: 0.5345 - val_accuracy: 0.7179 - val_loss: 0.5517
Epoch 604/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7213 - loss: 0.5385 - val_accuracy: 0.7179 - val_loss: 0.5517
Epoch 605/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6916 - loss: 0.5626 - val_accuracy: 0.7179 - val_loss: 0.5517
Epoch 606/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7527 - loss: 0.5038 - val_accuracy: 0.7094 - val_loss: 0.5515
Epoch 607/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7303 - loss: 0.5202 - val_accuracy: 0.7179 - val_loss: 0.5516
Epoch 608/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7157 - loss: 0.5446 - val_accuracy: 0.7179 - val_loss: 0.5516
Epoch 609/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7287 - loss: 0.5287 - val_accuracy: 0.7179 - val_loss: 0.5516
Epoch 610/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7035 - loss: 0.5476 - val_accuracy: 0.7179 - val_loss: 0.5515
Epoch 611/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7508 - loss: 0.5097 - val_accuracy: 0.7179 - val_loss: 0.5514
Epoch 612/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7009 - loss: 0.5435 - val_accuracy: 0.7179 - val_loss: 0.5514
Epoch 613/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6655 - loss: 0.5827 - val_accuracy: 0.7179 - val_loss: 0.5515
Epoch 614/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7277 - loss: 0.5264 - val_accuracy: 0.7179 - val_loss: 0.5513
Epoch 615/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7259 - loss: 0.5355 - val_accuracy: 0.7179 - val_loss: 0.5513
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Epoch 616/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7195 - loss: 0.5426 - val_accuracy: 0.7179 - val_loss: 0.5512
Epoch 617/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6990 - loss: 0.5561 - val_accuracy: 0.7179 - val_loss: 0.5512
Epoch 618/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7260 - loss: 0.5294 - val_accuracy: 0.7179 - val_loss: 0.5511
Epoch 619/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7087 - loss: 0.5346 - val_accuracy: 0.7179 - val_loss: 0.5512
Epoch 620/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6907 - loss: 0.5612 - val_accuracy: 0.7179 - val_loss: 0.5511
Epoch 621/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7031 - loss: 0.5435 - val_accuracy: 0.7179 - val_loss: 0.5511
Epoch 622/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7129 - loss: 0.5370 - val_accuracy: 0.7179 - val_loss: 0.5510
Epoch 623/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7262 - loss: 0.5296 - val_accuracy: 0.7179 - val_loss: 0.5509
Epoch 624/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.6991 - loss: 0.5528 - val_accuracy: 0.7179 - val_loss: 0.5509
Epoch 625/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7012 - loss: 0.5412 - val_accuracy: 0.7179 - val_loss: 0.5509
Epoch 626/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7118 - loss: 0.5400 - val_accuracy: 0.7179 - val_loss: 0.5507
Epoch 627/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7279 - loss: 0.5234 - val_accuracy: 0.7179 - val_loss: 0.5507
Epoch 628/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7168 - loss: 0.5257 - val_accuracy: 0.7179 - val_loss: 0.5507
Epoch 629/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7238 - loss: 0.5322 - val_accuracy: 0.7179 - val_loss: 0.5507
Epoch 630/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7124 - loss: 0.5407 - val_accuracy: 0.7179 - val_loss: 0.5508
Epoch 631/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6941 - loss: 0.5585 - val_accuracy: 0.7179 - val_loss: 0.5508
Epoch 632/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7216 - loss: 0.5296 - val_accuracy: 0.7179 - val_loss: 0.5505
Epoch 633/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7080 - loss: 0.5488 - val_accuracy: 0.7179 - val_loss: 0.5504
Epoch 634/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7209 - loss: 0.5330 - val_accuracy: 0.7179 - val_loss: 0.5505
Epoch 635/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7208 - loss: 0.5352 - val_accuracy: 0.7179 - val_loss: 0.5504
Epoch 636/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6855 - loss: 0.5657 - val_accuracy: 0.7179 - val_loss: 0.5503
Epoch 637/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7154 - loss: 0.5452 - val_accuracy: 0.7179 - val_loss: 0.5503
Epoch 638/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7206 - loss: 0.5327 - val_accuracy: 0.7179 - val_loss: 0.5503
Epoch 639/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7181 - loss: 0.5286 - val_accuracy: 0.7094 - val_loss: 0.5501
Epoch 640/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7244 - loss: 0.5314 - val_accuracy: 0.7094 - val_loss: 0.5499
Epoch 641/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7370 - loss: 0.5162 - val_accuracy: 0.7094 - val_loss: 0.5500
Epoch 642/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7397 - loss: 0.5166 - val_accuracy: 0.7094 - val_loss: 0.5499
Epoch 643/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7245 - loss: 0.5294 - val_accuracy: 0.7179 - val_loss: 0.5498
Epoch 644/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7088 - loss: 0.5527 - val_accuracy: 0.7094 - val_loss: 0.5498
Epoch 645/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7268 - loss: 0.5347 - val_accuracy: 0.7179 - val_loss: 0.5497
Epoch 646/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7267 - loss: 0.5204 - val_accuracy: 0.7094 - val_loss: 0.5497
Epoch 647/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7353 - loss: 0.5157 - val_accuracy: 0.7179 - val_loss: 0.5496
Epoch 648/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7053 - loss: 0.5497 - val_accuracy: 0.7179 - val_loss: 0.5495
Epoch 649/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7330 - loss: 0.5228 - val_accuracy: 0.7179 - val_loss: 0.5495
Epoch 650/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7080 - loss: 0.5481 - val_accuracy: 0.7179 - val_loss: 0.5495
Epoch 651/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7152 - loss: 0.5354 - val_accuracy: 0.7179 - val_loss: 0.5494
Epoch 652/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7080 - loss: 0.5385 - val_accuracy: 0.7179 - val_loss: 0.5494
Epoch 653/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7059 - loss: 0.5494 - val_accuracy: 0.7094 - val_loss: 0.5494
Epoch 654/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6998 - loss: 0.5424 - val_accuracy: 0.7179 - val_loss: 0.5495
Epoch 655/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7236 - loss: 0.5364 - val_accuracy: 0.7179 - val_loss: 0.5494
Epoch 656/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7334 - loss: 0.5217 - val_accuracy: 0.7179 - val_loss: 0.5494
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Epoch 657/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6768 - loss: 0.5638 - val_accuracy: 0.7179 - val_loss: 0.5494
Epoch 658/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7156 - loss: 0.5291 - val_accuracy: 0.7094 - val_loss: 0.5492
Epoch 659/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7195 - loss: 0.5267 - val_accuracy: 0.7094 - val_loss: 0.5492
Epoch 660/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7311 - loss: 0.5347 - val_accuracy: 0.7179 - val_loss: 0.5493
Epoch 661/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7068 - loss: 0.5379 - val_accuracy: 0.7179 - val_loss: 0.5492
Epoch 662/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7290 - loss: 0.5278 - val_accuracy: 0.7179 - val_loss: 0.5492
Epoch 663/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7487 - loss: 0.5084 - val_accuracy: 0.7094 - val_loss: 0.5491
Epoch 664/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7097 - loss: 0.5303 - val_accuracy: 0.7179 - val_loss: 0.5492
Epoch 665/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6993 - loss: 0.5561 - val_accuracy: 0.7179 - val_loss: 0.5491
Epoch 666/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7014 - loss: 0.5376 - val_accuracy: 0.7179 - val_loss: 0.5491
Epoch 667/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7220 - loss: 0.5384 - val_accuracy: 0.7179 - val_loss: 0.5492
Epoch 668/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7016 - loss: 0.5457 - val_accuracy: 0.7179 - val_loss: 0.5492
Epoch 669/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6986 - loss: 0.5360 - val_accuracy: 0.7179 - val_loss: 0.5490
Epoch 670/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7282 - loss: 0.5299 - val_accuracy: 0.7179 - val_loss: 0.5490
Epoch 671/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7406 - loss: 0.5154 - val_accuracy: 0.7094 - val_loss: 0.5487
Epoch 672/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7208 - loss: 0.5425 - val_accuracy: 0.7094 - val_loss: 0.5487
Epoch 673/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6973 - loss: 0.5436 - val_accuracy: 0.7094 - val_loss: 0.5488
Epoch 674/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7185 - loss: 0.5309 - val_accuracy: 0.7094 - val_loss: 0.5485
Epoch 675/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7172 - loss: 0.5310 - val_accuracy: 0.7179 - val_loss: 0.5483
Epoch 676/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7294 - loss: 0.5170 - val_accuracy: 0.7179 - val_loss: 0.5482
Epoch 677/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7221 - loss: 0.5407 - val_accuracy: 0.7179 - val_loss: 0.5480
Epoch 678/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7055 - loss: 0.5500 - val_accuracy: 0.7179 - val_loss: 0.5480
Epoch 679/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7112 - loss: 0.5365 - val_accuracy: 0.7179 - val_loss: 0.5482
Epoch 680/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7261 - loss: 0.5270 - val_accuracy: 0.7179 - val_loss: 0.5482
Epoch 681/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6930 - loss: 0.5525 - val_accuracy: 0.7094 - val_loss: 0.5482
Epoch 682/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7272 - loss: 0.5285 - val_accuracy: 0.7094 - val_loss: 0.5482
Epoch 683/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7173 - loss: 0.5430 - val_accuracy: 0.7094 - val_loss: 0.5482
Epoch 684/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7042 - loss: 0.5554 - val_accuracy: 0.7094 - val_loss: 0.5482
Epoch 685/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7169 - loss: 0.5289 - val_accuracy: 0.7094 - val_loss: 0.5481
Epoch 686/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7166 - loss: 0.5323 - val_accuracy: 0.7179 - val_loss: 0.5479
Epoch 687/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7107 - loss: 0.5402 - val_accuracy: 0.7179 - val_loss: 0.5478
Epoch 688/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7462 - loss: 0.5112 - val_accuracy: 0.7179 - val_loss: 0.5477
Epoch 689/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7350 - loss: 0.5155 - val_accuracy: 0.7179 - val_loss: 0.5476
Epoch 690/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6980 - loss: 0.5475 - val_accuracy: 0.7179 - val_loss: 0.5477
Epoch 691/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7103 - loss: 0.5281 - val_accuracy: 0.7094 - val_loss: 0.5479
Epoch 692/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7094 - loss: 0.5393 - val_accuracy: 0.7094 - val_loss: 0.5479
Epoch 693/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7032 - loss: 0.5389 - val_accuracy: 0.7094 - val_loss: 0.5478
Epoch 694/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7093 - loss: 0.5355 - val_accuracy: 0.7094 - val_loss: 0.5477
Epoch 695/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7233 - loss: 0.5289 - val_accuracy: 0.7094 - val_loss: 0.5478
Epoch 696/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7168 - loss: 0.5312 - val_accuracy: 0.7094 - val_loss: 0.5476
Epoch 697/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7119 - loss: 0.5435 - val_accuracy: 0.7179 - val_loss: 0.5475
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Epoch 698/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7033 - loss: 0.5408 - val_accuracy: 0.7179 - val_loss: 0.5474
Epoch 699/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7257 - loss: 0.5207 - val_accuracy: 0.7094 - val_loss: 0.5474
Epoch 700/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7391 - loss: 0.5051 - val_accuracy: 0.7179 - val_loss: 0.5473
Epoch 701/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7319 - loss: 0.5137 - val_accuracy: 0.7094 - val_loss: 0.5475
Epoch 702/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6976 - loss: 0.5629 - val_accuracy: 0.7094 - val_loss: 0.5475
Epoch 703/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7044 - loss: 0.5501 - val_accuracy: 0.7094 - val_loss: 0.5473
Epoch 704/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7402 - loss: 0.5193 - val_accuracy: 0.7094 - val_loss: 0.5472
Epoch 705/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7286 - loss: 0.5326 - val_accuracy: 0.7179 - val_loss: 0.5474
Epoch 706/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7241 - loss: 0.5180 - val_accuracy: 0.7094 - val_loss: 0.5472
Epoch 707/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7039 - loss: 0.5485 - val_accuracy: 0.7094 - val_loss: 0.5472
Epoch 708/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7242 - loss: 0.5326 - val_accuracy: 0.7179 - val_loss: 0.5469
Epoch 709/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7071 - loss: 0.5356 - val_accuracy: 0.7179 - val_loss: 0.5469
Epoch 710/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7273 - loss: 0.5319 - val_accuracy: 0.7179 - val_loss: 0.5468
Epoch 711/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7122 - loss: 0.5351 - val_accuracy: 0.7179 - val_loss: 0.5467
Epoch 712/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7209 - loss: 0.5339 - val_accuracy: 0.7179 - val_loss: 0.5466
Epoch 713/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7028 - loss: 0.5376 - val_accuracy: 0.7179 - val_loss: 0.5466
Epoch 714/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6896 - loss: 0.5449 - val_accuracy: 0.7094 - val_loss: 0.5468
Epoch 715/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7089 - loss: 0.5317 - val_accuracy: 0.7094 - val_loss: 0.5467
Epoch 716/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7376 - loss: 0.5087 - val_accuracy: 0.7094 - val_loss: 0.5469
