# Introduction to Keras

Keras is an open-source neural network library written in Python that enables developers to easily design, build, and train deep learning models. It is a high-level API built on top of lower-level neural network libraries such as TensorFlow, Theano, and CNTK, providing a simpler and more intuitive way to create deep learning models. Keras allows users to quickly build and prototype deep learning models with minimal coding and provides a range of tools for implementing a variety of neural network architectures, such as convolutional neural networks (CNNs) and recurrent neural networks (RNNs). Additionally, Keras provides easy-to-use interfaces for data preprocessing, model evaluation, and visualization, making it an accessible tool for both beginners and experienced developers alike. With its user-friendly interface, flexibility, and wide range of applications, Keras has become a popular choice for implementing deep learning models in a variety of fields, including computer vision, natural language processing, and robotics.

## Using Keras to Build and Train Neural Networks

The purpose of this notebook is to employ a neural network to predict diabetes. To begin, we will establish a performance baseline by training a Random Forest model. Subsequently, we will use the Keras package to construct and train a neural network swiftly and evaluate its performance in comparison to the Random Forest model. Furthermore, we will investigate how diverse network structures influence performance, training time, and the degree of overfitting or underfitting.

## Diabetes Dataset

Download Dataset

### Attributes: (all numeric-valued)

1. Number of times pregnant
2. Plasma glucose concentration a 2 hours in an oral glucose tolerance test
3. Diastolic blood pressure (mm Hg)
4. Triceps skin fold thickness (mm)
5. 2-Hour serum insulin (mu U/ml)
6. Body mass index (weight in kg/(height in m)^2)
7. Diabetes pedigree function
8. Age (years)
9. Class variable (0 or 1)

The Diabetes Dataset which has 8 numerical predictors and a binary outcome.

In [77]:
```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import StandardScaler
from sklearn.metrics import confusion_matrix, precision_recall_curve, roc_auc_score, roc_curve, accuracy_score
from sklearn.ensemble import RandomForestClassifier
```

In [78]:
```
## Import Keras objects for Deep Learning
from keras.models  import Sequential
from keras.layers import Input, Dense, Flatten, Dropout, BatchNormalization
from keras.optimizers import Adam, SGD, RMSprop
```

In [79]:
```
## Load in the data set
names = ["times_pregnant", "glucose_tolerance_test", "blood_pressure", "skin_thickness", "insulin",
         "bmi", "pedigree_function", "age", "has_diabetes"]
diabetes_df = pd.read_csv('./diabetes.csv', names=names, header=0)
```

In [80]:
```
# Take a peek at the data -- if there are lots of "NaN" you may have internet connectivity issues
print(diabetes_df.shape)
diabetes_df.sample(5)
```

(768, 9)

Out[80]:

| | times_pregnant | glucose_tolerance_test | blood_pressure | skin_thickness | insulin | bmi | pedigree_function | age | has_diabetes |
|---|---|---|---|---|---|---|---|---|---|
| **202** | 0 | 108 | 68 | 20 | 0 | 27.3 | 0.787 | 32 | 0 |
| **101** | 1 | 151 | 60 | 0 | 0 | 26.1 | 0.179 | 22 | 0 |
| **128** | 1 | 117 | 88 | 24 | 145 | 34.5 | 0.403 | 40 | 1 |
| **547** | 4 | 131 | 68 | 21 | 166 | 33.1 | 0.160 | 28 | 0 |
| **678** | 3 | 121 | 52 | 0 | 0 | 36.0 | 0.127 | 25 | 1 |

In [81]:
```
X = diabetes_df.iloc[:, :-1].values
y = diabetes_df["has_diabetes"].values
```

In [82]:
```
# Split the data to Train, and Test (75%, 25%)

X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.25, random_state=11111)
```

In [83]:
```
np.mean(y), np.mean(1-y)
```

Out[83]: (0.3489583333333333, 0.6510416666666666)

Above, we see that about 35% of the patients in this dataset have diabetes, while 65% do not. This means we can get an accuracy of 65% without any model - just declare that no one has diabetes. We will calculate the ROC-AUC score to evaluate performance of our model, and also look at the accuracy as well to see if we improved upon the 65% accuracy.

## Get a baseline performance using Random Forest

To begin, and get a baseline for classifier performance:

1. Train a Random Forest model with 200 trees on the training data.
2. Calculate the accuracy and roc_auc_score of the predictions.

In [84]:
```
## Train the RF Model
rf_model = RandomForestClassifier(n_estimators=200)
rf_model.fit(X_train, y_train)
```

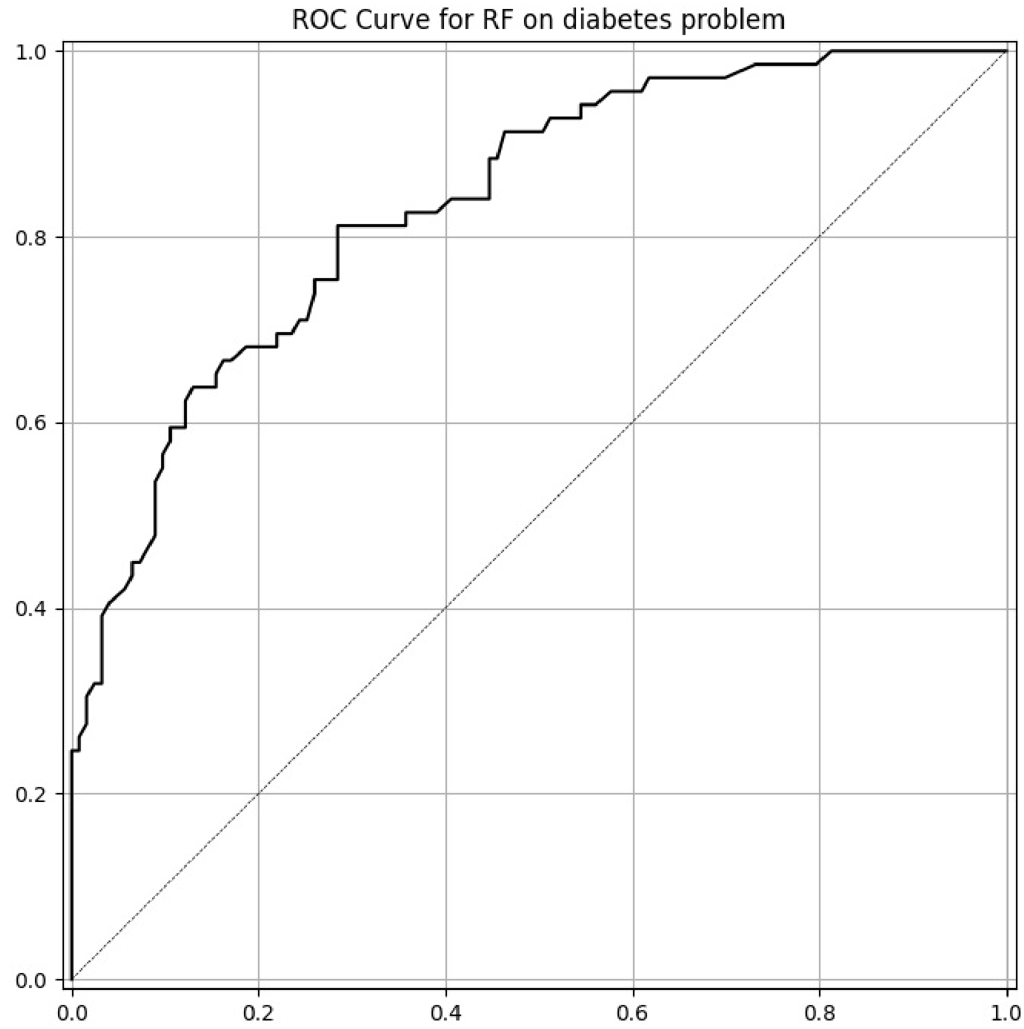
Out[84]:
```
▾ RandomForestClassifier
RandomForestClassifier(n_estimators=200)
```

In [85]:
```
# Make predictions on the test set - both "hard" predictions, and the scores (percent of trees voting yes)
y_pred_class_rf = rf_model.predict(X_test)
y_pred_prob_rf = rf_model.predict_proba(X_test)


print('accuracy is {:.3f}'.format(accuracy_score(y_test,y_pred_class_rf)))
print('roc-auc is {:.3f}'.format(roc_auc_score(y_test,y_pred_prob_rf[:,1])))
```

```
accuracy is 0.786
roc-auc is 0.835
```

In [87]:
```
def plot_roc(y_test, y_pred, model_name):
    fpr, tpr, thr = roc_curve(y_test, y_pred)
    fig, ax = plt.subplots(figsize=(8, 8))
    ax.plot(fpr, tpr, 'k-')
    ax.plot([0, 1], [0, 1], 'k--', linewidth=.5)  # roc curve for random model
    ax.grid(True)
    ax.set(title='ROC Curve for {} on diabetes problem'.format(model_name),
           xlim=[-0.01, 1.01], ylim=[-0.01, 1.01])
plot_roc(y_test, y_pred_prob_rf[:, 1], 'RF')
```




## Build a Single Hidden Layer Neural Network

We will use the Sequential model to quickly build a neural network. Our first network will be a single layer network. We have 8 variables, so we set the input shape to 8. Let's start by having a single hidden layer with 12 nodes.

In [61]:
```
## First let's normalize the data
## This aids the training of neural nets by providing numerical stability
## Random Forest does not need this as it finds a split only, as opposed to performing matrix multiplications

normalizer = StandardScaler()
X_train_norm = normalizer.fit_transform(X_train)
X_test_norm = normalizer.transform(X_test)
```

In [88]:
```
# Define the Model
# Input size is 8-dimensional
# 1 hidden layer, 12 hidden nodes, sigmoid activation
# Final layer has just one node with a sigmoid activation (standard for binary classification)

model_1 = Sequential()
model_1.add(Dense(12,input_shape = (8,),activation = 'sigmoid'))
model_1.add(Dense(1,activation='sigmoid'))
```

In [89]:
```
#  This is a nice tool to view the model you have created and count the parameters

model_1.summary()
```

```
Model: "sequential_6"
_________________________________________________________________
 Layer (type)                Output Shape              Param #
=================================================================
 dense_15 (Dense)            (None, 12)                108

 dense_16 (Dense)            (None, 1)                 13

=================================================================
Total params: 121
Trainable params: 121
Non-trainable params: 0
_________________________________________________________________
```

Let's fit our model for 200 epochs

Let's fit our model for 200 epochs.

In [96]:
```python
# Fit(Train) the Model

# Compile the model with Optimizer, Loss Function and Metrics
# Roc-Auc is not available in Keras as an off the shelf metric yet, so we will skip it here.

model_1.compile(SGD(learning_rate = .003), "binary_crossentropy", metrics=["accuracy"])
run_hist_1 = model_1.fit(X_train_norm, y_train, validation_data=(X_test_norm, y_test), epochs=200)
# the fit function returns the run history.
# It is very convenient, as it contains information about the model fit, iterations etc.
```

```
Epoch 1/200
18/18 [==============================] - 0s 11ms/step - loss: 0.4865 - accuracy: 0.7708 - val_loss: 0.5082 - va
l_accuracy: 0.7708
Epoch 2/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4863 - accuracy: 0.7708 - val_loss: 0.5081 - val
_accuracy: 0.7708
Epoch 3/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4862 - accuracy: 0.7708 - val_loss: 0.5080 - val
_accuracy: 0.7708
Epoch 4/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4861 - accuracy: 0.7708 - val_loss: 0.5078 - val
_accuracy: 0.7708
Epoch 5/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4860 - accuracy: 0.7743 - val_loss: 0.5077 - val
_accuracy: 0.7708
Epoch 6/200
18/18 [==============================] - 0s 5ms/step - loss: 0.4858 - accuracy: 0.7726 - val_loss: 0.5076 - val
_accuracy: 0.7708
Epoch 7/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4857 - accuracy: 0.7726 - val_loss: 0.5075 - val
_accuracy: 0.7708
Epoch 8/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4856 - accuracy: 0.7726 - val_loss: 0.5074 - val
_accuracy: 0.7708
Epoch 9/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4854 - accuracy: 0.7743 - val_loss: 0.5073 - val
_accuracy: 0.7708
Epoch 10/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4853 - accuracy: 0.7743 - val_loss: 0.5072 - val
_accuracy: 0.7708
Epoch 11/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4852 - accuracy: 0.7743 - val_loss: 0.5071 - val
_accuracy: 0.7656
Epoch 12/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4850 - accuracy: 0.7743 - val_loss: 0.5070 - val
_accuracy: 0.7656
Epoch 13/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4849 - accuracy: 0.7743 - val_loss: 0.5069 - val
_accuracy: 0.7656
Epoch 14/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4848 - accuracy: 0.7743 - val_loss: 0.5068 - val
_accuracy: 0.7656
Epoch 15/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4847 - accuracy: 0.7743 - val_loss: 0.5066 - val
_accuracy: 0.7656
Epoch 16/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4845 - accuracy: 0.7743 - val_loss: 0.5065 - val
_accuracy: 0.7656
Epoch 17/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4844 - accuracy: 0.7743 - val_loss: 0.5064 - val
_accuracy: 0.7656
Epoch 18/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4843 - accuracy: 0.7743 - val_loss: 0.5063 - val
_accuracy: 0.7656
Epoch 19/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4842 - accuracy: 0.7743 - val_loss: 0.5062 - val
_accuracy: 0.7656
Epoch 20/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4840 - accuracy: 0.7743 - val_loss: 0.5061 - val
_accuracy: 0.7656
Epoch 21/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4839 - accuracy: 0.7743 - val_loss: 0.5060 - val
_accuracy: 0.7656
Epoch 22/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4838 - accuracy: 0.7743 - val_loss: 0.5059 - val
_accuracy: 0.7656
Epoch 23/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4837 - accuracy: 0.7743 - val_loss: 0.5058 - val
_accuracy: 0.7656
Epoch 24/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4836 - accuracy: 0.7743 - val_loss: 0.5057 - val
_accuracy: 0.7656
```

```
Epoch 25/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4834 - accuracy: 0.7743 - val_loss: 0.5056 - val
_accuracy: 0.7656
Epoch 26/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4833 - accuracy: 0.7743 - val_loss: 0.5055 - val
_accuracy: 0.7656
Epoch 27/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4832 - accuracy: 0.7743 - val_loss: 0.5054 - val
_accuracy: 0.7656
Epoch 28/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4831 - accuracy: 0.7760 - val_loss: 0.5053 - val
_accuracy: 0.7604
Epoch 29/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4829 - accuracy: 0.7743 - val_loss: 0.5052 - val
_accuracy: 0.7656
Epoch 30/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4828 - accuracy: 0.7743 - val_loss: 0.5051 - val
_accuracy: 0.7656
Epoch 31/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4827 - accuracy: 0.7760 - val_loss: 0.5050 - val
_accuracy: 0.7656
Epoch 32/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4826 - accuracy: 0.7760 - val_loss: 0.5049 - val
_accuracy: 0.7656
Epoch 33/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4825 - accuracy: 0.7760 - val_loss: 0.5048 - val
_accuracy: 0.7656
Epoch 34/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4824 - accuracy: 0.7760 - val_loss: 0.5048 - val
_accuracy: 0.7656
Epoch 35/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4823 - accuracy: 0.7760 - val_loss: 0.5047 - val
_accuracy: 0.7656
Epoch 36/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4821 - accuracy: 0.7760 - val_loss: 0.5046 - val
_accuracy: 0.7656
Epoch 37/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4820 - accuracy: 0.7760 - val_loss: 0.5045 - val
_accuracy: 0.7656
Epoch 38/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4819 - accuracy: 0.7760 - val_loss: 0.5044 - val
_accuracy: 0.7656
Epoch 39/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4818 - accuracy: 0.7760 - val_loss: 0.5043 - val
_accuracy: 0.7656
Epoch 40/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4817 - accuracy: 0.7743 - val_loss: 0.5042 - val
_accuracy: 0.7656
Epoch 41/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4816 - accuracy: 0.7743 - val_loss: 0.5041 - val
_accuracy: 0.7656
Epoch 42/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4815 - accuracy: 0.7743 - val_loss: 0.5040 - val
_accuracy: 0.7656
Epoch 43/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4814 - accuracy: 0.7743 - val_loss: 0.5039 - val
_accuracy: 0.7656
Epoch 44/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4812 - accuracy: 0.7743 - val_loss: 0.5038 - val
_accuracy: 0.7656
Epoch 45/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4811 - accuracy: 0.7743 - val_loss: 0.5037 - val
_accuracy: 0.7656
Epoch 46/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4810 - accuracy: 0.7743 - val_loss: 0.5037 - val
_accuracy: 0.7656
Epoch 47/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4809 - accuracy: 0.7743 - val_loss: 0.5036 - val
_accuracy: 0.7656
Epoch 48/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4808 - accuracy: 0.7743 - val_loss: 0.5035 - val
_accuracy: 0.7656
Epoch 49/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4807 - accuracy: 0.7743 - val_loss: 0.5034 - val
_accuracy: 0.7656
Epoch 50/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4806 - accuracy: 0.7743 - val_loss: 0.5033 - val
_accuracy: 0.7656
Epoch 51/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4805 - accuracy: 0.7743 - val_loss: 0.5032 - val
_accuracy: 0.7656
Epoch 52/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4804 - accuracy: 0.7743 - val_loss: 0.5031 - val
```

```
_accuracy: 0.7656
Epoch 53/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4803 - accuracy: 0.7743 - val_loss: 0.5031 - val
_accuracy: 0.7656
Epoch 54/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4802 - accuracy: 0.7743 - val_loss: 0.5030 - val
_accuracy: 0.7656
Epoch 55/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4801 - accuracy: 0.7743 - val_loss: 0.5029 - val
_accuracy: 0.7656
Epoch 56/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4800 - accuracy: 0.7743 - val_loss: 0.5028 - val
_accuracy: 0.7656
Epoch 57/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4799 - accuracy: 0.7743 - val_loss: 0.5027 - val
_accuracy: 0.7656
Epoch 58/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4798 - accuracy: 0.7743 - val_loss: 0.5026 - val
_accuracy: 0.7656
Epoch 59/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4797 - accuracy: 0.7743 - val_loss: 0.5026 - val
_accuracy: 0.7656
Epoch 60/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4796 - accuracy: 0.7743 - val_loss: 0.5025 - val
_accuracy: 0.7656
Epoch 61/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4795 - accuracy: 0.7760 - val_loss: 0.5024 - val
_accuracy: 0.7656
Epoch 62/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4794 - accuracy: 0.7743 - val_loss: 0.5023 - val
_accuracy: 0.7656
Epoch 63/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4793 - accuracy: 0.7760 - val_loss: 0.5022 - val
_accuracy: 0.7656
Epoch 64/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4792 - accuracy: 0.7760 - val_loss: 0.5022 - val
_accuracy: 0.7656
Epoch 65/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4791 - accuracy: 0.7743 - val_loss: 0.5021 - val
_accuracy: 0.7656
Epoch 66/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4790 - accuracy: 0.7760 - val_loss: 0.5020 - val
_accuracy: 0.7656
Epoch 67/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4789 - accuracy: 0.7760 - val_loss: 0.5019 - val
_accuracy: 0.7656
Epoch 68/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4788 - accuracy: 0.7778 - val_loss: 0.5019 - val
_accuracy: 0.7656
Epoch 69/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4787 - accuracy: 0.7778 - val_loss: 0.5018 - val
_accuracy: 0.7656
Epoch 70/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4786 - accuracy: 0.7778 - val_loss: 0.5017 - val
_accuracy: 0.7656
Epoch 71/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4785 - accuracy: 0.7778 - val_loss: 0.5016 - val
_accuracy: 0.7656
Epoch 72/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4784 - accuracy: 0.7778 - val_loss: 0.5015 - val
_accuracy: 0.7656
Epoch 73/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4783 - accuracy: 0.7778 - val_loss: 0.5015 - val
_accuracy: 0.7656
Epoch 74/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4782 - accuracy: 0.7778 - val_loss: 0.5014 - val
_accuracy: 0.7656
Epoch 75/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4781 - accuracy: 0.7778 - val_loss: 0.5013 - val
_accuracy: 0.7656
Epoch 76/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4780 - accuracy: 0.7778 - val_loss: 0.5013 - val
_accuracy: 0.7656
Epoch 77/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4779 - accuracy: 0.7778 - val_loss: 0.5012 - val
_accuracy: 0.7656
Epoch 78/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4778 - accuracy: 0.7778 - val_loss: 0.5011 - val
_accuracy: 0.7656
Epoch 79/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4777 - accuracy: 0.7778 - val_loss: 0.5010 - val
_accuracy: 0.7604
Epoch 80/200
```

```
18/18 [==============================] - 0s 3ms/step - loss: 0.4777 - accuracy: 0.7778 - val_loss: 0.5010 - val
_accuracy: 0.7604
Epoch 81/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4776 - accuracy: 0.7778 - val_loss: 0.5009 - val
_accuracy: 0.7604
Epoch 82/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4775 - accuracy: 0.7778 - val_loss: 0.5008 - val
_accuracy: 0.7604
Epoch 83/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4774 - accuracy: 0.7778 - val_loss: 0.5007 - val
_accuracy: 0.7604
Epoch 84/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4773 - accuracy: 0.7760 - val_loss: 0.5007 - val
_accuracy: 0.7604
Epoch 85/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4772 - accuracy: 0.7743 - val_loss: 0.5006 - val
_accuracy: 0.7604
Epoch 86/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4771 - accuracy: 0.7743 - val_loss: 0.5005 - val
_accuracy: 0.7604
Epoch 87/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4770 - accuracy: 0.7743 - val_loss: 0.5005 - val
_accuracy: 0.7604
Epoch 88/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4770 - accuracy: 0.7743 - val_loss: 0.5004 - val
_accuracy: 0.7604
Epoch 89/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4769 - accuracy: 0.7743 - val_loss: 0.5003 - val
_accuracy: 0.7604
Epoch 90/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4768 - accuracy: 0.7743 - val_loss: 0.5003 - val
_accuracy: 0.7604
Epoch 91/200
18/18 [==============================] - 0s 5ms/step - loss: 0.4767 - accuracy: 0.7743 - val_loss: 0.5002 - val
_accuracy: 0.7604
Epoch 92/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4766 - accuracy: 0.7743 - val_loss: 0.5001 - val
_accuracy: 0.7604
Epoch 93/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4765 - accuracy: 0.7743 - val_loss: 0.5001 - val
_accuracy: 0.7604
Epoch 94/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4764 - accuracy: 0.7743 - val_loss: 0.5000 - val
_accuracy: 0.7604
Epoch 95/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4764 - accuracy: 0.7760 - val_loss: 0.4999 - val
_accuracy: 0.7604
Epoch 96/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4763 - accuracy: 0.7743 - val_loss: 0.4999 - val
_accuracy: 0.7604
Epoch 97/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4762 - accuracy: 0.7743 - val_loss: 0.4998 - val
_accuracy: 0.7604
Epoch 98/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4761 - accuracy: 0.7760 - val_loss: 0.4997 - val
_accuracy: 0.7604
Epoch 99/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4760 - accuracy: 0.7743 - val_loss: 0.4997 - val
_accuracy: 0.7604
Epoch 100/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4759 - accuracy: 0.7760 - val_loss: 0.4996 - val
_accuracy: 0.7604
Epoch 101/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4758 - accuracy: 0.7760 - val_loss: 0.4995 - val
_accuracy: 0.7604
Epoch 102/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4758 - accuracy: 0.7760 - val_loss: 0.4995 - val
_accuracy: 0.7604
Epoch 103/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4757 - accuracy: 0.7778 - val_loss: 0.4994 - val
_accuracy: 0.7604
Epoch 104/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4756 - accuracy: 0.7778 - val_loss: 0.4994 - val
_accuracy: 0.7604
Epoch 105/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4755 - accuracy: 0.7778 - val_loss: 0.4993 - val
_accuracy: 0.7604
Epoch 106/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4754 - accuracy: 0.7778 - val_loss: 0.4992 - val
_accuracy: 0.7604
Epoch 107/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4754 - accuracy: 0.7778 - val_loss: 0.4992 - val
_accuracy: 0.7604
```

```
Epoch 108/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4753 - accuracy: 0.7778 - val_loss: 0.4991 - val
_accuracy: 0.7604
Epoch 109/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4752 - accuracy: 0.7778 - val_loss: 0.4991 - val
_accuracy: 0.7604
Epoch 110/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4751 - accuracy: 0.7778 - val_loss: 0.4990 - val
_accuracy: 0.7604
Epoch 111/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4751 - accuracy: 0.7778 - val_loss: 0.4989 - val
_accuracy: 0.7604
Epoch 112/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4750 - accuracy: 0.7778 - val_loss: 0.4989 - val
_accuracy: 0.7604
Epoch 113/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4749 - accuracy: 0.7778 - val_loss: 0.4988 - val
_accuracy: 0.7604
Epoch 114/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4748 - accuracy: 0.7778 - val_loss: 0.4988 - val
_accuracy: 0.7604
Epoch 115/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4747 - accuracy: 0.7778 - val_loss: 0.4987 - val
_accuracy: 0.7604
Epoch 116/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4747 - accuracy: 0.7778 - val_loss: 0.4986 - val
_accuracy: 0.7604
Epoch 117/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4746 - accuracy: 0.7778 - val_loss: 0.4986 - val
_accuracy: 0.7604
Epoch 118/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4745 - accuracy: 0.7778 - val_loss: 0.4985 - val
_accuracy: 0.7604
Epoch 119/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4744 - accuracy: 0.7778 - val_loss: 0.4985 - val
_accuracy: 0.7604
Epoch 120/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4744 - accuracy: 0.7778 - val_loss: 0.4984 - val
_accuracy: 0.7604
Epoch 121/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4743 - accuracy: 0.7778 - val_loss: 0.4984 - val
_accuracy: 0.7604
Epoch 122/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4742 - accuracy: 0.7795 - val_loss: 0.4983 - val
_accuracy: 0.7604
Epoch 123/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4742 - accuracy: 0.7795 - val_loss: 0.4982 - val
_accuracy: 0.7604
Epoch 124/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4741 - accuracy: 0.7795 - val_loss: 0.4982 - val
_accuracy: 0.7604
Epoch 125/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4740 - accuracy: 0.7795 - val_loss: 0.4981 - val
_accuracy: 0.7604
Epoch 126/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4739 - accuracy: 0.7795 - val_loss: 0.4981 - val
_accuracy: 0.7604
Epoch 127/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4738 - accuracy: 0.7795 - val_loss: 0.4980 - val
_accuracy: 0.7604
Epoch 128/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4738 - accuracy: 0.7795 - val_loss: 0.4980 - val
_accuracy: 0.7604
Epoch 129/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4737 - accuracy: 0.7795 - val_loss: 0.4979 - val
_accuracy: 0.7604
Epoch 130/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4736 - accuracy: 0.7795 - val_loss: 0.4979 - val
_accuracy: 0.7604
Epoch 131/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4736 - accuracy: 0.7795 - val_loss: 0.4978 - val
_accuracy: 0.7604
Epoch 132/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4735 - accuracy: 0.7795 - val_loss: 0.4978 - val
_accuracy: 0.7604
Epoch 133/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4734 - accuracy: 0.7795 - val_loss: 0.4977 - val
_accuracy: 0.7604
Epoch 134/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4734 - accuracy: 0.7795 - val_loss: 0.4977 - val
_accuracy: 0.7604
Epoch 135/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4733 - accuracy: 0.7795 - val_loss: 0.4976 - val
```

```
_accuracy: 0.7604
Epoch 136/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4732 - accuracy: 0.7795 - val_loss: 0.4976 - val
_accuracy: 0.7604
Epoch 137/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4731 - accuracy: 0.7795 - val_loss: 0.4975 - val
_accuracy: 0.7604
Epoch 138/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4731 - accuracy: 0.7795 - val_loss: 0.4975 - val
_accuracy: 0.7604
Epoch 139/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4730 - accuracy: 0.7795 - val_loss: 0.4974 - val
_accuracy: 0.7604
Epoch 140/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4730 - accuracy: 0.7795 - val_loss: 0.4974 - val
_accuracy: 0.7604
Epoch 141/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4729 - accuracy: 0.7795 - val_loss: 0.4973 - val
_accuracy: 0.7604
Epoch 142/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4728 - accuracy: 0.7795 - val_loss: 0.4973 - val
_accuracy: 0.7604
Epoch 143/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4727 - accuracy: 0.7795 - val_loss: 0.4972 - val
_accuracy: 0.7604
Epoch 144/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4727 - accuracy: 0.7795 - val_loss: 0.4972 - val
_accuracy: 0.7604
Epoch 145/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4726 - accuracy: 0.7795 - val_loss: 0.4971 - val
_accuracy: 0.7604
Epoch 146/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4726 - accuracy: 0.7795 - val_loss: 0.4971 - val
_accuracy: 0.7604
Epoch 147/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4725 - accuracy: 0.7795 - val_loss: 0.4970 - val
_accuracy: 0.7604
Epoch 148/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4724 - accuracy: 0.7795 - val_loss: 0.4970 - val
_accuracy: 0.7604
Epoch 149/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4724 - accuracy: 0.7795 - val_loss: 0.4969 - val
_accuracy: 0.7604
Epoch 150/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4723 - accuracy: 0.7795 - val_loss: 0.4969 - val
_accuracy: 0.7604
Epoch 151/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4722 - accuracy: 0.7795 - val_loss: 0.4968 - val
_accuracy: 0.7604
Epoch 152/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4721 - accuracy: 0.7795 - val_loss: 0.4968 - val
_accuracy: 0.7604
Epoch 153/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4721 - accuracy: 0.7795 - val_loss: 0.4967 - val
_accuracy: 0.7604
Epoch 154/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4720 - accuracy: 0.7795 - val_loss: 0.4967 - val
_accuracy: 0.7604
Epoch 155/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4720 - accuracy: 0.7795 - val_loss: 0.4966 - val
_accuracy: 0.7604
Epoch 156/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4719 - accuracy: 0.7795 - val_loss: 0.4966 - val
_accuracy: 0.7604
Epoch 157/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4718 - accuracy: 0.7795 - val_loss: 0.4965 - val
_accuracy: 0.7604
Epoch 158/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4718 - accuracy: 0.7795 - val_loss: 0.4965 - val
_accuracy: 0.7604
Epoch 159/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4717 - accuracy: 0.7795 - val_loss: 0.4965 - val
_accuracy: 0.7604
Epoch 160/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4716 - accuracy: 0.7795 - val_loss: 0.4964 - val
_accuracy: 0.7604
Epoch 161/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4716 - accuracy: 0.7795 - val_loss: 0.4964 - val
_accuracy: 0.7604
Epoch 162/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4715 - accuracy: 0.7795 - val_loss: 0.4963 - val
_accuracy: 0.7604
Epoch 163/200
```

```
18/18 [==============================] - 0s 4ms/step - loss: 0.4715 - accuracy: 0.7795 - val_loss: 0.4963 - val
_accuracy: 0.7604
Epoch 164/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4714 - accuracy: 0.7795 - val_loss: 0.4962 - val
_accuracy: 0.7604
Epoch 165/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4713 - accuracy: 0.7795 - val_loss: 0.4962 - val
_accuracy: 0.7604
Epoch 166/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4713 - accuracy: 0.7795 - val_loss: 0.4962 - val
_accuracy: 0.7604
Epoch 167/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4712 - accuracy: 0.7795 - val_loss: 0.4961 - val
_accuracy: 0.7604
Epoch 168/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4712 - accuracy: 0.7795 - val_loss: 0.4961 - val
_accuracy: 0.7604
Epoch 169/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4711 - accuracy: 0.7795 - val_loss: 0.4960 - val
_accuracy: 0.7604
Epoch 170/200
18/18 [==============================] - 0s 5ms/step - loss: 0.4710 - accuracy: 0.7795 - val_loss: 0.4960 - val
_accuracy: 0.7604
Epoch 171/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4710 - accuracy: 0.7795 - val_loss: 0.4959 - val
_accuracy: 0.7604
Epoch 172/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4710 - accuracy: 0.7795 - val_loss: 0.4959 - val
_accuracy: 0.7604
Epoch 173/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4709 - accuracy: 0.7795 - val_loss: 0.4959 - val
_accuracy: 0.7604
Epoch 174/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4708 - accuracy: 0.7795 - val_loss: 0.4958 - val
_accuracy: 0.7604
Epoch 175/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4708 - accuracy: 0.7795 - val_loss: 0.4958 - val
_accuracy: 0.7604
Epoch 176/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4707 - accuracy: 0.7795 - val_loss: 0.4957 - val
_accuracy: 0.7604
Epoch 177/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4706 - accuracy: 0.7795 - val_loss: 0.4957 - val
_accuracy: 0.7604
Epoch 178/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4706 - accuracy: 0.7812 - val_loss: 0.4957 - val
_accuracy: 0.7604
Epoch 179/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4705 - accuracy: 0.7795 - val_loss: 0.4956 - val
_accuracy: 0.7552
Epoch 180/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4705 - accuracy: 0.7812 - val_loss: 0.4956 - val
_accuracy: 0.7552
Epoch 181/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4704 - accuracy: 0.7812 - val_loss: 0.4955 - val
_accuracy: 0.7552
Epoch 182/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4704 - accuracy: 0.7812 - val_loss: 0.4955 - val
_accuracy: 0.7552
Epoch 183/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4703 - accuracy: 0.7812 - val_loss: 0.4955 - val
_accuracy: 0.7552
Epoch 184/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4703 - accuracy: 0.7830 - val_loss: 0.4954 - val
_accuracy: 0.7552
Epoch 185/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4702 - accuracy: 0.7812 - val_loss: 0.4954 - val
_accuracy: 0.7552
Epoch 186/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4701 - accuracy: 0.7830 - val_loss: 0.4953 - val
_accuracy: 0.7552
Epoch 187/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4701 - accuracy: 0.7830 - val_loss: 0.4953 - val
_accuracy: 0.7552
Epoch 188/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4701 - accuracy: 0.7830 - val_loss: 0.4953 - val
_accuracy: 0.7552
Epoch 189/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4700 - accuracy: 0.7830 - val_loss: 0.4952 - val
_accuracy: 0.7552
Epoch 190/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4699 - accuracy: 0.7830 - val_loss: 0.4952 - val
_accuracy: 0.7552
```

```
Epoch 191/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4699 - accuracy: 0.7830 - val_loss: 0.4952 - val
_accuracy: 0.7552
Epoch 192/200
18/18 [==============================] - 0s 3ms/step - loss: 0.4698 - accuracy: 0.7830 - val_loss: 0.4951 - val
_accuracy: 0.7552
Epoch 193/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4698 - accuracy: 0.7830 - val_loss: 0.4951 - val
_accuracy: 0.7552
Epoch 194/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4697 - accuracy: 0.7830 - val_loss: 0.4950 - val
_accuracy: 0.7552
Epoch 195/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4697 - accuracy: 0.7830 - val_loss: 0.4950 - val
_accuracy: 0.7552
Epoch 196/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4696 - accuracy: 0.7830 - val_loss: 0.4950 - val
_accuracy: 0.7552
Epoch 197/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4696 - accuracy: 0.7830 - val_loss: 0.4949 - val
_accuracy: 0.7552
Epoch 198/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4695 - accuracy: 0.7830 - val_loss: 0.4949 - val
_accuracy: 0.7552
Epoch 199/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4695 - accuracy: 0.7830 - val_loss: 0.4949 - val
_accuracy: 0.7552
Epoch 200/200
18/18 [==============================] - 0s 4ms/step - loss: 0.4694 - accuracy: 0.7830 - val_loss: 0.4948 - val
_accuracy: 0.7552
```

In [97]:

```python
## Like we did for the Random Forest, we generate two kinds of predictions
#  One is a hard decision, the other is a probabilitistic score.
# Assuming your model is defined as `model_1`

# Make predictions on test data
y_pred_prob_nn_1 = model_1.predict(X_test_norm)

# Obtain predicted class labels by taking the index of the highest probability for each example
y_pred_class_nn_1 = y_pred_prob_nn_1.argmax(axis=-1)
```

```
6/6 [==============================] - 0s 2ms/step
```

In [98]:

```python
y_pred_prob_nn_1[:10]
```

Out[98]:

```
array([[0.48891714],
       [0.7093221 ],
       [0.2787088 ],
       [0.26989993],
       [0.19304611],
       [0.514679  ],
       [0.08812507],
       [0.31525382],
       [0.8304369 ],
       [0.19541515]], dtype=float32)
```

In [99]:

```python
y_pred_class_nn_1[:10]
```

Out[99]:

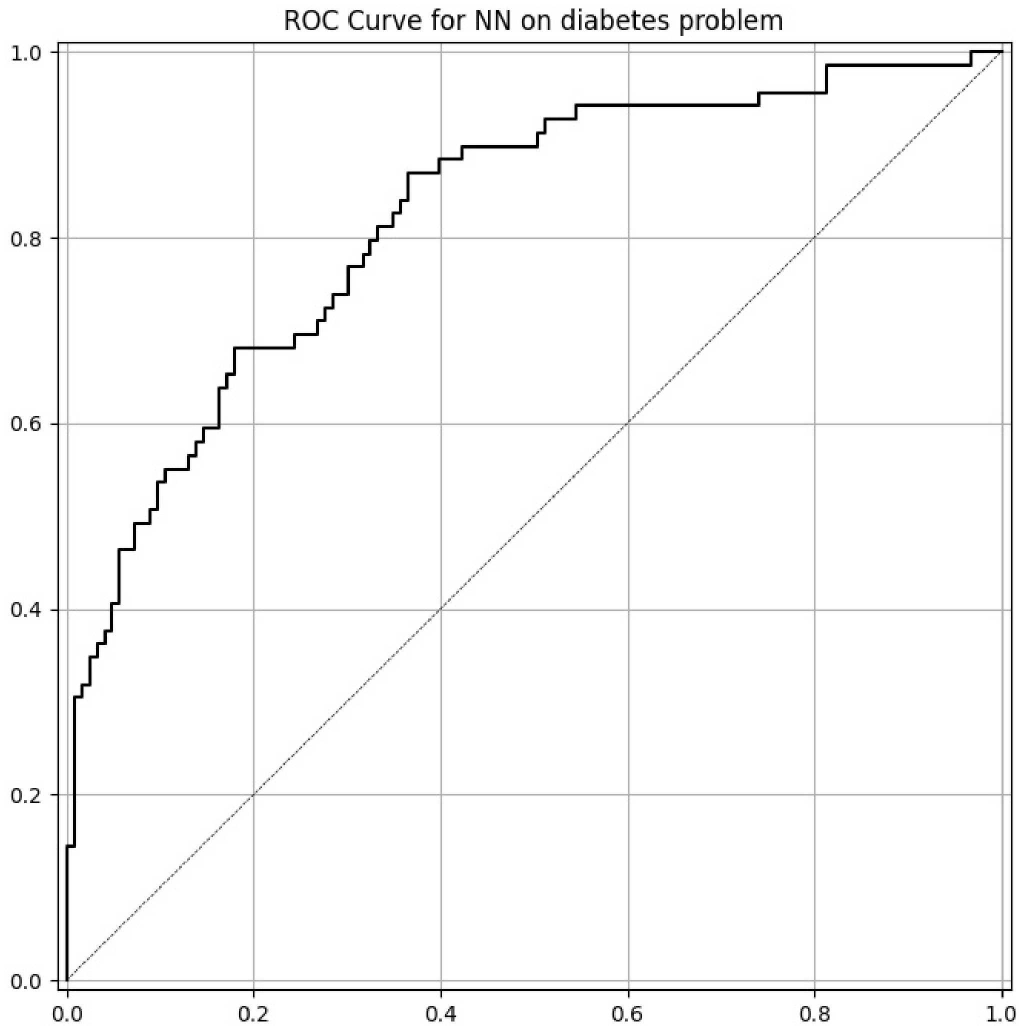
```
array([0, 0, 0, 0, 0, 0, 0, 0, 0, 0])
```

In [100…

```python
# Print model performance and plot the roc curve
print('accuracy is {:.3f}'.format(accuracy_score(y_test,y_pred_class_nn_1)))
print('roc-auc is {:.3f}'.format(roc_auc_score(y_test,y_pred_prob_nn_1)))

plot_roc(y_test, y_pred_prob_nn_1, 'NN')
```

```
accuracy is 0.641
roc-auc is 0.821
```




Let's look at the `run_hist_1` object that was created, specifically its `history` attribute.

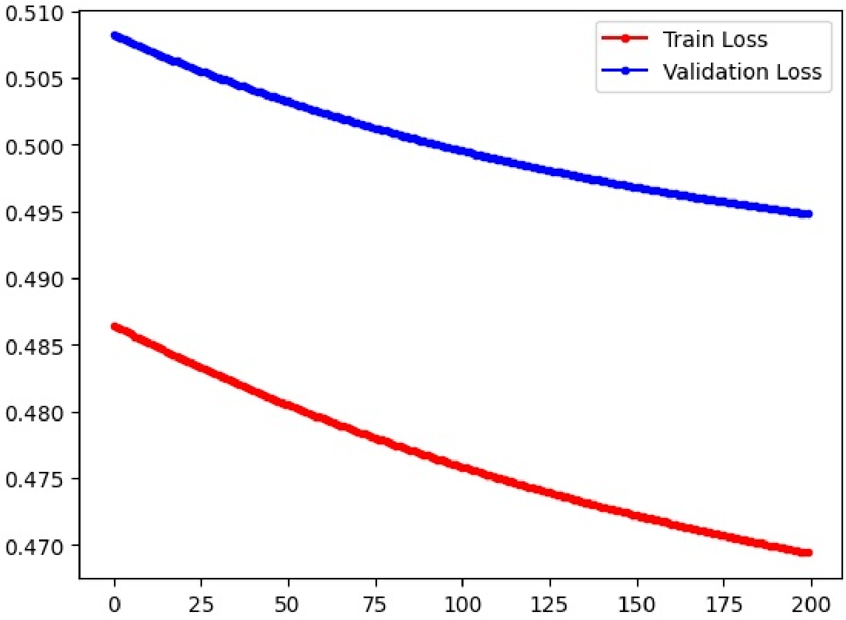
In [101…
```
run_hist_1.history.keys()
```

Out[101]:
```
dict_keys(['loss', 'accuracy', 'val_loss', 'val_accuracy'])
```

Let's plot the training loss and the validation loss over the different epochs and see how it looks.

In [102…
```
fig, ax = plt.subplots()
ax.plot(run_hist_1.history["loss"],'r', marker='.', label="Train Loss")
ax.plot(run_hist_1.history["val_loss"],'b', marker='.', label="Validation Loss")
ax.legend()
```

Out[102]:
```
<matplotlib.legend.Legend at 0x7f31be0bc4c0>
```




Looks like the losses are still going down on both the training set and the validation set. This suggests that the model might benefit from further training. Let's train the model a little more and see what happens. Note that it will pick up from where it left off. Train for 1000 more epochs.