Epoch 717/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6955 - loss: 0.5571 - val_accuracy: 0.7094 - val_loss: 0.5466
Epoch 718/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7295 - loss: 0.5345 - val_accuracy: 0.7179 - val_loss: 0.5465
Epoch 719/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7120 - loss: 0.5284 - val_accuracy: 0.7094 - val_loss: 0.5467
Epoch 720/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7311 - loss: 0.5160 - val_accuracy: 0.7094 - val_loss: 0.5465
Epoch 721/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7281 - loss: 0.5254 - val_accuracy: 0.7094 - val_loss: 0.5466
Epoch 722/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7050 - loss: 0.5363 - val_accuracy: 0.7094 - val_loss: 0.5466
Epoch 723/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7523 - loss: 0.5147 - val_accuracy: 0.7094 - val_loss: 0.5466
Epoch 724/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7307 - loss: 0.5310 - val_accuracy: 0.7094 - val_loss: 0.5465
Epoch 725/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6925 - loss: 0.5503 - val_accuracy: 0.7094 - val_loss: 0.5464
Epoch 726/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7003 - loss: 0.5528 - val_accuracy: 0.7179 - val_loss: 0.5463
Epoch 727/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6893 - loss: 0.5584 - val_accuracy: 0.7094 - val_loss: 0.5462
Epoch 728/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7033 - loss: 0.5302 - val_accuracy: 0.7179 - val_loss: 0.5461
Epoch 729/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.6988 - loss: 0.5398 - val_accuracy: 0.7094 - val_loss: 0.5462
Epoch 730/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7270 - loss: 0.5220 - val_accuracy: 0.7179 - val_loss: 0.5461
Epoch 731/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7349 - loss: 0.5162 - val_accuracy: 0.7179 - val_loss: 0.5458
Epoch 732/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7319 - loss: 0.5240 - val_accuracy: 0.7179 - val_loss: 0.5457
Epoch 733/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7473 - loss: 0.5079 - val_accuracy: 0.7179 - val_loss: 0.5458
Epoch 734/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7318 - loss: 0.5338 - val_accuracy: 0.7179 - val_loss: 0.5456
Epoch 735/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7256 - loss: 0.5299 - val_accuracy: 0.7179 - val_loss: 0.5456
Epoch 736/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7270 - loss: 0.5299 - val_accuracy: 0.7179 - val_loss: 0.5455
Epoch 737/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7095 - loss: 0.5410 - val_accuracy: 0.7179 - val_loss: 0.5455
Epoch 738/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7120 - loss: 0.5316 - val_accuracy: 0.7179 - val_loss: 0.5455
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Epoch 739/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7428 - loss: 0.5200 - val_accuracy: 0.7179 - val_loss: 0.5456
Epoch 740/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7303 - loss: 0.5300 - val_accuracy: 0.7179 - val_loss: 0.5454
Epoch 741/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7211 - loss: 0.5233 - val_accuracy: 0.7179 - val_loss: 0.5454
Epoch 742/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7193 - loss: 0.5240 - val_accuracy: 0.7179 - val_loss: 0.5452
Epoch 743/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7290 - loss: 0.5168 - val_accuracy: 0.7179 - val_loss: 0.5452
Epoch 744/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7115 - loss: 0.5319 - val_accuracy: 0.7179 - val_loss: 0.5454
Epoch 745/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7112 - loss: 0.5437 - val_accuracy: 0.7179 - val_loss: 0.5453
Epoch 746/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7214 - loss: 0.5396 - val_accuracy: 0.7179 - val_loss: 0.5453
Epoch 747/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7139 - loss: 0.5424 - val_accuracy: 0.7179 - val_loss: 0.5451
Epoch 748/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7129 - loss: 0.5384 - val_accuracy: 0.7179 - val_loss: 0.5451
Epoch 749/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7346 - loss: 0.5039 - val_accuracy: 0.7179 - val_loss: 0.5451
Epoch 750/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7060 - loss: 0.5401 - val_accuracy: 0.7179 - val_loss: 0.5450
Epoch 751/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7534 - loss: 0.5015 - val_accuracy: 0.7179 - val_loss: 0.5449
Epoch 752/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7191 - loss: 0.5363 - val_accuracy: 0.7179 - val_loss: 0.5449
Epoch 753/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7521 - loss: 0.4980 - val_accuracy: 0.7179 - val_loss: 0.5448
Epoch 754/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7289 - loss: 0.5290 - val_accuracy: 0.7179 - val_loss: 0.5449
Epoch 755/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7063 - loss: 0.5423 - val_accuracy: 0.7179 - val_loss: 0.5450
Epoch 756/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7100 - loss: 0.5412 - val_accuracy: 0.7179 - val_loss: 0.5450
Epoch 757/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.6961 - loss: 0.5491 - val_accuracy: 0.7179 - val_loss: 0.5448
Epoch 758/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7444 - loss: 0.5050 - val_accuracy: 0.7179 - val_loss: 0.5447
Epoch 759/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7073 - loss: 0.5566 - val_accuracy: 0.7179 - val_loss: 0.5446
Epoch 760/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7231 - loss: 0.5179 - val_accuracy: 0.7179 - val_loss: 0.5447
Epoch 761/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7376 - loss: 0.5209 - val_accuracy: 0.7179 - val_loss: 0.5446
Epoch 762/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7049 - loss: 0.5382 - val_accuracy: 0.7179 - val_loss: 0.5446
Epoch 763/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7100 - loss: 0.5432 - val_accuracy: 0.7179 - val_loss: 0.5445
Epoch 764/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7019 - loss: 0.5412 - val_accuracy: 0.7179 - val_loss: 0.5445
Epoch 765/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7301 - loss: 0.5148 - val_accuracy: 0.7179 - val_loss: 0.5445
Epoch 766/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7115 - loss: 0.5359 - val_accuracy: 0.7179 - val_loss: 0.5445
Epoch 767/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7340 - loss: 0.5130 - val_accuracy: 0.7094 - val_loss: 0.5441
Epoch 768/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7439 - loss: 0.5154 - val_accuracy: 0.7179 - val_loss: 0.5441
Epoch 769/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7226 - loss: 0.5413 - val_accuracy: 0.7179 - val_loss: 0.5440
Epoch 770/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7173 - loss: 0.5384 - val_accuracy: 0.7179 - val_loss: 0.5439
Epoch 771/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7515 - loss: 0.5126 - val_accuracy: 0.7179 - val_loss: 0.5438
Epoch 772/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7401 - loss: 0.5179 - val_accuracy: 0.7179 - val_loss: 0.5439
Epoch 773/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7190 - loss: 0.5324 - val_accuracy: 0.7094 - val_loss: 0.5439
Epoch 774/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7427 - loss: 0.5302 - val_accuracy: 0.7179 - val_loss: 0.5439
Epoch 775/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 5ms/step - accuracy: 0.6977 - loss: 0.5348 - val_accuracy: 0.7179 - val_loss: 0.5441
Epoch 776/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7076 - loss: 0.5368 - val_accuracy: 0.7179 - val_loss: 0.5438
Epoch 777/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7045 - loss: 0.5577 - val_accuracy: 0.7179 - val_loss: 0.5439
Epoch 778/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7393 - loss: 0.5167 - val_accuracy: 0.7179 - val_loss: 0.5438
Epoch 779/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7150 - loss: 0.5365 - val_accuracy: 0.7179 - val_loss: 0.5439
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Epoch 780/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7109 - loss: 0.5492 - val_accuracy: 0.7179 - val_loss: 0.5439
Epoch 781/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7087 - loss: 0.5360 - val_accuracy: 0.7179 - val_loss: 0.5439
Epoch 782/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6960 - loss: 0.5514 - val_accuracy: 0.7179 - val_loss: 0.5440
Epoch 783/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7284 - loss: 0.5266 - val_accuracy: 0.7179 - val_loss: 0.5440
Epoch 784/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7208 - loss: 0.5272 - val_accuracy: 0.7179 - val_loss: 0.5439
Epoch 785/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7134 - loss: 0.5316 - val_accuracy: 0.7179 - val_loss: 0.5438
Epoch 786/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7111 - loss: 0.5391 - val_accuracy: 0.7179 - val_loss: 0.5439
Epoch 787/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7225 - loss: 0.5299 - val_accuracy: 0.7179 - val_loss: 0.5439
Epoch 788/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7270 - loss: 0.5248 - val_accuracy: 0.7179 - val_loss: 0.5440
Epoch 789/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7302 - loss: 0.5156 - val_accuracy: 0.7179 - val_loss: 0.5438
Epoch 790/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7039 - loss: 0.5391 - val_accuracy: 0.7179 - val_loss: 0.5439
Epoch 791/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7036 - loss: 0.5481 - val_accuracy: 0.7179 - val_loss: 0.5436
Epoch 792/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7073 - loss: 0.5400 - val_accuracy: 0.7179 - val_loss: 0.5436
Epoch 793/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7081 - loss: 0.5254 - val_accuracy: 0.7179 - val_loss: 0.5437
Epoch 794/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6975 - loss: 0.5493 - val_accuracy: 0.7179 - val_loss: 0.5436
Epoch 795/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7119 - loss: 0.5286 - val_accuracy: 0.7179 - val_loss: 0.5435
Epoch 796/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.6846 - loss: 0.5429 - val_accuracy: 0.7179 - val_loss: 0.5434
Epoch 797/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7097 - loss: 0.5375 - val_accuracy: 0.7179 - val_loss: 0.5434
Epoch 798/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7056 - loss: 0.5323 - val_accuracy: 0.7179 - val_loss: 0.5431
Epoch 799/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7047 - loss: 0.5267 - val_accuracy: 0.7179 - val_loss: 0.5432
Epoch 800/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7059 - loss: 0.5436 - val_accuracy: 0.7179 - val_loss: 0.5431
Epoch 801/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7457 - loss: 0.5138 - val_accuracy: 0.7179 - val_loss: 0.5430
Epoch 802/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7308 - loss: 0.5249 - val_accuracy: 0.7094 - val_loss: 0.5429
Epoch 803/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7310 - loss: 0.5216 - val_accuracy: 0.7179 - val_loss: 0.5431
Epoch 804/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7162 - loss: 0.5268 - val_accuracy: 0.7179 - val_loss: 0.5429
Epoch 805/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7171 - loss: 0.5362 - val_accuracy: 0.7179 - val_loss: 0.5428
Epoch 806/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7409 - loss: 0.5150 - val_accuracy: 0.7094 - val_loss: 0.5427
Epoch 807/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7131 - loss: 0.5437 - val_accuracy: 0.7094 - val_loss: 0.5427
Epoch 808/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7199 - loss: 0.5440 - val_accuracy: 0.7179 - val_loss: 0.5427
Epoch 809/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7223 - loss: 0.5296 - val_accuracy: 0.7094 - val_loss: 0.5426
Epoch 810/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7173 - loss: 0.5386 - val_accuracy: 0.7179 - val_loss: 0.5426
Epoch 811/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7237 - loss: 0.5230 - val_accuracy: 0.7179 - val_loss: 0.5425
Epoch 812/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6991 - loss: 0.5563 - val_accuracy: 0.7179 - val_loss: 0.5426
Epoch 813/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7150 - loss: 0.5316 - val_accuracy: 0.7179 - val_loss: 0.5425
Epoch 814/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7186 - loss: 0.5275 - val_accuracy: 0.7179 - val_loss: 0.5425
Epoch 815/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7311 - loss: 0.5067 - val_accuracy: 0.7179 - val_loss: 0.5424
Epoch 816/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7349 - loss: 0.5160 - val_accuracy: 0.7094 - val_loss: 0.5423
Epoch 817/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7627 - loss: 0.4911 - val_accuracy: 0.7179 - val_loss: 0.5422
Epoch 818/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7238 - loss: 0.5140 - val_accuracy: 0.7179 - val_loss: 0.5420
Epoch 819/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7042 - loss: 0.5502 - val_accuracy: 0.7179 - val_loss: 0.5420
Epoch 820/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7348 - loss: 0.5286 - val_accuracy: 0.7179 - val_loss: 0.5420
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Epoch 821/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7319 - loss: 0.5281 - val_accuracy: 0.7179 - val_loss: 0.5419
Epoch 822/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7364 - loss: 0.5329 - val_accuracy: 0.7179 - val_loss: 0.5419
Epoch 823/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7282 - loss: 0.5156 - val_accuracy: 0.7179 - val_loss: 0.5418
Epoch 824/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7428 - loss: 0.5163 - val_accuracy: 0.7179 - val_loss: 0.5418
Epoch 825/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7462 - loss: 0.5145 - val_accuracy: 0.7179 - val_loss: 0.5417
Epoch 826/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7308 - loss: 0.5252 - val_accuracy: 0.7179 - val_loss: 0.5417
Epoch 827/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7244 - loss: 0.5348 - val_accuracy: 0.7179 - val_loss: 0.5417
Epoch 828/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7386 - loss: 0.5186 - val_accuracy: 0.7179 - val_loss: 0.5417
Epoch 829/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7385 - loss: 0.5189 - val_accuracy: 0.7179 - val_loss: 0.5416
Epoch 830/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7189 - loss: 0.5494 - val_accuracy: 0.7179 - val_loss: 0.5417