In [103…

```
## Note that when we call "fit" again, it picks up where it left off
run_hist_1b = model_1.fit(X_train_norm, y_train, validation_data=(X_test_norm, y_test), epochs=1000)
```

```
Epoch 1/1000
18/18 [==============================] - 0s 6ms/step - loss: 0.4694 - accuracy: 0.7830 - val_loss: 0.4948 - val
_accuracy: 0.7552
Epoch 2/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4693 - accuracy: 0.7830 - val_loss: 0.4948 - val
_accuracy: 0.7552
Epoch 3/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4693 - accuracy: 0.7830 - val_loss: 0.4947 - val
_accuracy: 0.7552
Epoch 4/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4692 - accuracy: 0.7830 - val_loss: 0.4947 - val
_accuracy: 0.7552
Epoch 5/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4692 - accuracy: 0.7830 - val_loss: 0.4947 - val
_accuracy: 0.7552
Epoch 6/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4691 - accuracy: 0.7830 - val_loss: 0.4946 - val
_accuracy: 0.7552
Epoch 7/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4691 - accuracy: 0.7830 - val_loss: 0.4946 - val
_accuracy: 0.7552
Epoch 8/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4690 - accuracy: 0.7847 - val_loss: 0.4946 - val
_accuracy: 0.7552
Epoch 9/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4690 - accuracy: 0.7847 - val_loss: 0.4945 - val
_accuracy: 0.7552
Epoch 10/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4689 - accuracy: 0.7847 - val_loss: 0.4945 - val
_accuracy: 0.7552
Epoch 11/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4689 - accuracy: 0.7847 - val_loss: 0.4945 - val
_accuracy: 0.7552
Epoch 12/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4688 - accuracy: 0.7847 - val_loss: 0.4944 - val
_accuracy: 0.7552
Epoch 13/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4688 - accuracy: 0.7830 - val_loss: 0.4944 - val
_accuracy: 0.7552
```

```
Epoch 14/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4687 - accuracy: 0.7847 - val_loss: 0.4944 - val
_accuracy: 0.7552
Epoch 15/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4687 - accuracy: 0.7847 - val_loss: 0.4943 - val
_accuracy: 0.7552
Epoch 16/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4686 - accuracy: 0.7847 - val_loss: 0.4943 - val
_accuracy: 0.7552
Epoch 17/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4686 - accuracy: 0.7847 - val_loss: 0.4943 - val
_accuracy: 0.7552
Epoch 18/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4685 - accuracy: 0.7847 - val_loss: 0.4942 - val
_accuracy: 0.7552
Epoch 19/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4685 - accuracy: 0.7847 - val_loss: 0.4942 - val
_accuracy: 0.7552
Epoch 20/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4684 - accuracy: 0.7847 - val_loss: 0.4942 - val
_accuracy: 0.7552
Epoch 21/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4684 - accuracy: 0.7847 - val_loss: 0.4941 - val
_accuracy: 0.7552
Epoch 22/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4683 - accuracy: 0.7847 - val_loss: 0.4941 - val
_accuracy: 0.7552
Epoch 23/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4683 - accuracy: 0.7847 - val_loss: 0.4941 - val
_accuracy: 0.7552
Epoch 24/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4682 - accuracy: 0.7847 - val_loss: 0.4941 - val
_accuracy: 0.7552
Epoch 25/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4682 - accuracy: 0.7847 - val_loss: 0.4940 - val
_accuracy: 0.7552
Epoch 26/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4682 - accuracy: 0.7847 - val_loss: 0.4940 - val
_accuracy: 0.7552
Epoch 27/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4681 - accuracy: 0.7847 - val_loss: 0.4940 - val
_accuracy: 0.7552
Epoch 28/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4681 - accuracy: 0.7847 - val_loss: 0.4939 - val
_accuracy: 0.7552
Epoch 29/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4680 - accuracy: 0.7847 - val_loss: 0.4939 - val
_accuracy: 0.7552
Epoch 30/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4680 - accuracy: 0.7847 - val_loss: 0.4939 - val
_accuracy: 0.7552
Epoch 31/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4679 - accuracy: 0.7847 - val_loss: 0.4938 - val
_accuracy: 0.7552
Epoch 32/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4679 - accuracy: 0.7847 - val_loss: 0.4938 - val
_accuracy: 0.7552
Epoch 33/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4679 - accuracy: 0.7847 - val_loss: 0.4938 - val
_accuracy: 0.7552
Epoch 34/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4678 - accuracy: 0.7847 - val_loss: 0.4938 - val
_accuracy: 0.7552
Epoch 35/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4678 - accuracy: 0.7847 - val_loss: 0.4937 - val
_accuracy: 0.7552
Epoch 36/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4677 - accuracy: 0.7830 - val_loss: 0.4937 - val
_accuracy: 0.7552
Epoch 37/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4677 - accuracy: 0.7830 - val_loss: 0.4937 - val
_accuracy: 0.7552
Epoch 38/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4676 - accuracy: 0.7830 - val_loss: 0.4936 - val
_accuracy: 0.7552
Epoch 39/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4676 - accuracy: 0.7830 - val_loss: 0.4936 - val
_accuracy: 0.7552
Epoch 40/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4676 - accuracy: 0.7830 - val_loss: 0.4936 - val
_accuracy: 0.7552
Epoch 41/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4675 - accuracy: 0.7830 - val_loss: 0.4936 - val
```

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_accuracy: 0.7552
Epoch 42/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4675 - accuracy: 0.7830 - val_loss: 0.4935 - val
_accuracy: 0.7552
Epoch 43/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4674 - accuracy: 0.7812 - val_loss: 0.4935 - val
_accuracy: 0.7552
Epoch 44/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4674 - accuracy: 0.7812 - val_loss: 0.4935 - val
_accuracy: 0.7552
Epoch 45/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4673 - accuracy: 0.7812 - val_loss: 0.4935 - val
_accuracy: 0.7552
Epoch 46/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4673 - accuracy: 0.7812 - val_loss: 0.4934 - val
_accuracy: 0.7552
Epoch 47/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4673 - accuracy: 0.7812 - val_loss: 0.4934 - val
_accuracy: 0.7552
Epoch 48/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4672 - accuracy: 0.7812 - val_loss: 0.4934 - val
_accuracy: 0.7552
Epoch 49/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4672 - accuracy: 0.7812 - val_loss: 0.4934 - val
_accuracy: 0.7552
Epoch 50/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4672 - accuracy: 0.7812 - val_loss: 0.4933 - val
_accuracy: 0.7552
Epoch 51/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4671 - accuracy: 0.7812 - val_loss: 0.4933 - val
_accuracy: 0.7552
Epoch 52/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4671 - accuracy: 0.7812 - val_loss: 0.4933 - val
_accuracy: 0.7552
Epoch 53/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4670 - accuracy: 0.7812 - val_loss: 0.4932 - val
_accuracy: 0.7552
Epoch 54/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4670 - accuracy: 0.7812 - val_loss: 0.4932 - val
_accuracy: 0.7552
Epoch 55/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4669 - accuracy: 0.7812 - val_loss: 0.4932 - val
_accuracy: 0.7552
Epoch 56/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4669 - accuracy: 0.7812 - val_loss: 0.4932 - val
_accuracy: 0.7552
Epoch 57/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4669 - accuracy: 0.7812 - val_loss: 0.4931 - val
_accuracy: 0.7552
Epoch 58/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4668 - accuracy: 0.7812 - val_loss: 0.4931 - val
_accuracy: 0.7552
Epoch 59/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4668 - accuracy: 0.7812 - val_loss: 0.4931 - val
_accuracy: 0.7552
Epoch 60/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4667 - accuracy: 0.7812 - val_loss: 0.4931 - val
_accuracy: 0.7552
Epoch 61/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4667 - accuracy: 0.7812 - val_loss: 0.4930 - val
_accuracy: 0.7552
Epoch 62/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4667 - accuracy: 0.7812 - val_loss: 0.4930 - val
_accuracy: 0.7552
Epoch 63/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4666 - accuracy: 0.7812 - val_loss: 0.4930 - val
_accuracy: 0.7552
Epoch 64/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4666 - accuracy: 0.7812 - val_loss: 0.4930 - val
_accuracy: 0.7552
Epoch 65/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4666 - accuracy: 0.7812 - val_loss: 0.4929 - val
_accuracy: 0.7552
Epoch 66/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4665 - accuracy: 0.7812 - val_loss: 0.4929 - val
_accuracy: 0.7552
Epoch 67/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4665 - accuracy: 0.7812 - val_loss: 0.4929 - val
_accuracy: 0.7552
Epoch 68/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4664 - accuracy: 0.7812 - val_loss: 0.4929 - val
_accuracy: 0.7552
Epoch 69/1000
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18/18 [==============================] - 0s 4ms/step - loss: 0.4664 - accuracy: 0.7812 - val_loss: 0.4929 - val
_accuracy: 0.7552
Epoch 70/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4664 - accuracy: 0.7812 - val_loss: 0.4928 - val
_accuracy: 0.7552
Epoch 71/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4663 - accuracy: 0.7812 - val_loss: 0.4928 - val
_accuracy: 0.7552
Epoch 72/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4663 - accuracy: 0.7812 - val_loss: 0.4928 - val
_accuracy: 0.7552
Epoch 73/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4662 - accuracy: 0.7812 - val_loss: 0.4928 - val
_accuracy: 0.7552
Epoch 74/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4662 - accuracy: 0.7812 - val_loss: 0.4927 - val
_accuracy: 0.7552
Epoch 75/1000
18/18 [==============================] - 0s 6ms/step - loss: 0.4662 - accuracy: 0.7812 - val_loss: 0.4927 - val
_accuracy: 0.7552
Epoch 76/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4661 - accuracy: 0.7812 - val_loss: 0.4927 - val
_accuracy: 0.7552
Epoch 77/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4661 - accuracy: 0.7812 - val_loss: 0.4927 - val
_accuracy: 0.7552
Epoch 78/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4661 - accuracy: 0.7812 - val_loss: 0.4927 - val
_accuracy: 0.7552
Epoch 79/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4660 - accuracy: 0.7812 - val_loss: 0.4926 - val
_accuracy: 0.7552
Epoch 80/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4660 - accuracy: 0.7812 - val_loss: 0.4926 - val
_accuracy: 0.7552
Epoch 81/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4660 - accuracy: 0.7812 - val_loss: 0.4926 - val
_accuracy: 0.7552
Epoch 82/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4659 - accuracy: 0.7812 - val_loss: 0.4926 - val
_accuracy: 0.7552
Epoch 83/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4659 - accuracy: 0.7812 - val_loss: 0.4925 - val
_accuracy: 0.7552
Epoch 84/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4659 - accuracy: 0.7812 - val_loss: 0.4925 - val
_accuracy: 0.7552
Epoch 85/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4658 - accuracy: 0.7812 - val_loss: 0.4925 - val
_accuracy: 0.7552
Epoch 86/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4658 - accuracy: 0.7812 - val_loss: 0.4925 - val
_accuracy: 0.7552
Epoch 87/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4657 - accuracy: 0.7812 - val_loss: 0.4925 - val
_accuracy: 0.7552
Epoch 88/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4657 - accuracy: 0.7812 - val_loss: 0.4924 - val
_accuracy: 0.7552
Epoch 89/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4657 - accuracy: 0.7812 - val_loss: 0.4924 - val
_accuracy: 0.7552
Epoch 90/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4656 - accuracy: 0.7812 - val_loss: 0.4924 - val
_accuracy: 0.7552
Epoch 91/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4656 - accuracy: 0.7812 - val_loss: 0.4924 - val
_accuracy: 0.7604
Epoch 92/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4656 - accuracy: 0.7812 - val_loss: 0.4924 - val
_accuracy: 0.7604
Epoch 93/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4656 - accuracy: 0.7812 - val_loss: 0.4923 - val
_accuracy: 0.7604
Epoch 94/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4655 - accuracy: 0.7812 - val_loss: 0.4923 - val
_accuracy: 0.7604
Epoch 95/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4655 - accuracy: 0.7812 - val_loss: 0.4923 - val
_accuracy: 0.7604
Epoch 96/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4654 - accuracy: 0.7812 - val_loss: 0.4923 - val
_accuracy: 0.7604
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Epoch 97/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4654 - accuracy: 0.7812 - val_loss: 0.4923 - val
_accuracy: 0.7604
Epoch 98/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4654 - accuracy: 0.7812 - val_loss: 0.4922 - val
_accuracy: 0.7604
Epoch 99/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4653 - accuracy: 0.7812 - val_loss: 0.4922 - val
_accuracy: 0.7604
Epoch 100/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4653 - accuracy: 0.7812 - val_loss: 0.4922 - val
_accuracy: 0.7604
Epoch 101/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4653 - accuracy: 0.7812 - val_loss: 0.4922 - val
_accuracy: 0.7604
Epoch 102/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4653 - accuracy: 0.7812 - val_loss: 0.4922 - val
_accuracy: 0.7604
Epoch 103/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4652 - accuracy: 0.7812 - val_loss: 0.4921 - val
_accuracy: 0.7604
Epoch 104/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4652 - accuracy: 0.7812 - val_loss: 0.4921 - val
_accuracy: 0.7552
Epoch 105/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4652 - accuracy: 0.7812 - val_loss: 0.4921 - val
_accuracy: 0.7552
Epoch 106/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4651 - accuracy: 0.7812 - val_loss: 0.4921 - val
_accuracy: 0.7552
Epoch 107/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4651 - accuracy: 0.7812 - val_loss: 0.4921 - val
_accuracy: 0.7552
Epoch 108/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4651 - accuracy: 0.7812 - val_loss: 0.4920 - val
_accuracy: 0.7552
Epoch 109/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4650 - accuracy: 0.7812 - val_loss: 0.4920 - val
_accuracy: 0.7552
Epoch 110/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4650 - accuracy: 0.7812 - val_loss: 0.4920 - val
_accuracy: 0.7552
Epoch 111/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4650 - accuracy: 0.7812 - val_loss: 0.4920 - val
_accuracy: 0.7552
Epoch 112/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4649 - accuracy: 0.7812 - val_loss: 0.4920 - val
_accuracy: 0.7552
Epoch 113/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4649 - accuracy: 0.7812 - val_loss: 0.4920 - val
_accuracy: 0.7552
Epoch 114/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4649 - accuracy: 0.7812 - val_loss: 0.4919 - val
_accuracy: 0.7552
Epoch 115/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4648 - accuracy: 0.7812 - val_loss: 0.4919 - val
_accuracy: 0.7552
Epoch 116/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4648 - accuracy: 0.7812 - val_loss: 0.4919 - val
_accuracy: 0.7552
Epoch 117/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4648 - accuracy: 0.7812 - val_loss: 0.4919 - val
_accuracy: 0.7552
Epoch 118/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4647 - accuracy: 0.7812 - val_loss: 0.4919 - val
_accuracy: 0.7552
Epoch 119/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4647 - accuracy: 0.7812 - val_loss: 0.4918 - val
_accuracy: 0.7552
Epoch 120/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4647 - accuracy: 0.7812 - val_loss: 0.4918 - val
_accuracy: 0.7552
Epoch 121/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4647 - accuracy: 0.7812 - val_loss: 0.4918 - val
_accuracy: 0.7552
Epoch 122/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4646 - accuracy: 0.7812 - val_loss: 0.4918 - val
_accuracy: 0.7552
Epoch 123/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4646 - accuracy: 0.7812 - val_loss: 0.4918 - val
_accuracy: 0.7552
Epoch 124/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4646 - accuracy: 0.7812 - val_loss: 0.4918 - val
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_accuracy: 0.7552
Epoch 125/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4645 - accuracy: 0.7795 - val_loss: 0.4917 - val
_accuracy: 0.7552
Epoch 126/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4645 - accuracy: 0.7812 - val_loss: 0.4917 - val
_accuracy: 0.7552
Epoch 127/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4645 - accuracy: 0.7795 - val_loss: 0.4917 - val
_accuracy: 0.7552
Epoch 128/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4644 - accuracy: 0.7795 - val_loss: 0.4917 - val
_accuracy: 0.7552
Epoch 129/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4644 - accuracy: 0.7795 - val_loss: 0.4917 - val
_accuracy: 0.7552
Epoch 130/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4644 - accuracy: 0.7795 - val_loss: 0.4917 - val
_accuracy: 0.7552
Epoch 131/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4644 - accuracy: 0.7795 - val_loss: 0.4916 - val
_accuracy: 0.7552
Epoch 132/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4643 - accuracy: 0.7795 - val_loss: 0.4916 - val
_accuracy: 0.7552
Epoch 133/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4643 - accuracy: 0.7795 - val_loss: 0.4916 - val
_accuracy: 0.7552
Epoch 134/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4643 - accuracy: 0.7795 - val_loss: 0.4916 - val
_accuracy: 0.7552
Epoch 135/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4643 - accuracy: 0.7795 - val_loss: 0.4916 - val
_accuracy: 0.7552
Epoch 136/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4642 - accuracy: 0.7795 - val_loss: 0.4916 - val
_accuracy: 0.7552
Epoch 137/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4642 - accuracy: 0.7812 - val_loss: 0.4916 - val
_accuracy: 0.7552
Epoch 138/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4642 - accuracy: 0.7795 - val_loss: 0.4915 - val
_accuracy: 0.7552
Epoch 139/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4641 - accuracy: 0.7795 - val_loss: 0.4915 - val
_accuracy: 0.7552
Epoch 140/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4641 - accuracy: 0.7795 - val_loss: 0.4915 - val
_accuracy: 0.7552
Epoch 141/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4641 - accuracy: 0.7795 - val_loss: 0.4915 - val
_accuracy: 0.7552
Epoch 142/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4641 - accuracy: 0.7795 - val_loss: 0.4915 - val
_accuracy: 0.7552
Epoch 143/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4640 - accuracy: 0.7812 - val_loss: 0.4915 - val
_accuracy: 0.7552
Epoch 144/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4640 - accuracy: 0.7795 - val_loss: 0.4914 - val
_accuracy: 0.7552
Epoch 145/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4640 - accuracy: 0.7812 - val_loss: 0.4914 - val
_accuracy: 0.7552
Epoch 146/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4639 - accuracy: 0.7812 - val_loss: 0.4914 - val
_accuracy: 0.7552
Epoch 147/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4639 - accuracy: 0.7812 - val_loss: 0.4914 - val
_accuracy: 0.7552
Epoch 148/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4639 - accuracy: 0.7812 - val_loss: 0.4914 - val
_accuracy: 0.7552
Epoch 149/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4639 - accuracy: 0.7812 - val_loss: 0.4914 - val
_accuracy: 0.7552
Epoch 150/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4638 - accuracy: 0.7812 - val_loss: 0.4914 - val
_accuracy: 0.7552
Epoch 151/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4638 - accuracy: 0.7812 - val_loss: 0.4913 - val
_accuracy: 0.7552
Epoch 152/1000
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18/18 [==============================] - 0s 4ms/step - loss: 0.4638 - accuracy: 0.7812 - val_loss: 0.4913 - val
_accuracy: 0.7552
Epoch 153/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4638 - accuracy: 0.7812 - val_loss: 0.4913 - val
_accuracy: 0.7552
Epoch 154/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4637 - accuracy: 0.7812 - val_loss: 0.4913 - val
_accuracy: 0.7552
Epoch 155/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4637 - accuracy: 0.7812 - val_loss: 0.4913 - val
_accuracy: 0.7552
Epoch 156/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4637 - accuracy: 0.7812 - val_loss: 0.4913 - val
_accuracy: 0.7552
Epoch 157/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4636 - accuracy: 0.7812 - val_loss: 0.4913 - val
_accuracy: 0.7552
Epoch 158/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4636 - accuracy: 0.7812 - val_loss: 0.4912 - val
_accuracy: 0.7552
Epoch 159/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4636 - accuracy: 0.7812 - val_loss: 0.4912 - val
_accuracy: 0.7552
Epoch 160/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4636 - accuracy: 0.7812 - val_loss: 0.4912 - val
_accuracy: 0.7552
Epoch 161/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4636 - accuracy: 0.7812 - val_loss: 0.4912 - val
_accuracy: 0.7552
Epoch 162/1000
18/18 [==============================] - 0s 6ms/step - loss: 0.4635 - accuracy: 0.7812 - val_loss: 0.4912 - val
_accuracy: 0.7552
Epoch 163/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4635 - accuracy: 0.7812 - val_loss: 0.4912 - val
_accuracy: 0.7552
Epoch 164/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4635 - accuracy: 0.7812 - val_loss: 0.4912 - val
_accuracy: 0.7552
Epoch 165/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4635 - accuracy: 0.7812 - val_loss: 0.4912 - val
_accuracy: 0.7552
Epoch 166/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4634 - accuracy: 0.7830 - val_loss: 0.4911 - val
_accuracy: 0.7552
Epoch 167/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4634 - accuracy: 0.7812 - val_loss: 0.4911 - val
_accuracy: 0.7552
Epoch 168/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4634 - accuracy: 0.7830 - val_loss: 0.4911 - val
_accuracy: 0.7552
Epoch 169/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4633 - accuracy: 0.7812 - val_loss: 0.4911 - val
_accuracy: 0.7552
Epoch 170/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4633 - accuracy: 0.7812 - val_loss: 0.4911 - val
_accuracy: 0.7552
Epoch 171/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4633 - accuracy: 0.7812 - val_loss: 0.4911 - val
_accuracy: 0.7552
Epoch 172/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4633 - accuracy: 0.7812 - val_loss: 0.4911 - val
_accuracy: 0.7552
Epoch 173/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4633 - accuracy: 0.7812 - val_loss: 0.4910 - val
_accuracy: 0.7552
Epoch 174/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4632 - accuracy: 0.7812 - val_loss: 0.4910 - val
_accuracy: 0.7552
Epoch 175/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4632 - accuracy: 0.7812 - val_loss: 0.4910 - val
_accuracy: 0.7552
Epoch 176/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4632 - accuracy: 0.7830 - val_loss: 0.4910 - val
_accuracy: 0.7552
Epoch 177/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4631 - accuracy: 0.7830 - val_loss: 0.4910 - val
_accuracy: 0.7552
Epoch 178/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4631 - accuracy: 0.7830 - val_loss: 0.4910 - val
_accuracy: 0.7552
Epoch 179/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4631 - accuracy: 0.7812 - val_loss: 0.4910 - val
_accuracy: 0.7552
```

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Epoch 180/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4631 - accuracy: 0.7830 - val_loss: 0.4910 - val
_accuracy: 0.7552
Epoch 181/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4631 - accuracy: 0.7830 - val_loss: 0.4909 - val
_accuracy: 0.7552
Epoch 182/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4630 - accuracy: 0.7830 - val_loss: 0.4909 - val
_accuracy: 0.7552
Epoch 183/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4630 - accuracy: 0.7830 - val_loss: 0.4909 - val
_accuracy: 0.7552
Epoch 184/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4630 - accuracy: 0.7830 - val_loss: 0.4909 - val
_accuracy: 0.7552
Epoch 185/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4630 - accuracy: 0.7830 - val_loss: 0.4909 - val
_accuracy: 0.7552
Epoch 186/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4629 - accuracy: 0.7847 - val_loss: 0.4909 - val
_accuracy: 0.7552
Epoch 187/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4629 - accuracy: 0.7847 - val_loss: 0.4909 - val
_accuracy: 0.7552
Epoch 188/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4629 - accuracy: 0.7847 - val_loss: 0.4909 - val
_accuracy: 0.7552
Epoch 189/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4629 - accuracy: 0.7847 - val_loss: 0.4909 - val
_accuracy: 0.7552
Epoch 190/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4629 - accuracy: 0.7847 - val_loss: 0.4908 - val
_accuracy: 0.7552
Epoch 191/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4628 - accuracy: 0.7847 - val_loss: 0.4908 - val
_accuracy: 0.7552
Epoch 192/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4628 - accuracy: 0.7847 - val_loss: 0.4908 - val
_accuracy: 0.7552
Epoch 193/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4628 - accuracy: 0.7847 - val_loss: 0.4908 - val
_accuracy: 0.7552
Epoch 194/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4628 - accuracy: 0.7847 - val_loss: 0.4908 - val
_accuracy: 0.7552
Epoch 195/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4627 - accuracy: 0.7847 - val_loss: 0.4908 - val
_accuracy: 0.7552
Epoch 196/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4627 - accuracy: 0.7847 - val_loss: 0.4908 - val
_accuracy: 0.7552
Epoch 197/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4627 - accuracy: 0.7847 - val_loss: 0.4908 - val
_accuracy: 0.7552
Epoch 198/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4627 - accuracy: 0.7847 - val_loss: 0.4908 - val
_accuracy: 0.7552
Epoch 199/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4626 - accuracy: 0.7847 - val_loss: 0.4907 - val
_accuracy: 0.7552
Epoch 200/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4626 - accuracy: 0.7847 - val_loss: 0.4907 - val
_accuracy: 0.7552
Epoch 201/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4626 - accuracy: 0.7847 - val_loss: 0.4907 - val
_accuracy: 0.7552
Epoch 202/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4626 - accuracy: 0.7847 - val_loss: 0.4907 - val
_accuracy: 0.7552
Epoch 203/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4626 - accuracy: 0.7847 - val_loss: 0.4907 - val
_accuracy: 0.7552
Epoch 204/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4625 - accuracy: 0.7847 - val_loss: 0.4907 - val
_accuracy: 0.7552
Epoch 205/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4625 - accuracy: 0.7847 - val_loss: 0.4907 - val
_accuracy: 0.7552
Epoch 206/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4625 - accuracy: 0.7847 - val_loss: 0.4907 - val
_accuracy: 0.7552
Epoch 207/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4625 - accuracy: 0.7847 - val_loss: 0.4907 - val
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_accuracy: 0.7552
Epoch 208/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4625 - accuracy: 0.7847 - val_loss: 0.4906 - val
_accuracy: 0.7552
Epoch 209/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4624 - accuracy: 0.7847 - val_loss: 0.4906 - val
_accuracy: 0.7552
Epoch 210/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4624 - accuracy: 0.7847 - val_loss: 0.4906 - val
_accuracy: 0.7552
Epoch 211/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4624 - accuracy: 0.7847 - val_loss: 0.4906 - val
_accuracy: 0.7552
Epoch 212/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4624 - accuracy: 0.7847 - val_loss: 0.4906 - val
_accuracy: 0.7552
Epoch 213/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4624 - accuracy: 0.7847 - val_loss: 0.4906 - val
_accuracy: 0.7552
Epoch 214/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4623 - accuracy: 0.7847 - val_loss: 0.4906 - val
_accuracy: 0.7552
Epoch 215/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4623 - accuracy: 0.7847 - val_loss: 0.4906 - val
_accuracy: 0.7552
Epoch 216/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4623 - accuracy: 0.7847 - val_loss: 0.4906 - val
_accuracy: 0.7552
Epoch 217/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4623 - accuracy: 0.7847 - val_loss: 0.4906 - val
_accuracy: 0.7552
Epoch 218/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4622 - accuracy: 0.7847 - val_loss: 0.4905 - val
_accuracy: 0.7552
Epoch 219/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4622 - accuracy: 0.7847 - val_loss: 0.4905 - val
_accuracy: 0.7552
Epoch 220/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4622 - accuracy: 0.7847 - val_loss: 0.4905 - val
_accuracy: 0.7552
Epoch 221/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4622 - accuracy: 0.7847 - val_loss: 0.4905 - val
_accuracy: 0.7552
Epoch 222/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4622 - accuracy: 0.7847 - val_loss: 0.4905 - val
_accuracy: 0.7552
Epoch 223/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4621 - accuracy: 0.7847 - val_loss: 0.4905 - val
_accuracy: 0.7552
Epoch 224/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4621 - accuracy: 0.7847 - val_loss: 0.4905 - val
_accuracy: 0.7552
Epoch 225/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4621 - accuracy: 0.7847 - val_loss: 0.4905 - val
_accuracy: 0.7552
Epoch 226/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4621 - accuracy: 0.7847 - val_loss: 0.4905 - val
_accuracy: 0.7552
Epoch 227/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4621 - accuracy: 0.7847 - val_loss: 0.4905 - val
_accuracy: 0.7552
Epoch 228/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4620 - accuracy: 0.7847 - val_loss: 0.4905 - val
_accuracy: 0.7552
Epoch 229/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4620 - accuracy: 0.7847 - val_loss: 0.4904 - val
_accuracy: 0.7552
Epoch 230/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4620 - accuracy: 0.7847 - val_loss: 0.4904 - val
_accuracy: 0.7552
Epoch 231/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4620 - accuracy: 0.7847 - val_loss: 0.4904 - val
_accuracy: 0.7552
Epoch 232/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4620 - accuracy: 0.7847 - val_loss: 0.4904 - val
_accuracy: 0.7552
Epoch 233/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4619 - accuracy: 0.7847 - val_loss: 0.4904 - val
_accuracy: 0.7552
Epoch 234/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4619 - accuracy: 0.7847 - val_loss: 0.4904 - val
_accuracy: 0.7552
Epoch 235/1000
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18/18 [==============================] - 0s 4ms/step - loss: 0.4619 - accuracy: 0.7847 - val_loss: 0.4904 - val
_accuracy: 0.7552
Epoch 236/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4619 - accuracy: 0.7847 - val_loss: 0.4904 - val
_accuracy: 0.7552
Epoch 237/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4619 - accuracy: 0.7847 - val_loss: 0.4904 - val
_accuracy: 0.7552
Epoch 238/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4618 - accuracy: 0.7847 - val_loss: 0.4904 - val
_accuracy: 0.7552
Epoch 239/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4618 - accuracy: 0.7847 - val_loss: 0.4904 - val
_accuracy: 0.7552
Epoch 240/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4618 - accuracy: 0.7847 - val_loss: 0.4904 - val
_accuracy: 0.7552
Epoch 241/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4618 - accuracy: 0.7847 - val_loss: 0.4903 - val
_accuracy: 0.7552
Epoch 242/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4618 - accuracy: 0.7847 - val_loss: 0.4903 - val
_accuracy: 0.7552
Epoch 243/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4618 - accuracy: 0.7847 - val_loss: 0.4903 - val
_accuracy: 0.7552
Epoch 244/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4617 - accuracy: 0.7847 - val_loss: 0.4903 - val
_accuracy: 0.7552
Epoch 245/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4617 - accuracy: 0.7847 - val_loss: 0.4903 - val
_accuracy: 0.7552
Epoch 246/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4617 - accuracy: 0.7847 - val_loss: 0.4903 - val
_accuracy: 0.7552
Epoch 247/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4617 - accuracy: 0.7847 - val_loss: 0.4903 - val
_accuracy: 0.7552
Epoch 248/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4617 - accuracy: 0.7847 - val_loss: 0.4903 - val
_accuracy: 0.7552
Epoch 249/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4617 - accuracy: 0.7847 - val_loss: 0.4903 - val
_accuracy: 0.7552
Epoch 250/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4616 - accuracy: 0.7847 - val_loss: 0.4903 - val
_accuracy: 0.7552
Epoch 251/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4616 - accuracy: 0.7847 - val_loss: 0.4903 - val
_accuracy: 0.7552
Epoch 252/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4616 - accuracy: 0.7847 - val_loss: 0.4903 - val
_accuracy: 0.7552
Epoch 253/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4616 - accuracy: 0.7847 - val_loss: 0.4902 - val
_accuracy: 0.7552
Epoch 254/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4616 - accuracy: 0.7847 - val_loss: 0.4902 - val
_accuracy: 0.7552
Epoch 255/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4615 - accuracy: 0.7847 - val_loss: 0.4902 - val
_accuracy: 0.7552
Epoch 256/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4615 - accuracy: 0.7847 - val_loss: 0.4902 - val
_accuracy: 0.7552
Epoch 257/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4615 - accuracy: 0.7847 - val_loss: 0.4902 - val
_accuracy: 0.7552
Epoch 258/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4615 - accuracy: 0.7847 - val_loss: 0.4902 - val
_accuracy: 0.7552
Epoch 259/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4615 - accuracy: 0.7847 - val_loss: 0.4902 - val
_accuracy: 0.7552
Epoch 260/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4614 - accuracy: 0.7847 - val_loss: 0.4902 - val
_accuracy: 0.7552
Epoch 261/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4614 - accuracy: 0.7847 - val_loss: 0.4902 - val
_accuracy: 0.7552
Epoch 262/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4614 - accuracy: 0.7847 - val_loss: 0.4902 - val
_accuracy: 0.7552
```