Epoch 831/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7149 - loss: 0.5459 - val_accuracy: 0.7179 - val_loss: 0.5416
Epoch 832/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7165 - loss: 0.5397 - val_accuracy: 0.7179 - val_loss: 0.5414
Epoch 833/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7294 - loss: 0.5297 - val_accuracy: 0.7179 - val_loss: 0.5414
Epoch 834/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7192 - loss: 0.5329 - val_accuracy: 0.7179 - val_loss: 0.5413
Epoch 835/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7285 - loss: 0.5274 - val_accuracy: 0.7179 - val_loss: 0.5413
Epoch 836/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7153 - loss: 0.5338 - val_accuracy: 0.7179 - val_loss: 0.5414
Epoch 837/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7194 - loss: 0.5348 - val_accuracy: 0.7179 - val_loss: 0.5413
Epoch 838/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7282 - loss: 0.5260 - val_accuracy: 0.7179 - val_loss: 0.5412
Epoch 839/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7355 - loss: 0.5291 - val_accuracy: 0.7179 - val_loss: 0.5412
Epoch 840/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7394 - loss: 0.5263 - val_accuracy: 0.7179 - val_loss: 0.5410
Epoch 841/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 6ms/step - accuracy: 0.7187 - loss: 0.5370 - val_accuracy: 0.7179 - val_loss: 0.5410
Epoch 842/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7200 - loss: 0.5390 - val_accuracy: 0.7179 - val_loss: 0.5410
Epoch 843/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7032 - loss: 0.5377 - val_accuracy: 0.7179 - val_loss: 0.5409
Epoch 844/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7240 - loss: 0.5241 - val_accuracy: 0.7179 - val_loss: 0.5411
Epoch 845/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7458 - loss: 0.5204 - val_accuracy: 0.7179 - val_loss: 0.5411
Epoch 846/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7244 - loss: 0.5197 - val_accuracy: 0.7179 - val_loss: 0.5409
Epoch 847/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7224 - loss: 0.5244 - val_accuracy: 0.7179 - val_loss: 0.5409
Epoch 848/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7166 - loss: 0.5297 - val_accuracy: 0.7179 - val_loss: 0.5410
Epoch 849/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7332 - loss: 0.5302 - val_accuracy: 0.7179 - val_loss: 0.5409
Epoch 850/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7187 - loss: 0.5139 - val_accuracy: 0.7179 - val_loss: 0.5407
Epoch 851/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7364 - loss: 0.5207 - val_accuracy: 0.7179 - val_loss: 0.5406
Epoch 852/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7314 - loss: 0.5226 - val_accuracy: 0.7179 - val_loss: 0.5406
Epoch 853/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7221 - loss: 0.5363 - val_accuracy: 0.7179 - val_loss: 0.5405
Epoch 854/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7312 - loss: 0.5155 - val_accuracy: 0.7179 - val_loss: 0.5406
Epoch 855/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7421 - loss: 0.4992 - val_accuracy: 0.7179 - val_loss: 0.5405
Epoch 856/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7377 - loss: 0.5070 - val_accuracy: 0.7179 - val_loss: 0.5406
Epoch 857/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7319 - loss: 0.5389 - val_accuracy: 0.7179 - val_loss: 0.5406
Epoch 858/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6965 - loss: 0.5503 - val_accuracy: 0.7179 - val_loss: 0.5406
Epoch 859/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6993 - loss: 0.5413 - val_accuracy: 0.7179 - val_loss: 0.5407
Epoch 860/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7134 - loss: 0.5394 - val_accuracy: 0.7094 - val_loss: 0.5408
Epoch 861/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7353 - loss: 0.5123 - val_accuracy: 0.7179 - val_loss: 0.5406
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Epoch 862/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7311 - loss: 0.5251 - val_accuracy: 0.7179 - val_loss: 0.5404
Epoch 863/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7582 - loss: 0.5007 - val_accuracy: 0.7179 - val_loss: 0.5403
Epoch 864/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7098 - loss: 0.5303 - val_accuracy: 0.7179 - val_loss: 0.5404
Epoch 865/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7053 - loss: 0.5476 - val_accuracy: 0.7179 - val_loss: 0.5402
Epoch 866/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7205 - loss: 0.5344 - val_accuracy: 0.7179 - val_loss: 0.5402
Epoch 867/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7101 - loss: 0.5304 - val_accuracy: 0.7179 - val_loss: 0.5402
Epoch 868/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.6928 - loss: 0.5534 - val_accuracy: 0.7179 - val_loss: 0.5404
Epoch 869/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7100 - loss: 0.5270 - val_accuracy: 0.7179 - val_loss: 0.5407
Epoch 870/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7458 - loss: 0.5039 - val_accuracy: 0.7179 - val_loss: 0.5405
Epoch 871/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7128 - loss: 0.5368 - val_accuracy: 0.7179 - val_loss: 0.5401
Epoch 872/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7230 - loss: 0.5224 - val_accuracy: 0.7179 - val_loss: 0.5399
Epoch 873/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7353 - loss: 0.5294 - val_accuracy: 0.7179 - val_loss: 0.5397
Epoch 874/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7293 - loss: 0.5220 - val_accuracy: 0.7179 - val_loss: 0.5397
Epoch 875/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7179 - loss: 0.5416 - val_accuracy: 0.7179 - val_loss: 0.5398
Epoch 876/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7163 - loss: 0.5268 - val_accuracy: 0.7179 - val_loss: 0.5397
Epoch 877/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7267 - loss: 0.5173 - val_accuracy: 0.7179 - val_loss: 0.5396
Epoch 878/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7258 - loss: 0.5298 - val_accuracy: 0.7179 - val_loss: 0.5395
Epoch 879/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7149 - loss: 0.5436 - val_accuracy: 0.7179 - val_loss: 0.5397
Epoch 880/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7444 - loss: 0.5003 - val_accuracy: 0.7179 - val_loss: 0.5396
Epoch 881/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7070 - loss: 0.5303 - val_accuracy: 0.7179 - val_loss: 0.5397
Epoch 882/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7323 - loss: 0.5217 - val_accuracy: 0.7179 - val_loss: 0.5396
Epoch 883/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7227 - loss: 0.5252 - val_accuracy: 0.7179 - val_loss: 0.5394
Epoch 884/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7403 - loss: 0.5137 - val_accuracy: 0.7179 - val_loss: 0.5393
Epoch 885/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7228 - loss: 0.5189 - val_accuracy: 0.7179 - val_loss: 0.5392
Epoch 886/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7023 - loss: 0.5459 - val_accuracy: 0.7179 - val_loss: 0.5392
Epoch 887/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7087 - loss: 0.5357 - val_accuracy: 0.7179 - val_loss: 0.5392
Epoch 888/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7229 - loss: 0.5289 - val_accuracy: 0.7179 - val_loss: 0.5392
Epoch 889/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7031 - loss: 0.5449 - val_accuracy: 0.7179 - val_loss: 0.5391
Epoch 890/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7236 - loss: 0.5344 - val_accuracy: 0.7179 - val_loss: 0.5390
Epoch 891/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7203 - loss: 0.5273 - val_accuracy: 0.7179 - val_loss: 0.5390
Epoch 892/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7261 - loss: 0.5345 - val_accuracy: 0.7179 - val_loss: 0.5391
Epoch 893/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7243 - loss: 0.5269 - val_accuracy: 0.7179 - val_loss: 0.5391
Epoch 894/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7155 - loss: 0.5290 - val_accuracy: 0.7179 - val_loss: 0.5391
Epoch 895/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7004 - loss: 0.5506 - val_accuracy: 0.7179 - val_loss: 0.5394
Epoch 896/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7082 - loss: 0.5352 - val_accuracy: 0.7179 - val_loss: 0.5394
Epoch 897/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7361 - loss: 0.5210 - val_accuracy: 0.7179 - val_loss: 0.5392
Epoch 898/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7138 - loss: 0.5270 - val_accuracy: 0.7179 - val_loss: 0.5392
Epoch 899/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7179 - loss: 0.5239 - val_accuracy: 0.7179 - val_loss: 0.5391
Epoch 900/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7353 - loss: 0.5289 - val_accuracy: 0.7179 - val_loss: 0.5386
Epoch 901/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7379 - loss: 0.5121 - val_accuracy: 0.7179 - val_loss: 0.5386
Epoch 902/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7210 - loss: 0.5215 - val_accuracy: 0.7179 - val_loss: 0.5387
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Epoch 903/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7457 - loss: 0.4995 - val_accuracy: 0.7179 - val_loss: 0.5387
Epoch 904/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7258 - loss: 0.5183 - val_accuracy: 0.7179 - val_loss: 0.5387
Epoch 905/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7277 - loss: 0.5110 - val_accuracy: 0.7179 - val_loss: 0.5387
Epoch 906/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7323 - loss: 0.5256 - val_accuracy: 0.7179 - val_loss: 0.5387
Epoch 907/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7059 - loss: 0.5337 - val_accuracy: 0.7179 - val_loss: 0.5388
Epoch 908/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7076 - loss: 0.5330 - val_accuracy: 0.7179 - val_loss: 0.5387
Epoch 909/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6953 - loss: 0.5510 - val_accuracy: 0.7179 - val_loss: 0.5388
Epoch 910/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6958 - loss: 0.5388 - val_accuracy: 0.7179 - val_loss: 0.5388
Epoch 911/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7247 - loss: 0.5169 - val_accuracy: 0.7179 - val_loss: 0.5387
Epoch 912/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7011 - loss: 0.5517 - val_accuracy: 0.7179 - val_loss: 0.5387
Epoch 913/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7231 - loss: 0.5331 - val_accuracy: 0.7179 - val_loss: 0.5385
Epoch 914/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7313 - loss: 0.5153 - val_accuracy: 0.7179 - val_loss: 0.5383
Epoch 915/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7169 - loss: 0.5185 - val_accuracy: 0.7179 - val_loss: 0.5381
Epoch 916/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7044 - loss: 0.5404 - val_accuracy: 0.7179 - val_loss: 0.5381
Epoch 917/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7279 - loss: 0.5287 - val_accuracy: 0.7179 - val_loss: 0.5382
Epoch 918/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7307 - loss: 0.5123 - val_accuracy: 0.7179 - val_loss: 0.5383
Epoch 919/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7196 - loss: 0.5273 - val_accuracy: 0.7179 - val_loss: 0.5381
Epoch 920/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7295 - loss: 0.5114 - val_accuracy: 0.7179 - val_loss: 0.5380
Epoch 921/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7412 - loss: 0.5092 - val_accuracy: 0.7179 - val_loss: 0.5379
Epoch 922/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7170 - loss: 0.5239 - val_accuracy: 0.7179 - val_loss: 0.5378
Epoch 923/1000
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10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6859 - loss: 0.5531 - val_accuracy: 0.7179 - val_loss: 0.5378
Epoch 924/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7379 - loss: 0.5033 - val_accuracy: 0.7179 - val_loss: 0.5378
Epoch 925/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7152 - loss: 0.5262 - val_accuracy: 0.7179 - val_loss: 0.5379
Epoch 926/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7086 - loss: 0.5326 - val_accuracy: 0.7179 - val_loss: 0.5380
Epoch 927/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7290 - loss: 0.5196 - val_accuracy: 0.7179 - val_loss: 0.5380
Epoch 928/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7011 - loss: 0.5500 - val_accuracy: 0.7179 - val_loss: 0.5381
Epoch 929/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7260 - loss: 0.5085 - val_accuracy: 0.7179 - val_loss: 0.5380
Epoch 930/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7017 - loss: 0.5426 - val_accuracy: 0.7179 - val_loss: 0.5380
Epoch 931/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7269 - loss: 0.5192 - val_accuracy: 0.7179 - val_loss: 0.5379
Epoch 932/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6862 - loss: 0.5542 - val_accuracy: 0.7179 - val_loss: 0.5380
Epoch 933/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7438 - loss: 0.5174 - val_accuracy: 0.7179 - val_loss: 0.5378
Epoch 934/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7023 - loss: 0.5429 - val_accuracy: 0.7179 - val_loss: 0.5379
Epoch 935/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7244 - loss: 0.5319 - val_accuracy: 0.7179 - val_loss: 0.5376
Epoch 936/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7430 - loss: 0.5194 - val_accuracy: 0.7179 - val_loss: 0.5376
Epoch 937/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7307 - loss: 0.5143 - val_accuracy: 0.7179 - val_loss: 0.5375
Epoch 938/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7025 - loss: 0.5450 - val_accuracy: 0.7179 - val_loss: 0.5376
Epoch 939/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7237 - loss: 0.5353 - val_accuracy: 0.7179 - val_loss: 0.5376
Epoch 940/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7131 - loss: 0.5375 - val_accuracy: 0.7179 - val_loss: 0.5376
Epoch 941/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7142 - loss: 0.5272 - val_accuracy: 0.7179 - val_loss: 0.5377
Epoch 942/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7115 - loss: 0.5339 - val_accuracy: 0.7179 - val_loss: 0.5375
Epoch 943/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7125 - loss: 0.5290 - val_accuracy: 0.7179 - val_loss: 0.5372
```