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Epoch 263/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4614 - accuracy: 0.7847 - val_loss: 0.4902 - val
_accuracy: 0.7552
Epoch 264/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4614 - accuracy: 0.7847 - val_loss: 0.4902 - val
_accuracy: 0.7552
Epoch 265/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4614 - accuracy: 0.7847 - val_loss: 0.4902 - val
_accuracy: 0.7552
Epoch 266/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4613 - accuracy: 0.7847 - val_loss: 0.4901 - val
_accuracy: 0.7552
Epoch 267/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4613 - accuracy: 0.7847 - val_loss: 0.4901 - val
_accuracy: 0.7552
Epoch 268/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4613 - accuracy: 0.7847 - val_loss: 0.4901 - val
_accuracy: 0.7552
Epoch 269/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4613 - accuracy: 0.7847 - val_loss: 0.4901 - val
_accuracy: 0.7552
Epoch 270/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4613 - accuracy: 0.7847 - val_loss: 0.4901 - val
_accuracy: 0.7552
Epoch 271/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4613 - accuracy: 0.7847 - val_loss: 0.4901 - val
_accuracy: 0.7552
Epoch 272/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4612 - accuracy: 0.7847 - val_loss: 0.4901 - val
_accuracy: 0.7552
Epoch 273/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4612 - accuracy: 0.7847 - val_loss: 0.4901 - val
_accuracy: 0.7552
Epoch 274/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4612 - accuracy: 0.7847 - val_loss: 0.4901 - val
_accuracy: 0.7552
Epoch 275/1000
18/18 [==============================] - 0s 7ms/step - loss: 0.4612 - accuracy: 0.7847 - val_loss: 0.4901 - val
_accuracy: 0.7552
Epoch 276/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4612 - accuracy: 0.7847 - val_loss: 0.4901 - val
_accuracy: 0.7552
Epoch 277/1000
18/18 [==============================] - 0s 7ms/step - loss: 0.4612 - accuracy: 0.7847 - val_loss: 0.4901 - val
_accuracy: 0.7552
Epoch 278/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4612 - accuracy: 0.7847 - val_loss: 0.4901 - val
_accuracy: 0.7552
Epoch 279/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4611 - accuracy: 0.7847 - val_loss: 0.4901 - val
_accuracy: 0.7552
Epoch 280/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4611 - accuracy: 0.7847 - val_loss: 0.4901 - val
_accuracy: 0.7552
Epoch 281/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4611 - accuracy: 0.7847 - val_loss: 0.4900 - val
_accuracy: 0.7552
Epoch 282/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4611 - accuracy: 0.7847 - val_loss: 0.4900 - val
_accuracy: 0.7552
Epoch 283/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4611 - accuracy: 0.7847 - val_loss: 0.4900 - val
_accuracy: 0.7552
Epoch 284/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4610 - accuracy: 0.7847 - val_loss: 0.4900 - val
_accuracy: 0.7552
Epoch 285/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4610 - accuracy: 0.7847 - val_loss: 0.4900 - val
_accuracy: 0.7552
Epoch 286/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4610 - accuracy: 0.7847 - val_loss: 0.4900 - val
_accuracy: 0.7552
Epoch 287/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4610 - accuracy: 0.7847 - val_loss: 0.4900 - val
_accuracy: 0.7552
Epoch 288/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4610 - accuracy: 0.7847 - val_loss: 0.4900 - val
_accuracy: 0.7552
Epoch 289/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4610 - accuracy: 0.7847 - val_loss: 0.4900 - val
_accuracy: 0.7552
Epoch 290/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4609 - accuracy: 0.7847 - val_loss: 0.4900 - val
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_accuracy: 0.7552
Epoch 291/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4609 - accuracy: 0.7830 - val_loss: 0.4900 - val
_accuracy: 0.7552
Epoch 292/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4609 - accuracy: 0.7847 - val_loss: 0.4900 - val
_accuracy: 0.7552
Epoch 293/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4609 - accuracy: 0.7847 - val_loss: 0.4900 - val
_accuracy: 0.7552
Epoch 294/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4609 - accuracy: 0.7847 - val_loss: 0.4900 - val
_accuracy: 0.7552
Epoch 295/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4609 - accuracy: 0.7830 - val_loss: 0.4900 - val
_accuracy: 0.7552
Epoch 296/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4608 - accuracy: 0.7847 - val_loss: 0.4900 - val
_accuracy: 0.7552
Epoch 297/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4609 - accuracy: 0.7847 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 298/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4608 - accuracy: 0.7830 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 299/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4608 - accuracy: 0.7847 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 300/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4608 - accuracy: 0.7847 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 301/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4608 - accuracy: 0.7847 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 302/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4608 - accuracy: 0.7847 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 303/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4608 - accuracy: 0.7847 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 304/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4607 - accuracy: 0.7830 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 305/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4607 - accuracy: 0.7830 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 306/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4607 - accuracy: 0.7830 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 307/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4607 - accuracy: 0.7830 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 308/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4607 - accuracy: 0.7830 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 309/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4607 - accuracy: 0.7847 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 310/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4606 - accuracy: 0.7830 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 311/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4606 - accuracy: 0.7830 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 312/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4606 - accuracy: 0.7830 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 313/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4606 - accuracy: 0.7830 - val_loss: 0.4899 - val
_accuracy: 0.7552
Epoch 314/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4606 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 315/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4606 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 316/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4606 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 317/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4605 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 318/1000
```

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18/18 [==============================] - 0s 5ms/step - loss: 0.4605 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 319/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4605 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 320/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4605 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 321/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4605 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 322/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4605 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 323/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4604 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 324/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4604 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 325/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4605 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 326/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4604 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 327/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4604 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 328/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4604 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 329/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4604 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 330/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4603 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 331/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4603 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 332/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4603 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 333/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4603 - accuracy: 0.7830 - val_loss: 0.4898 - val
_accuracy: 0.7552
Epoch 334/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4603 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7552
Epoch 335/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4603 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7552
Epoch 336/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4603 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7552
Epoch 337/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4603 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7552
Epoch 338/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4602 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7552
Epoch 339/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4602 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7552
Epoch 340/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4602 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7552
Epoch 341/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4602 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7552
Epoch 342/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4602 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7552
Epoch 343/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4602 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7552
Epoch 344/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4602 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7552
Epoch 345/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4602 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7604
```

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Epoch 346/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4601 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7604
Epoch 347/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4601 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7604
Epoch 348/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4601 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7604
Epoch 349/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4601 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7604
Epoch 350/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4601 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7604
Epoch 351/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4601 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7604
Epoch 352/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4601 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7604
Epoch 353/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4600 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7604
Epoch 354/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4601 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7604
Epoch 355/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4600 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7604
Epoch 356/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4600 - accuracy: 0.7830 - val_loss: 0.4897 - val
_accuracy: 0.7604
Epoch 357/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4600 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 358/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4600 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 359/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4600 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 360/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4600 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 361/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4600 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 362/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4599 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 363/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4599 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 364/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4599 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 365/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4599 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 366/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4599 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 367/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4599 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 368/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4599 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 369/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4599 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 370/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4598 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 371/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4599 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 372/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4598 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 373/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4598 - accuracy: 0.7830 - val_loss: 0.4896 - val
```

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_accuracy: 0.7604
Epoch 374/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4598 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 375/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4598 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 376/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4598 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 377/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4598 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 378/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4598 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 379/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4597 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 380/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4597 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 381/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4597 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 382/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4597 - accuracy: 0.7830 - val_loss: 0.4896 - val
_accuracy: 0.7604
Epoch 383/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4597 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 384/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4597 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 385/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4597 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 386/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4597 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 387/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4597 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 388/1000
18/18 [==============================] - 0s 7ms/step - loss: 0.4596 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 389/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4596 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 390/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4596 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 391/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4596 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 392/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4596 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 393/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4596 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 394/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4596 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 395/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4595 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 396/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4595 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 397/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4595 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 398/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4595 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 399/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4595 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 400/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4595 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 401/1000
```

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18/18 [==============================] - 0s 4ms/step - loss: 0.4595 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 402/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4595 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 403/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4595 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 404/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4595 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 405/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4594 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 406/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4594 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 407/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4594 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 408/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4594 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 409/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4594 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 410/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4594 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 411/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4594 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 412/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4594 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 413/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4594 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 414/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4594 - accuracy: 0.7830 - val_loss: 0.4895 - val
_accuracy: 0.7604
Epoch 415/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4593 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 416/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4593 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 417/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4593 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 418/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4593 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 419/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4593 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 420/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4593 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 421/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4593 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 422/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4593 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 423/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4592 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 424/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4592 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 425/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4592 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 426/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4592 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 427/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4592 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 428/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4592 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
```

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Epoch 429/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4592 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 430/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4592 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 431/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4592 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 432/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4591 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 433/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4591 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 434/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4591 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 435/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4591 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 436/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4591 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 437/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4591 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 438/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4591 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 439/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4591 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 440/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4591 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 441/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4591 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 442/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4590 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 443/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4590 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 444/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4590 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 445/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4590 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 446/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4590 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 447/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4590 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 448/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4590 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 449/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4590 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 450/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4590 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 451/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4590 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 452/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4590 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 453/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4590 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 454/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4589 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 455/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4589 - accuracy: 0.7830 - val_loss: 0.4894 - val
_accuracy: 0.7656
Epoch 456/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4589 - accuracy: 0.7830 - val_loss: 0.4894 - val
```

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_accuracy: 0.7656
Epoch 457/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4589 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 458/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4589 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 459/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4589 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 460/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4589 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 461/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4589 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 462/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4589 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 463/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4589 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 464/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4588 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 465/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4588 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 466/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4588 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 467/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4588 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 468/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4588 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 469/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4588 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 470/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4588 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 471/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4588 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 472/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4588 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 473/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4588 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 474/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4588 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 475/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4588 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 476/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4587 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 477/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4587 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 478/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4587 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 479/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4587 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 480/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4587 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 481/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4587 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 482/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4587 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 483/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4587 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 484/1000
```

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18/18 [==============================] - 0s 4ms/step - loss: 0.4587 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 485/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4587 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 486/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4587 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 487/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4586 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 488/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4586 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 489/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4586 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 490/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4586 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 491/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4586 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 492/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4586 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 493/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4586 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 494/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4586 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 495/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4586 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 496/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4586 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 497/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4586 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 498/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4585 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 499/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4585 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 500/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4585 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 501/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4585 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 502/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4585 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 503/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4585 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 504/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4585 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 505/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4585 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 506/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4585 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 507/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4585 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 508/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4585 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 509/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4585 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 510/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4585 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 511/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4584 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
```

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Epoch 512/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4584 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 513/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4584 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 514/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4584 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 515/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4584 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 516/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4584 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 517/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4584 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 518/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4584 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 519/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4584 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 520/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4584 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7656
Epoch 521/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4584 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 522/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4584 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 523/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4584 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 524/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4584 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 525/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4583 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 526/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4583 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 527/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4583 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 528/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4583 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 529/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4583 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 530/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4583 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 531/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4583 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 532/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4583 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 533/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4583 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 534/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4583 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 535/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4583 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 536/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4583 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 537/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4582 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 538/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4582 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 539/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4582 - accuracy: 0.7830 - val_loss: 0.4892 - val
```

```
_accuracy: 0.7604
Epoch 540/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4582 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 541/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4582 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 542/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4582 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 543/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4582 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 544/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4582 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 545/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4582 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 546/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4582 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 547/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4582 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 548/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4582 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 549/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4581 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 550/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4581 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 551/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4581 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 552/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4581 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 553/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4581 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 554/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4581 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 555/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4581 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 556/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4581 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 557/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4581 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 558/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4581 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 559/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4581 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 560/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4581 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 561/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4581 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 562/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4580 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 563/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4580 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 564/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4580 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 565/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4580 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 566/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4580 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 567/1000
```

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18/18 [==============================] - 0s 4ms/step - loss: 0.4580 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 568/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4580 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 569/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4580 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 570/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4580 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 571/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4580 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 572/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4580 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 573/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4580 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 574/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4580 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 575/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4580 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 576/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4579 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 577/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4579 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 578/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4579 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 579/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4579 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 580/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4579 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 581/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4579 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 582/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4579 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 583/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4579 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 584/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4579 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 585/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4579 - accuracy: 0.7847 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 586/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4579 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 587/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4579 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 588/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4579 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 589/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4579 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 590/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4579 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 591/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4578 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 592/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4578 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 593/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4578 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 594/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4578 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
```

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Epoch 595/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4578 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 596/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4578 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 597/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4578 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 598/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4578 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 599/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4578 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 600/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4578 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7604
Epoch 601/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4578 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 602/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4578 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 603/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4578 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 604/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4578 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 605/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4578 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 606/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4577 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 607/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4577 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 608/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4577 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 609/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4577 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 610/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4577 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 611/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4577 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 612/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4577 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 613/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4577 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 614/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4577 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 615/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4577 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 616/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4577 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 617/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4577 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 618/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4577 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 619/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4577 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 620/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4577 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 621/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4577 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 622/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4577 - accuracy: 0.7830 - val_loss: 0.4892 - val
```

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_accuracy: 0.7656
Epoch 623/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4576 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 624/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4576 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 625/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4576 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 626/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4576 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 627/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4576 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 628/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4576 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 629/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4576 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 630/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4576 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 631/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4576 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 632/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4576 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 633/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4576 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 634/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4576 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 635/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4576 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 636/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 637/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4576 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 638/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 639/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 640/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 641/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 642/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 643/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 644/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 645/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 646/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 647/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 648/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 649/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 650/1000
```