```
Epoch 944/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7141 - loss: 0.5281 - val_accuracy: 0.7179 - val_loss: 0.5373
Epoch 945/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 10ms/step - accuracy: 0.7465 - loss: 0.5049 - val_accuracy: 0.7179 - val_loss: 0.5371
Epoch 946/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7067 - loss: 0.5317 - val_accuracy: 0.7179 - val_loss: 0.5372
Epoch 947/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7296 - loss: 0.5177 - val_accuracy: 0.7179 - val_loss: 0.5371
Epoch 948/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7237 - loss: 0.5225 - val_accuracy: 0.7179 - val_loss: 0.5369
Epoch 949/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.6981 - loss: 0.5524 - val_accuracy: 0.7179 - val_loss: 0.5370
Epoch 950/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7384 - loss: 0.5077 - val_accuracy: 0.7179 - val_loss: 0.5369
Epoch 951/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7257 - loss: 0.5190 - val_accuracy: 0.7179 - val_loss: 0.5369
Epoch 952/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7227 - loss: 0.5140 - val_accuracy: 0.7179 - val_loss: 0.5370
Epoch 953/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7333 - loss: 0.5270 - val_accuracy: 0.7179 - val_loss: 0.5368
Epoch 954/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7181 - loss: 0.5395 - val_accuracy: 0.7179 - val_loss: 0.5366
Epoch 955/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7319 - loss: 0.5217 - val_accuracy: 0.7179 - val_loss: 0.5366
Epoch 956/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7143 - loss: 0.5348 - val_accuracy: 0.7179 - val_loss: 0.5367
Epoch 957/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7273 - loss: 0.5029 - val_accuracy: 0.7265 - val_loss: 0.5365
Epoch 958/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7075 - loss: 0.5462 - val_accuracy: 0.7179 - val_loss: 0.5368
Epoch 959/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7107 - loss: 0.5314 - val_accuracy: 0.7179 - val_loss: 0.5369
Epoch 960/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7216 - loss: 0.5200 - val_accuracy: 0.7179 - val_loss: 0.5368
Epoch 961/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7064 - loss: 0.5325 - val_accuracy: 0.7179 - val_loss: 0.5367
Epoch 962/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7186 - loss: 0.5230 - val_accuracy: 0.7179 - val_loss: 0.5366
Epoch 963/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7092 - loss: 0.5252 - val_accuracy: 0.7179 - val_loss: 0.5369
Epoch 964/1000
```