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18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 651/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 652/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 653/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 654/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 655/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 656/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 657/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 658/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 659/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 660/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 661/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 662/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 663/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 664/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 665/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 666/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 667/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 668/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 669/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 670/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 671/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4574 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 672/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 673/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 674/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 675/1000
18/18 [==============================] - 0s 6ms/step - loss: 0.4573 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 676/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 677/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4573 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
```

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Epoch 678/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 679/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 680/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 681/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 682/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 683/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 684/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 685/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 686/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 687/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 688/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 689/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 690/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4573 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 691/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 692/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 693/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 694/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 695/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 696/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 697/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 698/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 699/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 700/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 701/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 702/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 703/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 704/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 705/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
```

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_accuracy: 0.7656
Epoch 706/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4572 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 707/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 708/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 709/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 710/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 711/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 712/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 713/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 714/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 715/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 716/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 717/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 718/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 719/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 720/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 721/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 722/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 723/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 724/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 725/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4571 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 726/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 727/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 728/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 729/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 730/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 731/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 732/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 733/1000
```

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18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 734/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 735/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 736/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 737/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 738/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 739/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 740/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 741/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 742/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 743/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 744/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 745/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 746/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4570 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 747/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 748/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 749/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 750/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 751/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 752/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 753/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 754/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 755/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 756/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 757/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 758/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 759/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 760/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
```

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Epoch 761/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 762/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 763/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 764/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4569 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 765/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 766/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 767/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 768/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 769/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 770/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 771/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 772/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 773/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 774/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 775/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 776/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 777/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 778/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 779/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 780/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 781/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 782/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 783/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4568 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 784/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 785/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 786/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 787/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 788/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
```

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_accuracy: 0.7656
Epoch 789/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 790/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 791/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 792/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 793/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 794/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 795/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 796/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 797/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 798/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 799/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 800/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 801/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 802/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 803/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 804/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 805/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4567 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 806/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 807/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 808/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 809/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 810/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 811/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 812/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 813/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 814/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 815/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 816/1000
```

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18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 817/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 818/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 819/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 820/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 821/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 822/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 823/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 824/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 825/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 826/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 827/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 828/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 829/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 830/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 831/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 832/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 833/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 834/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 835/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 836/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 837/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 838/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 839/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 840/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 841/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 842/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 843/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
```

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Epoch 844/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 845/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 846/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 847/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4565 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 848/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 849/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 850/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 851/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 852/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 853/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 854/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 855/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 856/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 857/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 858/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 859/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 860/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 861/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 862/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 863/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 864/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 865/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 866/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 867/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 868/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 869/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 870/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 871/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
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_accuracy: 0.7656
Epoch 872/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 873/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 874/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 875/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 876/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 877/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 878/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 879/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 880/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 881/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 882/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 883/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 884/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 885/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 886/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 887/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 888/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 889/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 890/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 891/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 892/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 893/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 894/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 895/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 896/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4563 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 897/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 898/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 899/1000
```

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18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 900/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 901/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 902/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 903/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 904/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 905/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 906/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 907/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 908/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 909/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 910/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 911/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 912/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 913/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 914/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 915/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 916/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 917/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 918/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 919/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 920/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 921/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 922/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 923/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 924/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 925/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 926/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
```

```
Epoch 927/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 928/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 929/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 930/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 931/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 932/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 933/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 934/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 935/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 936/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 937/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 938/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 939/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 940/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 941/1000
18/18 [==============================] - 0s 5ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 942/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7795 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 943/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 944/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 945/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 946/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 947/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 948/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 949/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 950/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 951/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 952/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 953/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 954/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
```

```
_accuracy: 0.7656
Epoch 955/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 956/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 957/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 958/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 959/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 960/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 961/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 962/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7656
Epoch 963/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 964/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 965/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 966/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 967/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4560 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 968/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 969/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 970/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 971/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 972/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 973/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 974/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 975/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 976/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 977/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 978/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 979/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 980/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 981/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 982/1000
```

```
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 983/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 984/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 985/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 986/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4558 - accuracy: 0.7830 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 987/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4559 - accuracy: 0.7812 - val_loss: 0.4892 - val
_accuracy: 0.7708
Epoch 988/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4558 - accuracy: 0.7812 - val_loss: 0.4893 - val
_accuracy: 0.7708
Epoch 989/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4558 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7708
Epoch 990/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4558 - accuracy: 0.7812 - val_loss: 0.4893 - val
_accuracy: 0.7708
Epoch 991/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4558 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7708
Epoch 992/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4558 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7708
Epoch 993/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4558 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7708
Epoch 994/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4558 - accuracy: 0.7812 - val_loss: 0.4893 - val
_accuracy: 0.7708
Epoch 995/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4558 - accuracy: 0.7812 - val_loss: 0.4893 - val
_accuracy: 0.7708
Epoch 996/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4558 - accuracy: 0.7812 - val_loss: 0.4893 - val
_accuracy: 0.7708
Epoch 997/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4558 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7708
Epoch 998/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4558 - accuracy: 0.7812 - val_loss: 0.4893 - val
_accuracy: 0.7708
Epoch 999/1000
18/18 [==============================] - 0s 4ms/step - loss: 0.4558 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7708
Epoch 1000/1000
18/18 [==============================] - 0s 3ms/step - loss: 0.4558 - accuracy: 0.7830 - val_loss: 0.4893 - val
_accuracy: 0.7708
```

In [104…

```
n = len(run_hist_1.history["loss"])
m = len(run_hist_1b.history['loss'])
fig, ax = plt.subplots(figsize=(16, 8))

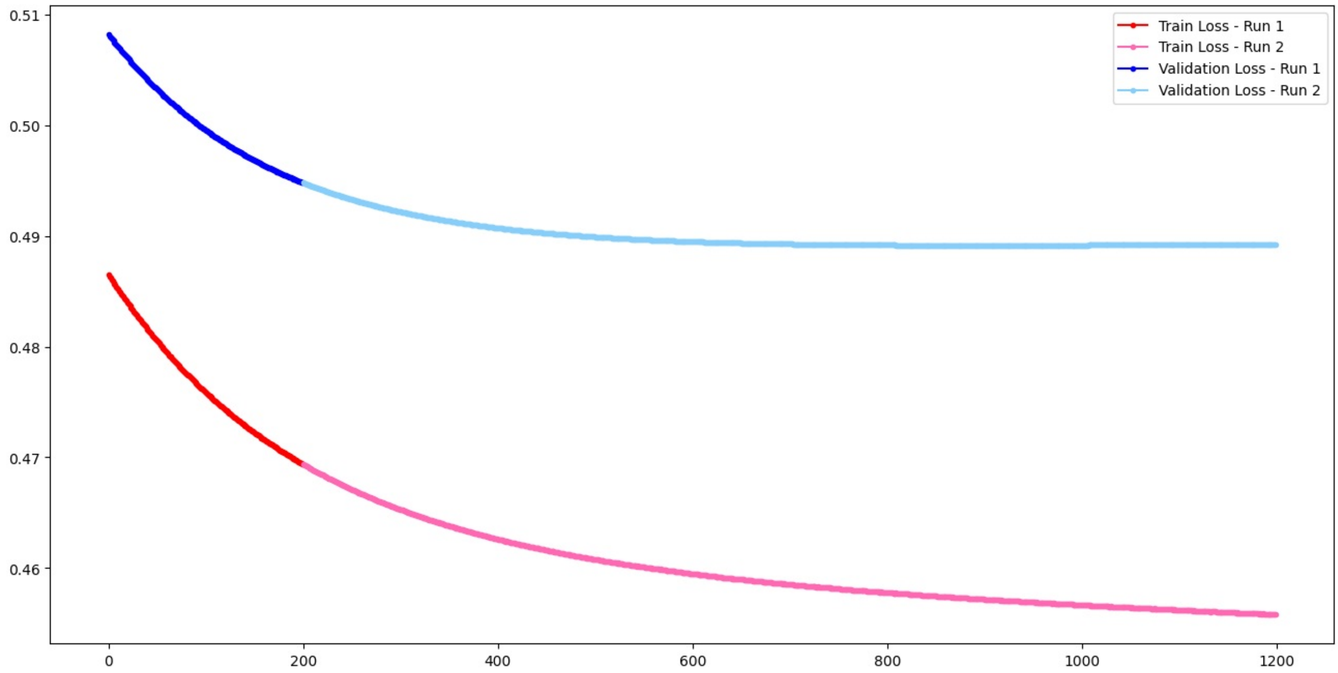
ax.plot(range(n), run_hist_1.history["loss"],'r', marker='.', label="Train Loss - Run 1")
ax.plot(range(n, n+m), run_hist_1b.history["loss"], 'hotpink', marker='.', label="Train Loss - Run 2")

ax.plot(range(n), run_hist_1.history["val_loss"],'b', marker='.', label="Validation Loss - Run 1")
ax.plot(range(n, n+m), run_hist_1b.history["val_loss"], 'LightSkyBlue', marker='.',  label="Validation Loss - Ru

ax.legend()
```

Out[104]:

```
<matplotlib.legend.Legend at 0x7f31bcb238b0>
```




Note that this graph begins where the other left off. While the training loss is still going down, it looks like the validation loss has stabilized (or even gotten worse!). This suggests that our network will not benefit from further training. What is the appropriate number of epochs?

## Rebuild Neural Network

For this, do the following in the cells below:

- Build a model with two hidden layers, each with 6 nodes
- Use the "relu" activation function for the hidden layers, and "sigmoid" for the final layer
- Use a learning rate of .003 and train for 1500 epochs
- Graph the trajectory of the loss functions, accuracy on both train and test set
- Plot the roc curve for the predictions

Experiment with different learning rates, numbers of epochs, and network structures

In [106…

```
model_2 = Sequential()
model_2.add(Dense(6, input_shape=(8,), activation="relu"))
model_2.add(Dense(6,  activation="relu"))
model_2.add(Dense(1, activation="sigmoid"))

model_2.compile(SGD(learning_rate = .003), "binary_crossentropy", metrics=["accuracy"])
run_hist_2 = model_2.fit(X_train_norm, y_train, validation_data=(X_test_norm, y_test), epochs=1500)
```

```
Epoch 1/1500
18/18 [==============================] - 1s 11ms/step - loss: 0.9109 - accuracy: 0.3767 - val_loss: 0.9485 - va
l_accuracy: 0.3646
Epoch 2/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.8947 - accuracy: 0.3819 - val_loss: 0.9308 - val
_accuracy: 0.3698
Epoch 3/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.8798 - accuracy: 0.3819 - val_loss: 0.9147 - val
_accuracy: 0.3802
Epoch 4/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.8662 - accuracy: 0.3924 - val_loss: 0.8999 - val
_accuracy: 0.3802
Epoch 5/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.8538 - accuracy: 0.3958 - val_loss: 0.8864 - val
_accuracy: 0.4010
Epoch 6/1500
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18/18 [==============================] - 0s 4ms/step - loss: 0.8424 - accuracy: 0.4062 - val_loss: 0.8739 - val
_accuracy: 0.4062
Epoch 7/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.8319 - accuracy: 0.4149 - val_loss: 0.8623 - val
_accuracy: 0.4115
Epoch 8/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.8221 - accuracy: 0.4253 - val_loss: 0.8515 - val
_accuracy: 0.4167
Epoch 9/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.8130 - accuracy: 0.4340 - val_loss: 0.8414 - val
_accuracy: 0.4115
Epoch 10/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.8046 - accuracy: 0.4392 - val_loss: 0.8320 - val
_accuracy: 0.4167
Epoch 11/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.7967 - accuracy: 0.4549 - val_loss: 0.8232 - val
_accuracy: 0.4219
Epoch 12/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.7893 - accuracy: 0.4531 - val_loss: 0.8149 - val
_accuracy: 0.4375
Epoch 13/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.7823 - accuracy: 0.4583 - val_loss: 0.8072 - val
_accuracy: 0.4375
Epoch 14/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.7758 - accuracy: 0.4670 - val_loss: 0.7999 - val
_accuracy: 0.4427
Epoch 15/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.7696 - accuracy: 0.4774 - val_loss: 0.7931 - val
_accuracy: 0.4427
Epoch 16/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.7638 - accuracy: 0.4913 - val_loss: 0.7866 - val
_accuracy: 0.4375
Epoch 17/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.7583 - accuracy: 0.4948 - val_loss: 0.7804 - val
_accuracy: 0.4427
Epoch 18/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.7531 - accuracy: 0.5000 - val_loss: 0.7746 - val
_accuracy: 0.4427
Epoch 19/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.7481 - accuracy: 0.5087 - val_loss: 0.7691 - val
_accuracy: 0.4531
Epoch 20/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.7433 - accuracy: 0.5191 - val_loss: 0.7638 - val
_accuracy: 0.4688
Epoch 21/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.7389 - accuracy: 0.5278 - val_loss: 0.7588 - val
_accuracy: 0.4792
Epoch 22/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.7345 - accuracy: 0.5347 - val_loss: 0.7540 - val
_accuracy: 0.4896
Epoch 23/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.7303 - accuracy: 0.5434 - val_loss: 0.7494 - val
_accuracy: 0.4948
Epoch 24/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.7264 - accuracy: 0.5538 - val_loss: 0.7450 - val
_accuracy: 0.5000
Epoch 25/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.7225 - accuracy: 0.5608 - val_loss: 0.7408 - val
_accuracy: 0.5052
Epoch 26/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.7189 - accuracy: 0.5816 - val_loss: 0.7367 - val
_accuracy: 0.5104
Epoch 27/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.7153 - accuracy: 0.5868 - val_loss: 0.7328 - val
_accuracy: 0.5104
Epoch 28/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.7118 - accuracy: 0.5938 - val_loss: 0.7290 - val
_accuracy: 0.5156
Epoch 29/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.7086 - accuracy: 0.6042 - val_loss: 0.7253 - val
_accuracy: 0.5208
Epoch 30/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.7055 - accuracy: 0.6128 - val_loss: 0.7218 - val
_accuracy: 0.5365
Epoch 31/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.7024 - accuracy: 0.6146 - val_loss: 0.7184 - val
_accuracy: 0.5469
Epoch 32/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6994 - accuracy: 0.6215 - val_loss: 0.7151 - val
_accuracy: 0.5573
Epoch 33/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6966 - accuracy: 0.6198 - val_loss: 0.7119 - val
_accuracy: 0.5625
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Epoch 34/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.6938 - accuracy: 0.6198 - val_loss: 0.7088 - val
_accuracy: 0.5677
Epoch 35/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6912 - accuracy: 0.6250 - val_loss: 0.7058 - val
_accuracy: 0.5729
Epoch 36/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6886 - accuracy: 0.6250 - val_loss: 0.7029 - val
_accuracy: 0.5729
Epoch 37/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6861 - accuracy: 0.6285 - val_loss: 0.7000 - val
_accuracy: 0.5833
Epoch 38/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6837 - accuracy: 0.6319 - val_loss: 0.6973 - val
_accuracy: 0.5938
Epoch 39/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6813 - accuracy: 0.6372 - val_loss: 0.6946 - val
_accuracy: 0.5990
Epoch 40/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6790 - accuracy: 0.6424 - val_loss: 0.6919 - val
_accuracy: 0.5990
Epoch 41/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6768 - accuracy: 0.6458 - val_loss: 0.6894 - val
_accuracy: 0.6042
Epoch 42/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6746 - accuracy: 0.6510 - val_loss: 0.6869 - val
_accuracy: 0.6094
Epoch 43/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6725 - accuracy: 0.6632 - val_loss: 0.6845 - val
_accuracy: 0.6094
Epoch 44/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6704 - accuracy: 0.6632 - val_loss: 0.6821 - val
_accuracy: 0.6146
Epoch 45/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6685 - accuracy: 0.6684 - val_loss: 0.6798 - val
_accuracy: 0.6146
Epoch 46/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6665 - accuracy: 0.6684 - val_loss: 0.6776 - val
_accuracy: 0.6146
Epoch 47/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6647 - accuracy: 0.6701 - val_loss: 0.6754 - val
_accuracy: 0.6354
Epoch 48/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6628 - accuracy: 0.6753 - val_loss: 0.6733 - val
_accuracy: 0.6354
Epoch 49/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6610 - accuracy: 0.6771 - val_loss: 0.6712 - val
_accuracy: 0.6354
Epoch 50/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6593 - accuracy: 0.6771 - val_loss: 0.6691 - val
_accuracy: 0.6406
Epoch 51/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6575 - accuracy: 0.6823 - val_loss: 0.6671 - val
_accuracy: 0.6458
Epoch 52/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6559 - accuracy: 0.6875 - val_loss: 0.6651 - val
_accuracy: 0.6458
Epoch 53/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6542 - accuracy: 0.6892 - val_loss: 0.6632 - val
_accuracy: 0.6510
Epoch 54/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6525 - accuracy: 0.6927 - val_loss: 0.6613 - val
_accuracy: 0.6510
Epoch 55/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6510 - accuracy: 0.6944 - val_loss: 0.6595 - val
_accuracy: 0.6510
Epoch 56/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6494 - accuracy: 0.6944 - val_loss: 0.6577 - val
_accuracy: 0.6510
Epoch 57/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6479 - accuracy: 0.6962 - val_loss: 0.6559 - val
_accuracy: 0.6562
Epoch 58/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6464 - accuracy: 0.7014 - val_loss: 0.6541 - val
_accuracy: 0.6615
Epoch 59/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6449 - accuracy: 0.6979 - val_loss: 0.6524 - val
_accuracy: 0.6615
Epoch 60/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6435 - accuracy: 0.7014 - val_loss: 0.6507 - val
_accuracy: 0.6562
Epoch 61/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6420 - accuracy: 0.7014 - val_loss: 0.6491 - val
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_accuracy: 0.6719
Epoch 62/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6407 - accuracy: 0.7031 - val_loss: 0.6474 - val
_accuracy: 0.6771
Epoch 63/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6393 - accuracy: 0.7083 - val_loss: 0.6458 - val
_accuracy: 0.6823
Epoch 64/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6379 - accuracy: 0.7066 - val_loss: 0.6442 - val
_accuracy: 0.6771
Epoch 65/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6366 - accuracy: 0.7101 - val_loss: 0.6427 - val
_accuracy: 0.6823
Epoch 66/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6353 - accuracy: 0.7135 - val_loss: 0.6411 - val
_accuracy: 0.6771
Epoch 67/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6340 - accuracy: 0.7118 - val_loss: 0.6396 - val
_accuracy: 0.6823
Epoch 68/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6327 - accuracy: 0.7135 - val_loss: 0.6382 - val
_accuracy: 0.6875
Epoch 69/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6315 - accuracy: 0.7170 - val_loss: 0.6367 - val
_accuracy: 0.6875
Epoch 70/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6302 - accuracy: 0.7153 - val_loss: 0.6353 - val
_accuracy: 0.6979
Epoch 71/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6290 - accuracy: 0.7188 - val_loss: 0.6339 - val
_accuracy: 0.7031
Epoch 72/1500
18/18 [==============================] - 0s 9ms/step - loss: 0.6278 - accuracy: 0.7170 - val_loss: 0.6325 - val
_accuracy: 0.6979
Epoch 73/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6267 - accuracy: 0.7170 - val_loss: 0.6311 - val
_accuracy: 0.6979
Epoch 74/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6254 - accuracy: 0.7170 - val_loss: 0.6298 - val
_accuracy: 0.6979
Epoch 75/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6243 - accuracy: 0.7153 - val_loss: 0.6284 - val
_accuracy: 0.6927
Epoch 76/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6232 - accuracy: 0.7153 - val_loss: 0.6271 - val
_accuracy: 0.6979
Epoch 77/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6221 - accuracy: 0.7118 - val_loss: 0.6258 - val
_accuracy: 0.6979
Epoch 78/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6210 - accuracy: 0.7135 - val_loss: 0.6245 - val
_accuracy: 0.7083
Epoch 79/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6199 - accuracy: 0.7135 - val_loss: 0.6233 - val
_accuracy: 0.7083
Epoch 80/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.6188 - accuracy: 0.7170 - val_loss: 0.6220 - val
_accuracy: 0.7083
Epoch 81/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6178 - accuracy: 0.7170 - val_loss: 0.6208 - val
_accuracy: 0.7135
Epoch 82/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6167 - accuracy: 0.7205 - val_loss: 0.6196 - val
_accuracy: 0.7135
Epoch 83/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6157 - accuracy: 0.7240 - val_loss: 0.6184 - val
_accuracy: 0.7135
Epoch 84/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6147 - accuracy: 0.7257 - val_loss: 0.6173 - val
_accuracy: 0.7135
Epoch 85/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6137 - accuracy: 0.7257 - val_loss: 0.6161 - val
_accuracy: 0.7188
Epoch 86/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6127 - accuracy: 0.7274 - val_loss: 0.6149 - val
_accuracy: 0.7188
Epoch 87/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6118 - accuracy: 0.7309 - val_loss: 0.6138 - val
_accuracy: 0.7188
Epoch 88/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6108 - accuracy: 0.7292 - val_loss: 0.6127 - val
_accuracy: 0.7188
Epoch 89/1500
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18/18 [==============================] - 0s 4ms/step - loss: 0.6098 - accuracy: 0.7309 - val_loss: 0.6116 - val
_accuracy: 0.7188
Epoch 90/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6089 - accuracy: 0.7292 - val_loss: 0.6105 - val
_accuracy: 0.7240
Epoch 91/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6080 - accuracy: 0.7326 - val_loss: 0.6094 - val
_accuracy: 0.7240
Epoch 92/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6070 - accuracy: 0.7309 - val_loss: 0.6084 - val
_accuracy: 0.7240
Epoch 93/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.6061 - accuracy: 0.7326 - val_loss: 0.6073 - val
_accuracy: 0.7188
Epoch 94/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6052 - accuracy: 0.7326 - val_loss: 0.6063 - val
_accuracy: 0.7188
Epoch 95/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6043 - accuracy: 0.7309 - val_loss: 0.6052 - val
_accuracy: 0.7188
Epoch 96/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6034 - accuracy: 0.7361 - val_loss: 0.6042 - val
_accuracy: 0.7188
Epoch 97/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6025 - accuracy: 0.7361 - val_loss: 0.6032 - val
_accuracy: 0.7188
Epoch 98/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6017 - accuracy: 0.7344 - val_loss: 0.6022 - val
_accuracy: 0.7135
Epoch 99/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.6008 - accuracy: 0.7344 - val_loss: 0.6012 - val
_accuracy: 0.7188
Epoch 100/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5999 - accuracy: 0.7344 - val_loss: 0.6003 - val
_accuracy: 0.7188
Epoch 101/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5991 - accuracy: 0.7292 - val_loss: 0.5993 - val
_accuracy: 0.7188
Epoch 102/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5982 - accuracy: 0.7326 - val_loss: 0.5984 - val
_accuracy: 0.7188
Epoch 103/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5974 - accuracy: 0.7309 - val_loss: 0.5974 - val
_accuracy: 0.7188
Epoch 104/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5965 - accuracy: 0.7396 - val_loss: 0.5965 - val
_accuracy: 0.7188
Epoch 105/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5957 - accuracy: 0.7396 - val_loss: 0.5956 - val
_accuracy: 0.7188
Epoch 106/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5949 - accuracy: 0.7448 - val_loss: 0.5947 - val
_accuracy: 0.7188
Epoch 107/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5942 - accuracy: 0.7413 - val_loss: 0.5938 - val
_accuracy: 0.7188
Epoch 108/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5934 - accuracy: 0.7431 - val_loss: 0.5929 - val
_accuracy: 0.7188
Epoch 109/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5926 - accuracy: 0.7431 - val_loss: 0.5920 - val
_accuracy: 0.7188
Epoch 110/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5918 - accuracy: 0.7413 - val_loss: 0.5912 - val
_accuracy: 0.7188
Epoch 111/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5910 - accuracy: 0.7448 - val_loss: 0.5903 - val
_accuracy: 0.7188
Epoch 112/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5903 - accuracy: 0.7431 - val_loss: 0.5895 - val
_accuracy: 0.7188
Epoch 113/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5895 - accuracy: 0.7465 - val_loss: 0.5887 - val
_accuracy: 0.7188
Epoch 114/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5888 - accuracy: 0.7465 - val_loss: 0.5878 - val
_accuracy: 0.7240
Epoch 115/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5880 - accuracy: 0.7483 - val_loss: 0.5870 - val
_accuracy: 0.7240
Epoch 116/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5873 - accuracy: 0.7500 - val_loss: 0.5862 - val
_accuracy: 0.7240
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Epoch 117/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5866 - accuracy: 0.7483 - val_loss: 0.5854 - val
_accuracy: 0.7240
Epoch 118/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5859 - accuracy: 0.7483 - val_loss: 0.5846 - val
_accuracy: 0.7240
Epoch 119/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5852 - accuracy: 0.7483 - val_loss: 0.5838 - val
_accuracy: 0.7240
Epoch 120/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5844 - accuracy: 0.7483 - val_loss: 0.5830 - val
_accuracy: 0.7240
Epoch 121/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5838 - accuracy: 0.7465 - val_loss: 0.5822 - val
_accuracy: 0.7292
Epoch 122/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5830 - accuracy: 0.7465 - val_loss: 0.5815 - val
_accuracy: 0.7292
Epoch 123/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5824 - accuracy: 0.7500 - val_loss: 0.5807 - val
_accuracy: 0.7292
Epoch 124/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5817 - accuracy: 0.7500 - val_loss: 0.5799 - val
_accuracy: 0.7292
Epoch 125/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5810 - accuracy: 0.7500 - val_loss: 0.5792 - val
_accuracy: 0.7292
Epoch 126/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5804 - accuracy: 0.7500 - val_loss: 0.5785 - val
_accuracy: 0.7344
Epoch 127/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5797 - accuracy: 0.7483 - val_loss: 0.5777 - val
_accuracy: 0.7344
Epoch 128/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5791 - accuracy: 0.7500 - val_loss: 0.5770 - val
_accuracy: 0.7344
Epoch 129/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5785 - accuracy: 0.7500 - val_loss: 0.5763 - val
_accuracy: 0.7344
Epoch 130/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5778 - accuracy: 0.7500 - val_loss: 0.5757 - val
_accuracy: 0.7344
Epoch 131/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5772 - accuracy: 0.7500 - val_loss: 0.5750 - val
_accuracy: 0.7292
Epoch 132/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5765 - accuracy: 0.7535 - val_loss: 0.5743 - val
_accuracy: 0.7292
Epoch 133/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5759 - accuracy: 0.7552 - val_loss: 0.5736 - val
_accuracy: 0.7292
Epoch 134/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5753 - accuracy: 0.7535 - val_loss: 0.5730 - val
_accuracy: 0.7292
Epoch 135/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5747 - accuracy: 0.7552 - val_loss: 0.5723 - val
_accuracy: 0.7292
Epoch 136/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5741 - accuracy: 0.7552 - val_loss: 0.5717 - val
_accuracy: 0.7292
Epoch 137/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5734 - accuracy: 0.7552 - val_loss: 0.5711 - val
_accuracy: 0.7292
Epoch 138/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5728 - accuracy: 0.7535 - val_loss: 0.5705 - val
_accuracy: 0.7292
Epoch 139/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5723 - accuracy: 0.7535 - val_loss: 0.5698 - val
_accuracy: 0.7292
Epoch 140/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5717 - accuracy: 0.7517 - val_loss: 0.5692 - val
_accuracy: 0.7292
Epoch 141/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5711 - accuracy: 0.7517 - val_loss: 0.5687 - val
_accuracy: 0.7240
Epoch 142/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5705 - accuracy: 0.7517 - val_loss: 0.5681 - val
_accuracy: 0.7240
Epoch 143/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5699 - accuracy: 0.7517 - val_loss: 0.5675 - val
_accuracy: 0.7240
Epoch 144/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5693 - accuracy: 0.7517 - val_loss: 0.5669 - val
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_accuracy: 0.7240
Epoch 145/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5688 - accuracy: 0.7517 - val_loss: 0.5663 - val
_accuracy: 0.7240
Epoch 146/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5682 - accuracy: 0.7517 - val_loss: 0.5658 - val
_accuracy: 0.7240
Epoch 147/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5676 - accuracy: 0.7535 - val_loss: 0.5652 - val
_accuracy: 0.7292
Epoch 148/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5671 - accuracy: 0.7535 - val_loss: 0.5646 - val
_accuracy: 0.7292
Epoch 149/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5666 - accuracy: 0.7535 - val_loss: 0.5641 - val
_accuracy: 0.7292
Epoch 150/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5660 - accuracy: 0.7517 - val_loss: 0.5636 - val
_accuracy: 0.7292
Epoch 151/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5655 - accuracy: 0.7552 - val_loss: 0.5630 - val
_accuracy: 0.7292
Epoch 152/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5649 - accuracy: 0.7535 - val_loss: 0.5625 - val
_accuracy: 0.7292
Epoch 153/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5644 - accuracy: 0.7552 - val_loss: 0.5620 - val
_accuracy: 0.7344
Epoch 154/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5639 - accuracy: 0.7552 - val_loss: 0.5615 - val
_accuracy: 0.7344
Epoch 155/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5634 - accuracy: 0.7552 - val_loss: 0.5609 - val
_accuracy: 0.7344
Epoch 156/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5629 - accuracy: 0.7552 - val_loss: 0.5604 - val
_accuracy: 0.7344
Epoch 157/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5623 - accuracy: 0.7552 - val_loss: 0.5599 - val
_accuracy: 0.7344
Epoch 158/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5618 - accuracy: 0.7587 - val_loss: 0.5594 - val
_accuracy: 0.7344
Epoch 159/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5613 - accuracy: 0.7587 - val_loss: 0.5589 - val
_accuracy: 0.7292
Epoch 160/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5608 - accuracy: 0.7587 - val_loss: 0.5585 - val
_accuracy: 0.7292
Epoch 161/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5604 - accuracy: 0.7587 - val_loss: 0.5580 - val
_accuracy: 0.7292
Epoch 162/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5598 - accuracy: 0.7587 - val_loss: 0.5575 - val
_accuracy: 0.7292
Epoch 163/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5593 - accuracy: 0.7587 - val_loss: 0.5570 - val
_accuracy: 0.7344
Epoch 164/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5588 - accuracy: 0.7604 - val_loss: 0.5565 - val
_accuracy: 0.7292
Epoch 165/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5584 - accuracy: 0.7587 - val_loss: 0.5560 - val
_accuracy: 0.7292
Epoch 166/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5579 - accuracy: 0.7587 - val_loss: 0.5556 - val
_accuracy: 0.7292
Epoch 167/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5574 - accuracy: 0.7622 - val_loss: 0.5551 - val
_accuracy: 0.7292
Epoch 168/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5569 - accuracy: 0.7604 - val_loss: 0.5546 - val
_accuracy: 0.7292
Epoch 169/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5564 - accuracy: 0.7587 - val_loss: 0.5542 - val
_accuracy: 0.7292
Epoch 170/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5559 - accuracy: 0.7622 - val_loss: 0.5537 - val
_accuracy: 0.7292
Epoch 171/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5555 - accuracy: 0.7622 - val_loss: 0.5533 - val
_accuracy: 0.7240
Epoch 172/1500
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18/18 [==============================] - 0s 4ms/step - loss: 0.5551 - accuracy: 0.7622 - val_loss: 0.5528 - val
_accuracy: 0.7240
Epoch 173/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5546 - accuracy: 0.7622 - val_loss: 0.5524 - val
_accuracy: 0.7240
Epoch 174/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5542 - accuracy: 0.7622 - val_loss: 0.5520 - val
_accuracy: 0.7240
Epoch 175/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5537 - accuracy: 0.7622 - val_loss: 0.5516 - val
_accuracy: 0.7240
Epoch 176/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5532 - accuracy: 0.7622 - val_loss: 0.5512 - val
_accuracy: 0.7240
Epoch 177/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5528 - accuracy: 0.7622 - val_loss: 0.5507 - val
_accuracy: 0.7240
Epoch 178/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.5523 - accuracy: 0.7604 - val_loss: 0.5503 - val
_accuracy: 0.7240
Epoch 179/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5519 - accuracy: 0.7604 - val_loss: 0.5499 - val
_accuracy: 0.7240
Epoch 180/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5514 - accuracy: 0.7604 - val_loss: 0.5495 - val
_accuracy: 0.7240
Epoch 181/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5510 - accuracy: 0.7604 - val_loss: 0.5491 - val
_accuracy: 0.7240
Epoch 182/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5505 - accuracy: 0.7604 - val_loss: 0.5487 - val
_accuracy: 0.7240
Epoch 183/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5501 - accuracy: 0.7604 - val_loss: 0.5483 - val
_accuracy: 0.7240
Epoch 184/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5497 - accuracy: 0.7622 - val_loss: 0.5479 - val
_accuracy: 0.7240
Epoch 185/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5492 - accuracy: 0.7587 - val_loss: 0.5475 - val
_accuracy: 0.7240
Epoch 186/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5489 - accuracy: 0.7604 - val_loss: 0.5472 - val
_accuracy: 0.7240
Epoch 187/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5484 - accuracy: 0.7604 - val_loss: 0.5468 - val
_accuracy: 0.7240
Epoch 188/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5480 - accuracy: 0.7604 - val_loss: 0.5464 - val
_accuracy: 0.7240
Epoch 189/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5476 - accuracy: 0.7622 - val_loss: 0.5461 - val
_accuracy: 0.7240
Epoch 190/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5472 - accuracy: 0.7639 - val_loss: 0.5457 - val
_accuracy: 0.7240
Epoch 191/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5467 - accuracy: 0.7622 - val_loss: 0.5454 - val
_accuracy: 0.7240
Epoch 192/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5464 - accuracy: 0.7639 - val_loss: 0.5451 - val
_accuracy: 0.7240
Epoch 193/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5460 - accuracy: 0.7622 - val_loss: 0.5447 - val
_accuracy: 0.7240
Epoch 194/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5456 - accuracy: 0.7622 - val_loss: 0.5444 - val
_accuracy: 0.7240
Epoch 195/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5453 - accuracy: 0.7622 - val_loss: 0.5441 - val
_accuracy: 0.7240
Epoch 196/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5448 - accuracy: 0.7639 - val_loss: 0.5438 - val
_accuracy: 0.7240
Epoch 197/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5445 - accuracy: 0.7639 - val_loss: 0.5435 - val
_accuracy: 0.7240
Epoch 198/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5441 - accuracy: 0.7639 - val_loss: 0.5432 - val
_accuracy: 0.7240
Epoch 199/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5437 - accuracy: 0.7622 - val_loss: 0.5428 - val
_accuracy: 0.7240
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Epoch 200/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5434 - accuracy: 0.7656 - val_loss: 0.5425 - val
_accuracy: 0.7240
Epoch 201/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5431 - accuracy: 0.7622 - val_loss: 0.5422 - val
_accuracy: 0.7292
Epoch 202/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5426 - accuracy: 0.7639 - val_loss: 0.5419 - val
_accuracy: 0.7292
Epoch 203/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5423 - accuracy: 0.7604 - val_loss: 0.5416 - val
_accuracy: 0.7344
Epoch 204/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5419 - accuracy: 0.7639 - val_loss: 0.5414 - val
_accuracy: 0.7344
Epoch 205/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5416 - accuracy: 0.7656 - val_loss: 0.5411 - val
_accuracy: 0.7344
Epoch 206/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5412 - accuracy: 0.7604 - val_loss: 0.5408 - val
_accuracy: 0.7344
Epoch 207/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5409 - accuracy: 0.7604 - val_loss: 0.5405 - val
_accuracy: 0.7344
Epoch 208/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5405 - accuracy: 0.7604 - val_loss: 0.5402 - val
_accuracy: 0.7344
Epoch 209/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5401 - accuracy: 0.7622 - val_loss: 0.5399 - val
_accuracy: 0.7344
Epoch 210/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5398 - accuracy: 0.7604 - val_loss: 0.5396 - val
_accuracy: 0.7344
Epoch 211/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5395 - accuracy: 0.7622 - val_loss: 0.5394 - val
_accuracy: 0.7344
Epoch 212/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5391 - accuracy: 0.7604 - val_loss: 0.5391 - val
_accuracy: 0.7344
Epoch 213/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5387 - accuracy: 0.7622 - val_loss: 0.5388 - val
_accuracy: 0.7344
Epoch 214/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5384 - accuracy: 0.7622 - val_loss: 0.5386 - val
_accuracy: 0.7344
Epoch 215/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5381 - accuracy: 0.7622 - val_loss: 0.5383 - val