```
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7030 - loss: 0.5362 - val_accuracy: 0.7179 - val_loss: 0.5371
Epoch 965/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7370 - loss: 0.5126 - val_accuracy: 0.7179 - val_loss: 0.5368
Epoch 966/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7193 - loss: 0.5255 - val_accuracy: 0.7179 - val_loss: 0.5365
Epoch 967/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7035 - loss: 0.5283 - val_accuracy: 0.7179 - val_loss: 0.5364
Epoch 968/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7339 - loss: 0.5100 - val_accuracy: 0.7179 - val_loss: 0.5365
Epoch 969/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7217 - loss: 0.5200 - val_accuracy: 0.7179 - val_loss: 0.5364
Epoch 970/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7173 - loss: 0.5170 - val_accuracy: 0.7179 - val_loss: 0.5363
Epoch 971/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7341 - loss: 0.5153 - val_accuracy: 0.7179 - val_loss: 0.5362
Epoch 972/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7330 - loss: 0.5193 - val_accuracy: 0.7179 - val_loss: 0.5366
Epoch 973/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7149 - loss: 0.5251 - val_accuracy: 0.7179 - val_loss: 0.5365
Epoch 974/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7205 - loss: 0.5259 - val_accuracy: 0.7179 - val_loss: 0.5365
Epoch 975/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7156 - loss: 0.5241 - val_accuracy: 0.7179 - val_loss: 0.5362
Epoch 976/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7308 - loss: 0.5107 - val_accuracy: 0.7179 - val_loss: 0.5361
Epoch 977/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7257 - loss: 0.5053 - val_accuracy: 0.7179 - val_loss: 0.5362
Epoch 978/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7091 - loss: 0.5367 - val_accuracy: 0.7179 - val_loss: 0.5360
Epoch 979/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7317 - loss: 0.5143 - val_accuracy: 0.7179 - val_loss: 0.5361
Epoch 980/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7097 - loss: 0.5333 - val_accuracy: 0.7179 - val_loss: 0.5360
Epoch 981/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7095 - loss: 0.5239 - val_accuracy: 0.7179 - val_loss: 0.5362
Epoch 982/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7178 - loss: 0.5240 - val_accuracy: 0.7179 - val_loss: 0.5361
Epoch 983/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7251 - loss: 0.5256 - val_accuracy: 0.7179 - val_loss: 0.5360
Epoch 984/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7525 - loss: 0.4906 - val_accuracy: 0.7265 - val_loss: 0.5356
```