_accuracy: 0.7344
Epoch 216/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.5378 - accuracy: 0.7639 - val_loss: 0.5380 - val
_accuracy: 0.7344
Epoch 217/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.5375 - accuracy: 0.7622 - val_loss: 0.5378 - val
_accuracy: 0.7344
Epoch 218/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.5371 - accuracy: 0.7639 - val_loss: 0.5375 - val
_accuracy: 0.7344
Epoch 219/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.5368 - accuracy: 0.7656 - val_loss: 0.5373 - val
_accuracy: 0.7344
Epoch 220/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.5364 - accuracy: 0.7691 - val_loss: 0.5370 - val
_accuracy: 0.7344
Epoch 221/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5362 - accuracy: 0.7639 - val_loss: 0.5368 - val
_accuracy: 0.7396
Epoch 222/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5358 - accuracy: 0.7639 - val_loss: 0.5365 - val
_accuracy: 0.7396
Epoch 223/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5355 - accuracy: 0.7639 - val_loss: 0.5362 - val
_accuracy: 0.7396
Epoch 224/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5352 - accuracy: 0.7639 - val_loss: 0.5360 - val
_accuracy: 0.7448
Epoch 225/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5349 - accuracy: 0.7656 - val_loss: 0.5358 - val
_accuracy: 0.7448
Epoch 226/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5346 - accuracy: 0.7674 - val_loss: 0.5355 - val
_accuracy: 0.7448
Epoch 227/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5343 - accuracy: 0.7691 - val_loss: 0.5353 - val
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_accuracy: 0.7500
Epoch 228/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5340 - accuracy: 0.7708 - val_loss: 0.5351 - val
_accuracy: 0.7500
Epoch 229/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5336 - accuracy: 0.7691 - val_loss: 0.5348 - val
_accuracy: 0.7500
Epoch 230/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5333 - accuracy: 0.7691 - val_loss: 0.5346 - val
_accuracy: 0.7500
Epoch 231/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5330 - accuracy: 0.7691 - val_loss: 0.5344 - val
_accuracy: 0.7500
Epoch 232/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5327 - accuracy: 0.7674 - val_loss: 0.5341 - val
_accuracy: 0.7500
Epoch 233/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5324 - accuracy: 0.7691 - val_loss: 0.5339 - val
_accuracy: 0.7500
Epoch 234/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5321 - accuracy: 0.7691 - val_loss: 0.5337 - val
_accuracy: 0.7500
Epoch 235/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5318 - accuracy: 0.7691 - val_loss: 0.5334 - val
_accuracy: 0.7552
Epoch 236/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5314 - accuracy: 0.7726 - val_loss: 0.5332 - val
_accuracy: 0.7552
Epoch 237/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5312 - accuracy: 0.7708 - val_loss: 0.5330 - val
_accuracy: 0.7552
Epoch 238/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5309 - accuracy: 0.7708 - val_loss: 0.5328 - val
_accuracy: 0.7552
Epoch 239/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5306 - accuracy: 0.7708 - val_loss: 0.5326 - val
_accuracy: 0.7552
Epoch 240/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5303 - accuracy: 0.7726 - val_loss: 0.5324 - val
_accuracy: 0.7552
Epoch 241/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5300 - accuracy: 0.7708 - val_loss: 0.5321 - val
_accuracy: 0.7552
Epoch 242/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5296 - accuracy: 0.7708 - val_loss: 0.5319 - val
_accuracy: 0.7552
Epoch 243/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5294 - accuracy: 0.7726 - val_loss: 0.5317 - val
_accuracy: 0.7552
Epoch 244/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5291 - accuracy: 0.7726 - val_loss: 0.5315 - val
_accuracy: 0.7552
Epoch 245/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5288 - accuracy: 0.7726 - val_loss: 0.5313 - val
_accuracy: 0.7552
Epoch 246/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5285 - accuracy: 0.7743 - val_loss: 0.5311 - val
_accuracy: 0.7552
Epoch 247/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5282 - accuracy: 0.7743 - val_loss: 0.5309 - val
_accuracy: 0.7552
Epoch 248/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5280 - accuracy: 0.7726 - val_loss: 0.5307 - val
_accuracy: 0.7552
Epoch 249/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5277 - accuracy: 0.7743 - val_loss: 0.5305 - val
_accuracy: 0.7552
Epoch 250/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5274 - accuracy: 0.7708 - val_loss: 0.5303 - val
_accuracy: 0.7552
Epoch 251/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5271 - accuracy: 0.7743 - val_loss: 0.5301 - val
_accuracy: 0.7552
Epoch 252/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5268 - accuracy: 0.7726 - val_loss: 0.5300 - val
_accuracy: 0.7552
Epoch 253/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5265 - accuracy: 0.7726 - val_loss: 0.5298 - val
_accuracy: 0.7552
Epoch 254/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5263 - accuracy: 0.7726 - val_loss: 0.5296 - val
_accuracy: 0.7552
Epoch 255/1500
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18/18 [==============================] - 0s 4ms/step - loss: 0.5260 - accuracy: 0.7726 - val_loss: 0.5294 - val
_accuracy: 0.7552
Epoch 256/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5257 - accuracy: 0.7726 - val_loss: 0.5292 - val
_accuracy: 0.7552
Epoch 257/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5254 - accuracy: 0.7726 - val_loss: 0.5290 - val
_accuracy: 0.7552
Epoch 258/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5252 - accuracy: 0.7726 - val_loss: 0.5289 - val
_accuracy: 0.7552
Epoch 259/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5249 - accuracy: 0.7708 - val_loss: 0.5287 - val
_accuracy: 0.7552
Epoch 260/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5246 - accuracy: 0.7708 - val_loss: 0.5286 - val
_accuracy: 0.7552
Epoch 261/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5243 - accuracy: 0.7726 - val_loss: 0.5284 - val
_accuracy: 0.7552
Epoch 262/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.5240 - accuracy: 0.7726 - val_loss: 0.5282 - val
_accuracy: 0.7552
Epoch 263/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5238 - accuracy: 0.7726 - val_loss: 0.5281 - val
_accuracy: 0.7552
Epoch 264/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5236 - accuracy: 0.7726 - val_loss: 0.5279 - val
_accuracy: 0.7552
Epoch 265/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5233 - accuracy: 0.7726 - val_loss: 0.5278 - val
_accuracy: 0.7552
Epoch 266/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5231 - accuracy: 0.7726 - val_loss: 0.5276 - val
_accuracy: 0.7552
Epoch 267/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5228 - accuracy: 0.7726 - val_loss: 0.5274 - val
_accuracy: 0.7552
Epoch 268/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5225 - accuracy: 0.7726 - val_loss: 0.5273 - val
_accuracy: 0.7552
Epoch 269/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5223 - accuracy: 0.7726 - val_loss: 0.5271 - val
_accuracy: 0.7552
Epoch 270/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5219 - accuracy: 0.7726 - val_loss: 0.5270 - val
_accuracy: 0.7500
Epoch 271/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5218 - accuracy: 0.7708 - val_loss: 0.5268 - val
_accuracy: 0.7500
Epoch 272/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5215 - accuracy: 0.7708 - val_loss: 0.5267 - val
_accuracy: 0.7500
Epoch 273/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5213 - accuracy: 0.7691 - val_loss: 0.5265 - val
_accuracy: 0.7500
Epoch 274/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5210 - accuracy: 0.7708 - val_loss: 0.5264 - val
_accuracy: 0.7500
Epoch 275/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5207 - accuracy: 0.7708 - val_loss: 0.5262 - val
_accuracy: 0.7448
Epoch 276/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5205 - accuracy: 0.7691 - val_loss: 0.5261 - val
_accuracy: 0.7448
Epoch 277/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5202 - accuracy: 0.7691 - val_loss: 0.5259 - val
_accuracy: 0.7448
Epoch 278/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5200 - accuracy: 0.7691 - val_loss: 0.5258 - val
_accuracy: 0.7448
Epoch 279/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5197 - accuracy: 0.7691 - val_loss: 0.5256 - val
_accuracy: 0.7448
Epoch 280/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5195 - accuracy: 0.7691 - val_loss: 0.5254 - val
_accuracy: 0.7448
Epoch 281/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5192 - accuracy: 0.7691 - val_loss: 0.5253 - val
_accuracy: 0.7448
Epoch 282/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5190 - accuracy: 0.7691 - val_loss: 0.5251 - val
_accuracy: 0.7448
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Epoch 283/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5187 - accuracy: 0.7691 - val_loss: 0.5250 - val
_accuracy: 0.7448
Epoch 284/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5184 - accuracy: 0.7691 - val_loss: 0.5248 - val
_accuracy: 0.7448
Epoch 285/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5182 - accuracy: 0.7691 - val_loss: 0.5247 - val
_accuracy: 0.7448
Epoch 286/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5179 - accuracy: 0.7674 - val_loss: 0.5245 - val
_accuracy: 0.7448
Epoch 287/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5177 - accuracy: 0.7691 - val_loss: 0.5244 - val
_accuracy: 0.7448
Epoch 288/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5174 - accuracy: 0.7674 - val_loss: 0.5243 - val
_accuracy: 0.7448
Epoch 289/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5172 - accuracy: 0.7691 - val_loss: 0.5241 - val
_accuracy: 0.7448
Epoch 290/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5169 - accuracy: 0.7674 - val_loss: 0.5240 - val
_accuracy: 0.7448
Epoch 291/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5166 - accuracy: 0.7691 - val_loss: 0.5239 - val
_accuracy: 0.7448
Epoch 292/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5165 - accuracy: 0.7691 - val_loss: 0.5237 - val
_accuracy: 0.7500
Epoch 293/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5162 - accuracy: 0.7691 - val_loss: 0.5236 - val
_accuracy: 0.7500
Epoch 294/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5160 - accuracy: 0.7674 - val_loss: 0.5235 - val
_accuracy: 0.7500
Epoch 295/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5158 - accuracy: 0.7691 - val_loss: 0.5234 - val
_accuracy: 0.7500
Epoch 296/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5156 - accuracy: 0.7691 - val_loss: 0.5232 - val
_accuracy: 0.7500
Epoch 297/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5153 - accuracy: 0.7691 - val_loss: 0.5231 - val
_accuracy: 0.7500
Epoch 298/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5150 - accuracy: 0.7708 - val_loss: 0.5230 - val
_accuracy: 0.7500
Epoch 299/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5148 - accuracy: 0.7708 - val_loss: 0.5229 - val
_accuracy: 0.7500
Epoch 300/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5146 - accuracy: 0.7708 - val_loss: 0.5228 - val
_accuracy: 0.7500
Epoch 301/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5143 - accuracy: 0.7726 - val_loss: 0.5227 - val
_accuracy: 0.7500
Epoch 302/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5142 - accuracy: 0.7708 - val_loss: 0.5225 - val
_accuracy: 0.7500
Epoch 303/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5139 - accuracy: 0.7691 - val_loss: 0.5224 - val
_accuracy: 0.7500
Epoch 304/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5136 - accuracy: 0.7708 - val_loss: 0.5223 - val
_accuracy: 0.7500
Epoch 305/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5135 - accuracy: 0.7760 - val_loss: 0.5222 - val
_accuracy: 0.7500
Epoch 306/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5132 - accuracy: 0.7760 - val_loss: 0.5221 - val
_accuracy: 0.7500
Epoch 307/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5130 - accuracy: 0.7726 - val_loss: 0.5220 - val
_accuracy: 0.7500
Epoch 308/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5128 - accuracy: 0.7760 - val_loss: 0.5219 - val
_accuracy: 0.7500
Epoch 309/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5126 - accuracy: 0.7760 - val_loss: 0.5218 - val
_accuracy: 0.7448
Epoch 310/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5123 - accuracy: 0.7743 - val_loss: 0.5217 - val
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_accuracy: 0.7448
Epoch 311/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5122 - accuracy: 0.7760 - val_loss: 0.5217 - val
_accuracy: 0.7448
Epoch 312/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5119 - accuracy: 0.7778 - val_loss: 0.5216 - val
_accuracy: 0.7448
Epoch 313/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5117 - accuracy: 0.7778 - val_loss: 0.5215 - val
_accuracy: 0.7448
Epoch 314/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5115 - accuracy: 0.7778 - val_loss: 0.5214 - val
_accuracy: 0.7448
Epoch 315/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5113 - accuracy: 0.7760 - val_loss: 0.5213 - val
_accuracy: 0.7448
Epoch 316/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5111 - accuracy: 0.7760 - val_loss: 0.5212 - val
_accuracy: 0.7448
Epoch 317/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5109 - accuracy: 0.7760 - val_loss: 0.5210 - val
_accuracy: 0.7448
Epoch 318/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5107 - accuracy: 0.7760 - val_loss: 0.5209 - val
_accuracy: 0.7448
Epoch 319/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5104 - accuracy: 0.7760 - val_loss: 0.5208 - val
_accuracy: 0.7448
Epoch 320/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5103 - accuracy: 0.7760 - val_loss: 0.5208 - val
_accuracy: 0.7448
Epoch 321/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5100 - accuracy: 0.7760 - val_loss: 0.5207 - val
_accuracy: 0.7448
Epoch 322/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5099 - accuracy: 0.7760 - val_loss: 0.5206 - val
_accuracy: 0.7448
Epoch 323/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5096 - accuracy: 0.7778 - val_loss: 0.5205 - val
_accuracy: 0.7448
Epoch 324/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5095 - accuracy: 0.7760 - val_loss: 0.5204 - val
_accuracy: 0.7448
Epoch 325/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5092 - accuracy: 0.7760 - val_loss: 0.5203 - val
_accuracy: 0.7448
Epoch 326/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5090 - accuracy: 0.7760 - val_loss: 0.5203 - val
_accuracy: 0.7448
Epoch 327/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5088 - accuracy: 0.7760 - val_loss: 0.5202 - val
_accuracy: 0.7448
Epoch 328/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5087 - accuracy: 0.7760 - val_loss: 0.5201 - val
_accuracy: 0.7448
Epoch 329/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5085 - accuracy: 0.7760 - val_loss: 0.5200 - val
_accuracy: 0.7448
Epoch 330/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5083 - accuracy: 0.7760 - val_loss: 0.5199 - val
_accuracy: 0.7448
Epoch 331/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5080 - accuracy: 0.7743 - val_loss: 0.5198 - val
_accuracy: 0.7448
Epoch 332/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5078 - accuracy: 0.7743 - val_loss: 0.5198 - val
_accuracy: 0.7448
Epoch 333/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5076 - accuracy: 0.7795 - val_loss: 0.5197 - val
_accuracy: 0.7448
Epoch 334/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5075 - accuracy: 0.7743 - val_loss: 0.5196 - val
_accuracy: 0.7448
Epoch 335/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5072 - accuracy: 0.7743 - val_loss: 0.5195 - val
_accuracy: 0.7448
Epoch 336/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5071 - accuracy: 0.7760 - val_loss: 0.5194 - val
_accuracy: 0.7448
Epoch 337/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5069 - accuracy: 0.7778 - val_loss: 0.5194 - val
_accuracy: 0.7448
Epoch 338/1500
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18/18 [==============================] - 0s 4ms/step - loss: 0.5066 - accuracy: 0.7760 - val_loss: 0.5193 - val
_accuracy: 0.7448
Epoch 339/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5064 - accuracy: 0.7778 - val_loss: 0.5192 - val
_accuracy: 0.7448
Epoch 340/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5063 - accuracy: 0.7778 - val_loss: 0.5192 - val
_accuracy: 0.7448
Epoch 341/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5061 - accuracy: 0.7778 - val_loss: 0.5191 - val
_accuracy: 0.7500
Epoch 342/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5059 - accuracy: 0.7778 - val_loss: 0.5190 - val
_accuracy: 0.7500
Epoch 343/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.5058 - accuracy: 0.7778 - val_loss: 0.5189 - val
_accuracy: 0.7500
Epoch 344/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5054 - accuracy: 0.7778 - val_loss: 0.5189 - val
_accuracy: 0.7500
Epoch 345/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5053 - accuracy: 0.7778 - val_loss: 0.5188 - val
_accuracy: 0.7500
Epoch 346/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5050 - accuracy: 0.7778 - val_loss: 0.5187 - val
_accuracy: 0.7500
Epoch 347/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5048 - accuracy: 0.7778 - val_loss: 0.5186 - val
_accuracy: 0.7500
Epoch 348/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5047 - accuracy: 0.7778 - val_loss: 0.5186 - val
_accuracy: 0.7500
Epoch 349/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5045 - accuracy: 0.7726 - val_loss: 0.5185 - val
_accuracy: 0.7500
Epoch 350/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5043 - accuracy: 0.7760 - val_loss: 0.5185 - val
_accuracy: 0.7500
Epoch 351/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5042 - accuracy: 0.7743 - val_loss: 0.5184 - val
_accuracy: 0.7500
Epoch 352/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5039 - accuracy: 0.7726 - val_loss: 0.5183 - val
_accuracy: 0.7500
Epoch 353/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5037 - accuracy: 0.7726 - val_loss: 0.5182 - val
_accuracy: 0.7500
Epoch 354/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5035 - accuracy: 0.7726 - val_loss: 0.5182 - val
_accuracy: 0.7500
Epoch 355/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.5033 - accuracy: 0.7708 - val_loss: 0.5181 - val
_accuracy: 0.7500
Epoch 356/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5032 - accuracy: 0.7708 - val_loss: 0.5181 - val
_accuracy: 0.7500
Epoch 357/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5030 - accuracy: 0.7726 - val_loss: 0.5180 - val
_accuracy: 0.7500
Epoch 358/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5028 - accuracy: 0.7708 - val_loss: 0.5180 - val
_accuracy: 0.7500
Epoch 359/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5026 - accuracy: 0.7708 - val_loss: 0.5179 - val
_accuracy: 0.7500
Epoch 360/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5025 - accuracy: 0.7726 - val_loss: 0.5178 - val
_accuracy: 0.7500
Epoch 361/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5023 - accuracy: 0.7708 - val_loss: 0.5178 - val
_accuracy: 0.7500
Epoch 362/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5020 - accuracy: 0.7708 - val_loss: 0.5177 - val
_accuracy: 0.7500
Epoch 363/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5019 - accuracy: 0.7726 - val_loss: 0.5177 - val
_accuracy: 0.7500
Epoch 364/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5018 - accuracy: 0.7726 - val_loss: 0.5176 - val
_accuracy: 0.7500
Epoch 365/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5015 - accuracy: 0.7726 - val_loss: 0.5176 - val
_accuracy: 0.7500
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Epoch 366/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5013 - accuracy: 0.7691 - val_loss: 0.5175 - val
_accuracy: 0.7500
Epoch 367/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5012 - accuracy: 0.7726 - val_loss: 0.5175 - val
_accuracy: 0.7500
Epoch 368/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5010 - accuracy: 0.7726 - val_loss: 0.5174 - val
_accuracy: 0.7500
Epoch 369/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5008 - accuracy: 0.7708 - val_loss: 0.5173 - val
_accuracy: 0.7500
Epoch 370/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5006 - accuracy: 0.7726 - val_loss: 0.5173 - val
_accuracy: 0.7500
Epoch 371/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5005 - accuracy: 0.7708 - val_loss: 0.5172 - val
_accuracy: 0.7500
Epoch 372/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.5004 - accuracy: 0.7726 - val_loss: 0.5171 - val
_accuracy: 0.7500
Epoch 373/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5002 - accuracy: 0.7726 - val_loss: 0.5171 - val
_accuracy: 0.7500
Epoch 374/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.5000 - accuracy: 0.7726 - val_loss: 0.5170 - val
_accuracy: 0.7552
Epoch 375/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4999 - accuracy: 0.7726 - val_loss: 0.5169 - val
_accuracy: 0.7552
Epoch 376/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4997 - accuracy: 0.7726 - val_loss: 0.5169 - val
_accuracy: 0.7552
Epoch 377/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4995 - accuracy: 0.7726 - val_loss: 0.5168 - val
_accuracy: 0.7552
Epoch 378/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4994 - accuracy: 0.7743 - val_loss: 0.5168 - val
_accuracy: 0.7552
Epoch 379/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4992 - accuracy: 0.7743 - val_loss: 0.5167 - val
_accuracy: 0.7552
Epoch 380/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4991 - accuracy: 0.7743 - val_loss: 0.5167 - val
_accuracy: 0.7552
Epoch 381/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4989 - accuracy: 0.7743 - val_loss: 0.5166 - val
_accuracy: 0.7604
Epoch 382/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4987 - accuracy: 0.7743 - val_loss: 0.5166 - val
_accuracy: 0.7604
Epoch 383/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4986 - accuracy: 0.7743 - val_loss: 0.5165 - val
_accuracy: 0.7604
Epoch 384/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4984 - accuracy: 0.7743 - val_loss: 0.5164 - val
_accuracy: 0.7604
Epoch 385/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4982 - accuracy: 0.7743 - val_loss: 0.5164 - val
_accuracy: 0.7604
Epoch 386/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4981 - accuracy: 0.7743 - val_loss: 0.5163 - val
_accuracy: 0.7604
Epoch 387/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4980 - accuracy: 0.7743 - val_loss: 0.5163 - val
_accuracy: 0.7656
Epoch 388/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4978 - accuracy: 0.7743 - val_loss: 0.5162 - val
_accuracy: 0.7656
Epoch 389/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4976 - accuracy: 0.7743 - val_loss: 0.5162 - val
_accuracy: 0.7656
Epoch 390/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4975 - accuracy: 0.7726 - val_loss: 0.5161 - val
_accuracy: 0.7708
Epoch 391/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4973 - accuracy: 0.7743 - val_loss: 0.5160 - val
_accuracy: 0.7708
Epoch 392/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4971 - accuracy: 0.7743 - val_loss: 0.5160 - val
_accuracy: 0.7708
Epoch 393/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4970 - accuracy: 0.7743 - val_loss: 0.5160 - val
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_accuracy: 0.7708
Epoch 394/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4969 - accuracy: 0.7726 - val_loss: 0.5159 - val
_accuracy: 0.7708
Epoch 395/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4968 - accuracy: 0.7743 - val_loss: 0.5159 - val
_accuracy: 0.7708
Epoch 396/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4966 - accuracy: 0.7743 - val_loss: 0.5158 - val
_accuracy: 0.7708
Epoch 397/1500
18/18 [==============================] - 0s 7ms/step - loss: 0.4964 - accuracy: 0.7743 - val_loss: 0.5158 - val
_accuracy: 0.7708
Epoch 398/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4963 - accuracy: 0.7743 - val_loss: 0.5157 - val
_accuracy: 0.7708
Epoch 399/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4961 - accuracy: 0.7743 - val_loss: 0.5157 - val
_accuracy: 0.7708
Epoch 400/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4960 - accuracy: 0.7743 - val_loss: 0.5157 - val
_accuracy: 0.7708
Epoch 401/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4958 - accuracy: 0.7743 - val_loss: 0.5156 - val
_accuracy: 0.7708
Epoch 402/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4958 - accuracy: 0.7743 - val_loss: 0.5156 - val
_accuracy: 0.7708
Epoch 403/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4955 - accuracy: 0.7743 - val_loss: 0.5155 - val
_accuracy: 0.7708
Epoch 404/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4954 - accuracy: 0.7743 - val_loss: 0.5155 - val
_accuracy: 0.7708
Epoch 405/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4954 - accuracy: 0.7743 - val_loss: 0.5155 - val
_accuracy: 0.7708
Epoch 406/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4952 - accuracy: 0.7743 - val_loss: 0.5154 - val
_accuracy: 0.7708
Epoch 407/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4950 - accuracy: 0.7743 - val_loss: 0.5154 - val
_accuracy: 0.7708
Epoch 408/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4949 - accuracy: 0.7743 - val_loss: 0.5154 - val
_accuracy: 0.7708
Epoch 409/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4947 - accuracy: 0.7743 - val_loss: 0.5154 - val
_accuracy: 0.7708
Epoch 410/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4947 - accuracy: 0.7726 - val_loss: 0.5154 - val
_accuracy: 0.7708
Epoch 411/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4945 - accuracy: 0.7743 - val_loss: 0.5153 - val
_accuracy: 0.7708
Epoch 412/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4944 - accuracy: 0.7726 - val_loss: 0.5153 - val
_accuracy: 0.7708
Epoch 413/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4942 - accuracy: 0.7743 - val_loss: 0.5153 - val
_accuracy: 0.7708
Epoch 414/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4940 - accuracy: 0.7726 - val_loss: 0.5153 - val
_accuracy: 0.7708
Epoch 415/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4940 - accuracy: 0.7708 - val_loss: 0.5152 - val
_accuracy: 0.7708
Epoch 416/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4938 - accuracy: 0.7726 - val_loss: 0.5151 - val
_accuracy: 0.7708
Epoch 417/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4937 - accuracy: 0.7708 - val_loss: 0.5151 - val
_accuracy: 0.7708
Epoch 418/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4935 - accuracy: 0.7726 - val_loss: 0.5151 - val
_accuracy: 0.7708
Epoch 419/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4935 - accuracy: 0.7726 - val_loss: 0.5151 - val
_accuracy: 0.7708
Epoch 420/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4933 - accuracy: 0.7726 - val_loss: 0.5150 - val
_accuracy: 0.7708
Epoch 421/1500
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18/18 [==============================] - 0s 4ms/step - loss: 0.4933 - accuracy: 0.7726 - val_loss: 0.5150 - val
_accuracy: 0.7708
Epoch 422/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4931 - accuracy: 0.7708 - val_loss: 0.5150 - val
_accuracy: 0.7708
Epoch 423/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4929 - accuracy: 0.7708 - val_loss: 0.5149 - val
_accuracy: 0.7708
Epoch 424/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4928 - accuracy: 0.7708 - val_loss: 0.5149 - val
_accuracy: 0.7656
Epoch 425/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4927 - accuracy: 0.7708 - val_loss: 0.5149 - val
_accuracy: 0.7604
Epoch 426/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4926 - accuracy: 0.7726 - val_loss: 0.5148 - val
_accuracy: 0.7604
Epoch 427/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4924 - accuracy: 0.7708 - val_loss: 0.5148 - val
_accuracy: 0.7604
Epoch 428/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4923 - accuracy: 0.7691 - val_loss: 0.5148 - val
_accuracy: 0.7604
Epoch 429/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4922 - accuracy: 0.7708 - val_loss: 0.5147 - val
_accuracy: 0.7604