```
Epoch 985/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7442 - loss: 0.5187 - val_accuracy: 0.7265 - val_loss: 0.5357
Epoch 986/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7366 - loss: 0.5183 - val_accuracy: 0.7436 - val_loss: 0.5355
Epoch 987/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7343 - loss: 0.5192 - val_accuracy: 0.7436 - val_loss: 0.5354
Epoch 988/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7002 - loss: 0.5508 - val_accuracy: 0.7436 - val_loss: 0.5354
Epoch 989/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7269 - loss: 0.5153 - val_accuracy: 0.7265 - val_loss: 0.5355
Epoch 990/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7213 - loss: 0.5375 - val_accuracy: 0.7265 - val_loss: 0.5354
Epoch 991/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 11ms/step - accuracy: 0.7023 - loss: 0.5444 - val_accuracy: 0.7179 - val_loss: 0.5355
Epoch 992/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7204 - loss: 0.5193 - val_accuracy: 0.7179 - val_loss: 0.5356
Epoch 993/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7236 - loss: 0.5081 - val_accuracy: 0.7179 - val_loss: 0.5358
Epoch 994/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 8ms/step - accuracy: 0.7226 - loss: 0.5248 - val_accuracy: 0.7179 - val_loss: 0.5357
Epoch 995/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7237 - loss: 0.5164 - val_accuracy: 0.7179 - val_loss: 0.5356
Epoch 996/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7155 - loss: 0.5296 - val_accuracy: 0.7179 - val_loss: 0.5356
Epoch 997/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7105 - loss: 0.5214 - val_accuracy: 0.7179 - val_loss: 0.5356
Epoch 998/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 9ms/step - accuracy: 0.7099 - loss: 0.5349 - val_accuracy: 0.7179 - val_loss: 0.5355
Epoch 999/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7216 - loss: 0.5165 - val_accuracy: 0.7179 - val_loss: 0.5357
Epoch 1000/1000
10/10 ━━━━━━━━━━━━━━━━━━━━ 0s 7ms/step - accuracy: 0.7037 - loss: 0.5272 - val_accuracy: 0.7179 - val_loss: 0.5355
```

Out[24]: <keras.src.callbacks.history.History at 0x1ed828760f0>

Question 3: MNIST

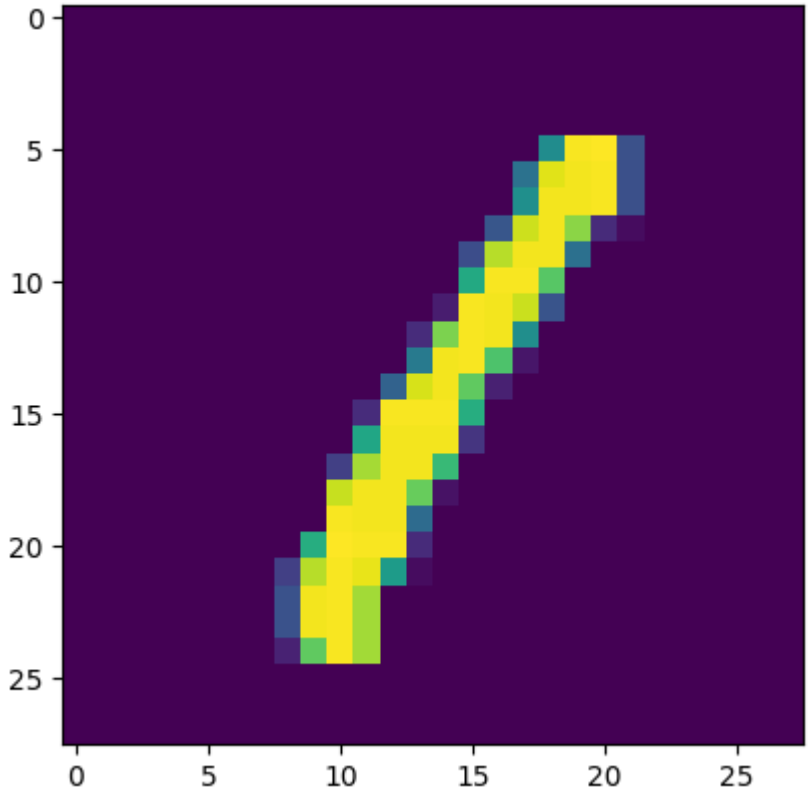
In [25]:
```
from keras.datasets import mnist
import matplotlib.pyplot as plt
```

In [26]:
```
batch_size = 128
num_classes = 10
epochs = 10
(X_train, y_train), (X_test, y_test) = mnist.load_data()
```