Epoch 430/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4921 - accuracy: 0.7708 - val_loss: 0.5147 - val
_accuracy: 0.7604
Epoch 431/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4920 - accuracy: 0.7708 - val_loss: 0.5147 - val
_accuracy: 0.7604
Epoch 432/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4918 - accuracy: 0.7691 - val_loss: 0.5147 - val
_accuracy: 0.7604
Epoch 433/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4917 - accuracy: 0.7726 - val_loss: 0.5146 - val
_accuracy: 0.7604
Epoch 434/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4916 - accuracy: 0.7691 - val_loss: 0.5146 - val
_accuracy: 0.7604
Epoch 435/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4915 - accuracy: 0.7691 - val_loss: 0.5146 - val
_accuracy: 0.7604
Epoch 436/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4913 - accuracy: 0.7691 - val_loss: 0.5146 - val
_accuracy: 0.7604
Epoch 437/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4912 - accuracy: 0.7708 - val_loss: 0.5146 - val
_accuracy: 0.7604
Epoch 438/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4910 - accuracy: 0.7726 - val_loss: 0.5145 - val
_accuracy: 0.7604
Epoch 439/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4909 - accuracy: 0.7726 - val_loss: 0.5145 - val
_accuracy: 0.7604
Epoch 440/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4908 - accuracy: 0.7743 - val_loss: 0.5145 - val
_accuracy: 0.7604
Epoch 441/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4908 - accuracy: 0.7708 - val_loss: 0.5144 - val
_accuracy: 0.7552
Epoch 442/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4906 - accuracy: 0.7743 - val_loss: 0.5144 - val
_accuracy: 0.7552
Epoch 443/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4904 - accuracy: 0.7743 - val_loss: 0.5144 - val
_accuracy: 0.7552
Epoch 444/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4903 - accuracy: 0.7743 - val_loss: 0.5144 - val
_accuracy: 0.7552
Epoch 445/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4902 - accuracy: 0.7743 - val_loss: 0.5143 - val
_accuracy: 0.7552
Epoch 446/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4901 - accuracy: 0.7743 - val_loss: 0.5143 - val
_accuracy: 0.7552
Epoch 447/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4900 - accuracy: 0.7743 - val_loss: 0.5143 - val
_accuracy: 0.7552
Epoch 448/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4899 - accuracy: 0.7743 - val_loss: 0.5142 - val
_accuracy: 0.7552
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Epoch 449/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4898 - accuracy: 0.7743 - val_loss: 0.5142 - val
_accuracy: 0.7552
Epoch 450/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4897 - accuracy: 0.7743 - val_loss: 0.5141 - val
_accuracy: 0.7552
Epoch 451/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4895 - accuracy: 0.7743 - val_loss: 0.5141 - val
_accuracy: 0.7552
Epoch 452/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4894 - accuracy: 0.7760 - val_loss: 0.5141 - val
_accuracy: 0.7552
Epoch 453/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4893 - accuracy: 0.7760 - val_loss: 0.5141 - val
_accuracy: 0.7552
Epoch 454/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4892 - accuracy: 0.7760 - val_loss: 0.5140 - val
_accuracy: 0.7552
Epoch 455/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4891 - accuracy: 0.7760 - val_loss: 0.5140 - val
_accuracy: 0.7552
Epoch 456/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4890 - accuracy: 0.7743 - val_loss: 0.5140 - val
_accuracy: 0.7552
Epoch 457/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4889 - accuracy: 0.7743 - val_loss: 0.5139 - val
_accuracy: 0.7552
Epoch 458/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4888 - accuracy: 0.7760 - val_loss: 0.5139 - val
_accuracy: 0.7552
Epoch 459/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4886 - accuracy: 0.7760 - val_loss: 0.5139 - val
_accuracy: 0.7552
Epoch 460/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4886 - accuracy: 0.7760 - val_loss: 0.5139 - val
_accuracy: 0.7552
Epoch 461/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4885 - accuracy: 0.7743 - val_loss: 0.5139 - val
_accuracy: 0.7552
Epoch 462/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4883 - accuracy: 0.7760 - val_loss: 0.5138 - val
_accuracy: 0.7552
Epoch 463/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4883 - accuracy: 0.7743 - val_loss: 0.5138 - val
_accuracy: 0.7552
Epoch 464/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4882 - accuracy: 0.7743 - val_loss: 0.5138 - val
_accuracy: 0.7552
Epoch 465/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4881 - accuracy: 0.7760 - val_loss: 0.5138 - val
_accuracy: 0.7552
Epoch 466/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4880 - accuracy: 0.7760 - val_loss: 0.5138 - val
_accuracy: 0.7552
Epoch 467/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4879 - accuracy: 0.7743 - val_loss: 0.5137 - val
_accuracy: 0.7552
Epoch 468/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4878 - accuracy: 0.7743 - val_loss: 0.5137 - val
_accuracy: 0.7552
Epoch 469/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4877 - accuracy: 0.7760 - val_loss: 0.5137 - val
_accuracy: 0.7552
Epoch 470/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4876 - accuracy: 0.7743 - val_loss: 0.5137 - val
_accuracy: 0.7552
Epoch 471/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4874 - accuracy: 0.7743 - val_loss: 0.5137 - val
_accuracy: 0.7552
Epoch 472/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4873 - accuracy: 0.7743 - val_loss: 0.5137 - val
_accuracy: 0.7552
Epoch 473/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4872 - accuracy: 0.7743 - val_loss: 0.5137 - val
_accuracy: 0.7552
Epoch 474/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4871 - accuracy: 0.7743 - val_loss: 0.5137 - val
_accuracy: 0.7552
Epoch 475/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4871 - accuracy: 0.7760 - val_loss: 0.5137 - val
_accuracy: 0.7552
Epoch 476/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4869 - accuracy: 0.7760 - val_loss: 0.5137 - val
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_accuracy: 0.7552
Epoch 477/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4869 - accuracy: 0.7760 - val_loss: 0.5137 - val
_accuracy: 0.7552
Epoch 478/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4867 - accuracy: 0.7760 - val_loss: 0.5137 - val
_accuracy: 0.7552
Epoch 479/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4867 - accuracy: 0.7760 - val_loss: 0.5137 - val
_accuracy: 0.7552
Epoch 480/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4866 - accuracy: 0.7760 - val_loss: 0.5137 - val
_accuracy: 0.7552
Epoch 481/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4865 - accuracy: 0.7760 - val_loss: 0.5136 - val
_accuracy: 0.7552
Epoch 482/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4864 - accuracy: 0.7760 - val_loss: 0.5136 - val
_accuracy: 0.7552
Epoch 483/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4863 - accuracy: 0.7760 - val_loss: 0.5136 - val
_accuracy: 0.7552
Epoch 484/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4861 - accuracy: 0.7760 - val_loss: 0.5136 - val
_accuracy: 0.7552
Epoch 485/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4861 - accuracy: 0.7760 - val_loss: 0.5135 - val
_accuracy: 0.7552
Epoch 486/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4860 - accuracy: 0.7760 - val_loss: 0.5135 - val
_accuracy: 0.7552
Epoch 487/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4859 - accuracy: 0.7760 - val_loss: 0.5136 - val
_accuracy: 0.7500
Epoch 488/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4858 - accuracy: 0.7760 - val_loss: 0.5136 - val
_accuracy: 0.7500
Epoch 489/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4857 - accuracy: 0.7760 - val_loss: 0.5136 - val
_accuracy: 0.7500
Epoch 490/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4856 - accuracy: 0.7760 - val_loss: 0.5135 - val
_accuracy: 0.7500
Epoch 491/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4855 - accuracy: 0.7760 - val_loss: 0.5135 - val
_accuracy: 0.7500
Epoch 492/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4854 - accuracy: 0.7778 - val_loss: 0.5135 - val
_accuracy: 0.7500
Epoch 493/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4853 - accuracy: 0.7760 - val_loss: 0.5135 - val
_accuracy: 0.7500
Epoch 494/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4852 - accuracy: 0.7760 - val_loss: 0.5135 - val
_accuracy: 0.7500
Epoch 495/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4853 - accuracy: 0.7778 - val_loss: 0.5135 - val
_accuracy: 0.7500
Epoch 496/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4850 - accuracy: 0.7778 - val_loss: 0.5135 - val
_accuracy: 0.7500
Epoch 497/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4850 - accuracy: 0.7760 - val_loss: 0.5135 - val
_accuracy: 0.7500
Epoch 498/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4849 - accuracy: 0.7778 - val_loss: 0.5134 - val
_accuracy: 0.7552
Epoch 499/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4847 - accuracy: 0.7778 - val_loss: 0.5134 - val
_accuracy: 0.7552
Epoch 500/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4847 - accuracy: 0.7778 - val_loss: 0.5134 - val
_accuracy: 0.7552
Epoch 501/1500
18/18 [==============================] - 0s 8ms/step - loss: 0.4847 - accuracy: 0.7778 - val_loss: 0.5134 - val
_accuracy: 0.7552
Epoch 502/1500
18/18 [==============================] - 0s 7ms/step - loss: 0.4845 - accuracy: 0.7778 - val_loss: 0.5134 - val
_accuracy: 0.7552
Epoch 503/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4844 - accuracy: 0.7778 - val_loss: 0.5134 - val
_accuracy: 0.7552
Epoch 504/1500
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18/18 [==============================] - 0s 6ms/step - loss: 0.4844 - accuracy: 0.7778 - val_loss: 0.5134 - val
_accuracy: 0.7552
Epoch 505/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4843 - accuracy: 0.7778 - val_loss: 0.5133 - val
_accuracy: 0.7552
Epoch 506/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4842 - accuracy: 0.7778 - val_loss: 0.5132 - val
_accuracy: 0.7552
Epoch 507/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4842 - accuracy: 0.7778 - val_loss: 0.5132 - val
_accuracy: 0.7552
Epoch 508/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4840 - accuracy: 0.7778 - val_loss: 0.5132 - val
_accuracy: 0.7552
Epoch 509/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4839 - accuracy: 0.7778 - val_loss: 0.5131 - val
_accuracy: 0.7552
Epoch 510/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4839 - accuracy: 0.7778 - val_loss: 0.5131 - val
_accuracy: 0.7552
Epoch 511/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4838 - accuracy: 0.7778 - val_loss: 0.5131 - val
_accuracy: 0.7552
Epoch 512/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4837 - accuracy: 0.7778 - val_loss: 0.5131 - val
_accuracy: 0.7552
Epoch 513/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4836 - accuracy: 0.7778 - val_loss: 0.5131 - val
_accuracy: 0.7552
Epoch 514/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4835 - accuracy: 0.7778 - val_loss: 0.5131 - val
_accuracy: 0.7552
Epoch 515/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4834 - accuracy: 0.7778 - val_loss: 0.5131 - val
_accuracy: 0.7552
Epoch 516/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4834 - accuracy: 0.7778 - val_loss: 0.5130 - val
_accuracy: 0.7552
Epoch 517/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4833 - accuracy: 0.7778 - val_loss: 0.5130 - val
_accuracy: 0.7552
Epoch 518/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4831 - accuracy: 0.7778 - val_loss: 0.5130 - val
_accuracy: 0.7552
Epoch 519/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4831 - accuracy: 0.7778 - val_loss: 0.5130 - val
_accuracy: 0.7552
Epoch 520/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4830 - accuracy: 0.7778 - val_loss: 0.5129 - val
_accuracy: 0.7552
Epoch 521/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4829 - accuracy: 0.7778 - val_loss: 0.5129 - val
_accuracy: 0.7552
Epoch 522/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4829 - accuracy: 0.7778 - val_loss: 0.5129 - val
_accuracy: 0.7552
Epoch 523/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4828 - accuracy: 0.7778 - val_loss: 0.5129 - val
_accuracy: 0.7552
Epoch 524/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4827 - accuracy: 0.7778 - val_loss: 0.5129 - val
_accuracy: 0.7552
Epoch 525/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4826 - accuracy: 0.7778 - val_loss: 0.5129 - val
_accuracy: 0.7552
Epoch 526/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4825 - accuracy: 0.7778 - val_loss: 0.5128 - val
_accuracy: 0.7552
Epoch 527/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4824 - accuracy: 0.7778 - val_loss: 0.5128 - val
_accuracy: 0.7552
Epoch 528/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4824 - accuracy: 0.7778 - val_loss: 0.5128 - val
_accuracy: 0.7552
Epoch 529/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4822 - accuracy: 0.7778 - val_loss: 0.5128 - val
_accuracy: 0.7552
Epoch 530/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4822 - accuracy: 0.7778 - val_loss: 0.5128 - val
_accuracy: 0.7552
Epoch 531/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4822 - accuracy: 0.7778 - val_loss: 0.5128 - val
_accuracy: 0.7552
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Epoch 532/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4820 - accuracy: 0.7778 - val_loss: 0.5128 - val
_accuracy: 0.7552
Epoch 533/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4820 - accuracy: 0.7778 - val_loss: 0.5128 - val
_accuracy: 0.7552
Epoch 534/1500
18/18 [==============================] - 0s 7ms/step - loss: 0.4818 - accuracy: 0.7778 - val_loss: 0.5127 - val
_accuracy: 0.7552
Epoch 535/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4818 - accuracy: 0.7778 - val_loss: 0.5127 - val
_accuracy: 0.7552
Epoch 536/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4816 - accuracy: 0.7778 - val_loss: 0.5127 - val
_accuracy: 0.7552
Epoch 537/1500
18/18 [==============================] - 0s 7ms/step - loss: 0.4816 - accuracy: 0.7778 - val_loss: 0.5127 - val
_accuracy: 0.7552
Epoch 538/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4815 - accuracy: 0.7778 - val_loss: 0.5127 - val
_accuracy: 0.7552
Epoch 539/1500
18/18 [==============================] - 0s 9ms/step - loss: 0.4814 - accuracy: 0.7778 - val_loss: 0.5127 - val
_accuracy: 0.7552
Epoch 540/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4813 - accuracy: 0.7795 - val_loss: 0.5127 - val
_accuracy: 0.7552
Epoch 541/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4813 - accuracy: 0.7778 - val_loss: 0.5127 - val
_accuracy: 0.7552
Epoch 542/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4813 - accuracy: 0.7778 - val_loss: 0.5127 - val
_accuracy: 0.7552
Epoch 543/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4811 - accuracy: 0.7795 - val_loss: 0.5127 - val
_accuracy: 0.7552
Epoch 544/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4810 - accuracy: 0.7778 - val_loss: 0.5126 - val
_accuracy: 0.7552
Epoch 545/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4810 - accuracy: 0.7795 - val_loss: 0.5127 - val
_accuracy: 0.7552
Epoch 546/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4810 - accuracy: 0.7778 - val_loss: 0.5126 - val
_accuracy: 0.7552
Epoch 547/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4809 - accuracy: 0.7778 - val_loss: 0.5126 - val
_accuracy: 0.7552
Epoch 548/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4808 - accuracy: 0.7778 - val_loss: 0.5126 - val
_accuracy: 0.7552
Epoch 549/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4807 - accuracy: 0.7795 - val_loss: 0.5126 - val
_accuracy: 0.7552
Epoch 550/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4806 - accuracy: 0.7778 - val_loss: 0.5126 - val
_accuracy: 0.7552
Epoch 551/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4805 - accuracy: 0.7795 - val_loss: 0.5126 - val
_accuracy: 0.7552
Epoch 552/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4804 - accuracy: 0.7795 - val_loss: 0.5126 - val
_accuracy: 0.7552
Epoch 553/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4804 - accuracy: 0.7795 - val_loss: 0.5126 - val
_accuracy: 0.7552
Epoch 554/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4803 - accuracy: 0.7812 - val_loss: 0.5126 - val
_accuracy: 0.7552
Epoch 555/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4803 - accuracy: 0.7795 - val_loss: 0.5125 - val
_accuracy: 0.7552
Epoch 556/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4802 - accuracy: 0.7795 - val_loss: 0.5126 - val
_accuracy: 0.7552
Epoch 557/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4801 - accuracy: 0.7812 - val_loss: 0.5126 - val
_accuracy: 0.7552
Epoch 558/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4800 - accuracy: 0.7795 - val_loss: 0.5125 - val
_accuracy: 0.7552
Epoch 559/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4799 - accuracy: 0.7830 - val_loss: 0.5126 - val
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_accuracy: 0.7552
Epoch 560/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4799 - accuracy: 0.7795 - val_loss: 0.5126 - val
_accuracy: 0.7552
Epoch 561/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4797 - accuracy: 0.7795 - val_loss: 0.5125 - val
_accuracy: 0.7552
Epoch 562/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4797 - accuracy: 0.7795 - val_loss: 0.5125 - val
_accuracy: 0.7552
Epoch 563/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4795 - accuracy: 0.7812 - val_loss: 0.5125 - val
_accuracy: 0.7552
Epoch 564/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4796 - accuracy: 0.7812 - val_loss: 0.5125 - val
_accuracy: 0.7552
Epoch 565/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4794 - accuracy: 0.7812 - val_loss: 0.5125 - val
_accuracy: 0.7552
Epoch 566/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4793 - accuracy: 0.7812 - val_loss: 0.5125 - val
_accuracy: 0.7552
Epoch 567/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4793 - accuracy: 0.7830 - val_loss: 0.5125 - val
_accuracy: 0.7552
Epoch 568/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4792 - accuracy: 0.7812 - val_loss: 0.5125 - val
_accuracy: 0.7604
Epoch 569/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4792 - accuracy: 0.7812 - val_loss: 0.5125 - val
_accuracy: 0.7604
Epoch 570/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4791 - accuracy: 0.7812 - val_loss: 0.5125 - val
_accuracy: 0.7604
Epoch 571/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4789 - accuracy: 0.7795 - val_loss: 0.5125 - val
_accuracy: 0.7604
Epoch 572/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4789 - accuracy: 0.7830 - val_loss: 0.5125 - val
_accuracy: 0.7604
Epoch 573/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4789 - accuracy: 0.7795 - val_loss: 0.5125 - val
_accuracy: 0.7604
Epoch 574/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4789 - accuracy: 0.7830 - val_loss: 0.5125 - val
_accuracy: 0.7604
Epoch 575/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4786 - accuracy: 0.7812 - val_loss: 0.5125 - val
_accuracy: 0.7604
Epoch 576/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4787 - accuracy: 0.7778 - val_loss: 0.5124 - val
_accuracy: 0.7604
Epoch 577/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4786 - accuracy: 0.7795 - val_loss: 0.5124 - val
_accuracy: 0.7604
Epoch 578/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4784 - accuracy: 0.7795 - val_loss: 0.5124 - val
_accuracy: 0.7604
Epoch 579/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4783 - accuracy: 0.7812 - val_loss: 0.5123 - val
_accuracy: 0.7604
Epoch 580/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4783 - accuracy: 0.7812 - val_loss: 0.5123 - val
_accuracy: 0.7604
Epoch 581/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4783 - accuracy: 0.7812 - val_loss: 0.5124 - val
_accuracy: 0.7604
Epoch 582/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4781 - accuracy: 0.7795 - val_loss: 0.5123 - val
_accuracy: 0.7604
Epoch 583/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4781 - accuracy: 0.7812 - val_loss: 0.5124 - val
_accuracy: 0.7604
Epoch 584/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4781 - accuracy: 0.7812 - val_loss: 0.5123 - val
_accuracy: 0.7604
Epoch 585/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4780 - accuracy: 0.7812 - val_loss: 0.5123 - val
_accuracy: 0.7604
Epoch 586/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4779 - accuracy: 0.7795 - val_loss: 0.5124 - val
_accuracy: 0.7604
Epoch 587/1500
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18/18 [==============================] - 0s 4ms/step - loss: 0.4778 - accuracy: 0.7812 - val_loss: 0.5123 - val
_accuracy: 0.7604
Epoch 588/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4777 - accuracy: 0.7830 - val_loss: 0.5123 - val
_accuracy: 0.7604
Epoch 589/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4778 - accuracy: 0.7812 - val_loss: 0.5123 - val
_accuracy: 0.7604
Epoch 590/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4776 - accuracy: 0.7812 - val_loss: 0.5123 - val
_accuracy: 0.7604
Epoch 591/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4775 - accuracy: 0.7812 - val_loss: 0.5123 - val
_accuracy: 0.7604
Epoch 592/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4775 - accuracy: 0.7812 - val_loss: 0.5124 - val
_accuracy: 0.7552
Epoch 593/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4774 - accuracy: 0.7812 - val_loss: 0.5124 - val
_accuracy: 0.7552
Epoch 594/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4773 - accuracy: 0.7812 - val_loss: 0.5124 - val
_accuracy: 0.7552
Epoch 595/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4773 - accuracy: 0.7795 - val_loss: 0.5123 - val
_accuracy: 0.7552
Epoch 596/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4772 - accuracy: 0.7812 - val_loss: 0.5123 - val
_accuracy: 0.7552
Epoch 597/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4771 - accuracy: 0.7812 - val_loss: 0.5124 - val
_accuracy: 0.7552
Epoch 598/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4771 - accuracy: 0.7812 - val_loss: 0.5123 - val
_accuracy: 0.7552
Epoch 599/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4770 - accuracy: 0.7812 - val_loss: 0.5123 - val
_accuracy: 0.7552
Epoch 600/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4770 - accuracy: 0.7812 - val_loss: 0.5122 - val
_accuracy: 0.7604
Epoch 601/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4769 - accuracy: 0.7812 - val_loss: 0.5122 - val
_accuracy: 0.7604
Epoch 602/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4768 - accuracy: 0.7812 - val_loss: 0.5122 - val
_accuracy: 0.7604
Epoch 603/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4768 - accuracy: 0.7812 - val_loss: 0.5122 - val
_accuracy: 0.7552
Epoch 604/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4767 - accuracy: 0.7812 - val_loss: 0.5122 - val
_accuracy: 0.7552
Epoch 605/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4767 - accuracy: 0.7812 - val_loss: 0.5122 - val
_accuracy: 0.7552
Epoch 606/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4766 - accuracy: 0.7812 - val_loss: 0.5122 - val
_accuracy: 0.7552
Epoch 607/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4765 - accuracy: 0.7812 - val_loss: 0.5122 - val
_accuracy: 0.7552
Epoch 608/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4765 - accuracy: 0.7812 - val_loss: 0.5122 - val
_accuracy: 0.7552
Epoch 609/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4763 - accuracy: 0.7812 - val_loss: 0.5121 - val
_accuracy: 0.7604
Epoch 610/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4763 - accuracy: 0.7812 - val_loss: 0.5122 - val
_accuracy: 0.7552
Epoch 611/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4763 - accuracy: 0.7812 - val_loss: 0.5123 - val
_accuracy: 0.7552
Epoch 612/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4762 - accuracy: 0.7812 - val_loss: 0.5122 - val
_accuracy: 0.7552
Epoch 613/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4761 - accuracy: 0.7812 - val_loss: 0.5122 - val
_accuracy: 0.7552
Epoch 614/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4761 - accuracy: 0.7812 - val_loss: 0.5122 - val
_accuracy: 0.7552
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Epoch 615/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4760 - accuracy: 0.7812 - val_loss: 0.5122 - val_accuracy: 0.7552
Epoch 616/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4759 - accuracy: 0.7812 - val_loss: 0.5122 - val_accuracy: 0.7552
Epoch 617/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4760 - accuracy: 0.7812 - val_loss: 0.5121 - val_accuracy: 0.7552
Epoch 618/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4758 - accuracy: 0.7812 - val_loss: 0.5121 - val_accuracy: 0.7552
Epoch 619/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4758 - accuracy: 0.7812 - val_loss: 0.5121 - val_accuracy: 0.7552
Epoch 620/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4757 - accuracy: 0.7812 - val_loss: 0.5120 - val_accuracy: 0.7552
Epoch 621/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4757 - accuracy: 0.7812 - val_loss: 0.5121 - val_accuracy: 0.7552
Epoch 622/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4755 - accuracy: 0.7812 - val_loss: 0.5121 - val_accuracy: 0.7552
Epoch 623/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4755 - accuracy: 0.7812 - val_loss: 0.5121 - val_accuracy: 0.7552
Epoch 624/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4755 - accuracy: 0.7812 - val_loss: 0.5120 - val_accuracy: 0.7552
Epoch 625/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4754 - accuracy: 0.7812 - val_loss: 0.5120 - val_accuracy: 0.7552
Epoch 626/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4753 - accuracy: 0.7812 - val_loss: 0.5121 - val_accuracy: 0.7552
Epoch 627/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4753 - accuracy: 0.7812 - val_loss: 0.5120 - val_accuracy: 0.7552
Epoch 628/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4752 - accuracy: 0.7812 - val_loss: 0.5121 - val_accuracy: 0.7552
Epoch 629/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4751 - accuracy: 0.7812 - val_loss: 0.5120 - val_accuracy: 0.7552
Epoch 630/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4751 - accuracy: 0.7812 - val_loss: 0.5120 - val_accuracy: 0.7552
Epoch 631/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4750 - accuracy: 0.7812 - val_loss: 0.5120 - val_accuracy: 0.7552
Epoch 632/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4750 - accuracy: 0.7812 - val_loss: 0.5120 - val_accuracy: 0.7552
Epoch 633/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4749 - accuracy: 0.7830 - val_loss: 0.5120 - val_accuracy: 0.7552
Epoch 634/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4749 - accuracy: 0.7830 - val_loss: 0.5120 - val_accuracy: 0.7552
Epoch 635/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4749 - accuracy: 0.7812 - val_loss: 0.5120 - val_accuracy: 0.7552
Epoch 636/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4748 - accuracy: 0.7830 - val_loss: 0.5119 - val_accuracy: 0.7552
Epoch 637/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4747 - accuracy: 0.7830 - val_loss: 0.5119 - val_accuracy: 0.7552
Epoch 638/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4748 - accuracy: 0.7830 - val_loss: 0.5119 - val_accuracy: 0.7552
Epoch 639/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4746 - accuracy: 0.7830 - val_loss: 0.5120 - val_accuracy: 0.7552
Epoch 640/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4746 - accuracy: 0.7830 - val_loss: 0.5119 - val_accuracy: 0.7552
Epoch 641/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4746 - accuracy: 0.7830 - val_loss: 0.5119 - val_accuracy: 0.7552
Epoch 642/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4745 - accuracy: 0.7830 - val_loss: 0.5120 - val
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_accuracy: 0.7552
Epoch 643/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4745 - accuracy: 0.7830 - val_loss: 0.5120 - val
_accuracy: 0.7552
Epoch 644/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4744