```
Downloading data from https://storage.googleapis.com/tensorflow/tf-keras-datasets/mnist.npz
11490434/11490434 ━━━━━━━━━━━━━━━━━━━━ 10s 1us/step
```

In [27]:
```
plt.imshow(X_train[3])
```

Out[27]:
```
<matplotlib.image.AxesImage at 0x1ed826869f0>
```



In [28]:
```
print(X_train[3])
```

```
[[  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
    0   0   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
    0   0   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
    0   0   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
    0   0   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
    0   0   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
  124 253 255  63   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0  96
  244 251 253  62   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0 127
  251 251 253  62   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0  68 236
  251 211  31   8   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0  60 228 251
  251  94   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0 155 253 253
  189   0   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0   0   0   0  20 253 251 235
   66   0   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0   0   0  32 205 253 251 126
    0   0   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0   0   0 104 251 253 184  15
    0   0   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0   0  80 240 251 193  23   0
    0   0   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0  32 253 253 253 159   0   0
    0   0   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0   0 151 251 251 251  39   0   0
    0   0   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0  48 221 251 251 172   0   0   0
    0   0   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0 234 251 251 196  12   0   0   0
    0   0   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0   0 253 251 251  89   0   0   0   0
    0   0   0   0   0   0   0   0   0   0]
 [  0   0   0   0   0   0   0   0   0 159 255 253 253  31   0   0   0   0
```

```
   0   0   0   0   0   0   0   0   0   0]
[  0   0   0   0   0   0   0   0  48 228 253 247 140   8   0   0   0   0
   0   0   0   0   0   0   0   0   0   0]
[  0   0   0   0   0   0   0   0  64 251 253 220   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0]
[  0   0   0   0   0   0   0   0  64 251 253 220   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0]
[  0   0   0   0   0   0   0   0  24 193 253 220   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0]
[  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0]
[  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0]
[  0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0   0
   0   0   0   0   0   0   0   0   0   0]]
```

In [40]:
```
X_train = X_train.reshape(60000, 784)
X_test = X_test.reshape(10000, 784)
X_train = X_train.astype('float32')
X_test = X_test.astype('float32')
X_train /= 255
X_test /= 255


y_train_cat = keras.utils.to_categorical(y_train, num_classes=10)
y_test_cat = keras.utils.to_categorical(y_test, num_classes=10)
```

In [41]:
```
model5 = Sequential()
model5.add(Dense(784, activation='relu', input_shape=(784,)))
model5.add(Dense(784, activation='relu', input_shape=(784,)))
model5.add(Dense(784, activation='relu', input_shape=(784,)))
model5.add(Dense(10, activation = 'softmax'))
model5.summary()
```

```
e:\VIT Study Materials\SEM 3\Deep Learning\LAB\.venv\Lib\site-packages\keras\src\layers\core\dense.py:93: UserWarning: Do not p
ass an `input_shape`/`input_dim` argument to a layer. When using Sequential models, prefer using an `Input(shape)` object as th
e first layer in the model instead.
  super().__init__(activity_regularizer=activity_regularizer, **kwargs)
```

Model: "sequential_6"

Layer (type)	Output Shape	Param #
dense_14 (Dense)	(None, 784)	615,440
dense_15 (Dense)	(None, 784)	615,440
dense_16 (Dense)	(None, 784)	615,440
dense_17 (Dense)	(None, 10)	7,850

Total params: 1,854,170 (7.07 MB)

Trainable params: 1,854,170 (7.07 MB)

Non-trainable params: 0 (0.00 B)

In [43]:
```
model5.compile(loss='CategoricalCrossentropy', optimizer='SGD', metrics=['accuracy'])
model5.fit(X_train, y_train_cat, batch_size=50, epochs=10,verbose=1, validation_data=(X_test, y_test_cat))
```

```
Epoch 1/10
1200/1200 ━━━━━━━━━━━━━━━━━━━━ 6s 5ms/step - accuracy: 0.1136 - loss: 2.2976 - val_accuracy: 0.1135 - val_loss: 2.2969
Epoch 2/10
1200/1200 ━━━━━━━━━━━━━━━━━━━━ 5s 4ms/step - accuracy: 0.1137 - loss: 2.2971 - val_accuracy: 0.1135 - val_loss: 2.2963
Epoch 3/10
1200/1200 ━━━━━━━━━━━━━━━━━━━━ 6s 5ms/step - accuracy: 0.1137 - loss: 2.2965 - val_accuracy: 0.1135 - val_loss: 2.2957
Epoch 4/10
1200/1200 ━━━━━━━━━━━━━━━━━━━━ 6s 5ms/step - accuracy: 0.1129 - loss: 2.2957 - val_accuracy: 0.1135 - val_loss: 2.2949
Epoch 5/10
1200/1200 ━━━━━━━━━━━━━━━━━━━━ 5s 4ms/step - accuracy: 0.1126 - loss: 2.2952 - val_accuracy: 0.1135 - val_loss: 2.2940
Epoch 6/10
1200/1200 ━━━━━━━━━━━━━━━━━━━━ 5s 4ms/step - accuracy: 0.1150 - loss: 2.2939 - val_accuracy: 0.1135 - val_loss: 2.2932
Epoch 7/10
1200/1200 ━━━━━━━━━━━━━━━━━━━━ 6s 5ms/step - accuracy: 0.1139 - loss: 2.2932 - val_accuracy: 0.1189 - val_loss: 2.2923
Epoch 8/10
1200/1200 ━━━━━━━━━━━━━━━━━━━━ 7s 6ms/step - accuracy: 0.1247 - loss: 2.2921 - val_accuracy: 0.1135 - val_loss: 2.2906
Epoch 9/10
1200/1200 ━━━━━━━━━━━━━━━━━━━━ 5s 4ms/step - accuracy: 0.1184 - loss: 2.2906 - val_accuracy: 0.1135 - val_loss: 2.2890
Epoch 10/10
1200/1200 ━━━━━━━━━━━━━━━━━━━━ 5s 4ms/step - accuracy: 0.1161 - loss: 2.2891 - val_accuracy: 0.1157 - val_loss: 2.2867
```

Out[43]: <keras.src.callbacks.history.History at 0x1ed8f0f82c0>

In [45]:
```
loss, accuracy = model5.evaluate(X_test, y_test_cat, verbose=0)
print(f"Test Loss: {loss:.4f}")
print(f"Test Accuracy: {accuracy:.4f}")
```

```
Test Loss: 2.2867
Test Accuracy: 0.1157
```

In [48]:
```
predictions = model5.predict(X_test)
for i in range(5):
    predicted_class = np.argmax(predictions[i])
    true_class = np.argmax(y_test_cat[i])
    print(f"Image {i+1}: Predicted = {predicted_class}, True = {true_class}")
```

```
313/313 ━━━━━━━━━━━━━━━━━━━━ 1s 2ms/step
Image 1: Predicted = 1, True = 7
Image 2: Predicted = 1, True = 2
Image 3: Predicted = 1, True = 1
Image 4: Predicted = 1, True = 0
Image 5: Predicted = 1, True = 4
```

Question 4

In [50]:
```
def sigmoid(x):
    return 1 / (1 + np.exp(-x))

def sigmoid_derivative(x):
    return x * (1 - x)
```

In [52]:
```
# inputs
X = np.array([[0, 0, 1],
              [0, 1, 1],
              [1, 0, 1],
              [1, 1, 1]])

# Output
y = np.array([[0],
```

```
              [1],
              [1],
              [0]])
```

In [59]:
```
synapse0 = 2 * np.random.random((3, 4)) - 1
synapse1 = 2 * np.random.random((4, 1)) - 1

print("Initial random weights for synapse0:")
print(synapse0)
print("\nInitial random weights for synapse1:")
print(synapse1)
```

```
Initial random weights for synapse0:
[[-0.42444932 -0.73994286 -0.96126608  0.35767107]
 [-0.57674377 -0.46890668 -0.01685368 -0.89327491]
 [ 0.14823521 -0.70654285  0.17861107  0.39951672]]

Initial random weights for synapse1:
[[-0.79533114]
 [-0.17188802]
 [ 0.38880032]
 [-0.17164146]]
```

In [63]:
```
epochs = 1000
for j in range(epochs):
    layer_0 = X
    layer_1 = sigmoid(np.dot(layer_0, synapse0))
    layer_2 = sigmoid(np.dot(layer_1, synapse1))

    layer_2_error = y - layer_2
    if (j % 10000) == 0:
        print(f"\nError after {j} iterations: {np.mean(np.abs(layer_2_error)):.5f}")

    layer_2_delta = layer_2_error * sigmoid_derivative(layer_2)
    layer_1_error = layer_2_delta.dot(synapse1.T)
    layer_1_delta = layer_1_error * sigmoid_derivative(layer_1)

    synapse1 += layer_1.T.dot(layer_2_delta)
    synapse0 += layer_0.T.dot(layer_1_delta)
```

```
Error after 0 iterations: 0.03159
```

In [65]:
```
print("\nOutput after training:")
print(layer_2)

classified_output = (layer_2 > 0.5).astype(int)
print("\nClassified Output after training (0 or 1):")
print(classified_output)

print("\nFinal weights for synapse0:")
print(synapse0)
print("\nFinal weights for synapse1:")
print(synapse1)

# Test
print("\nTesting with a new situation [1, 0, 0]:")
new_input = np.array([1, 0, 0])
l1 = sigmoid(np.dot(new_input, synapse0))
l2 = sigmoid(np.dot(l1, synapse1))
print("Prediction for [1, 0, 0]:")
print(l2)
```

```
Output after training:
[[0.01312246]
 [0.97687284]
 [0.97750513]
 [0.03344716]]

Classified Output after training (0 or 1):
[[0]
 [1]
 [1]
 [0]]

Final weights for synapse0:
[[-6.05865722  0.85080658 -6.58033756  3.16456706]
 [-6.0460626   1.04288708  3.09102454 -6.55490124]
 [ 1.91657777  0.09436428 -0.66498881 -0.77146376]]

Final weights for synapse1:
[[-8.15987505]
 [-4.08772551]
 [ 7.57847555]
 [ 7.46256194]]

Testing with a new situation [1, 0, 0]:
Prediction for [1, 0, 0]:
[0.98644327]
```

In [ ]: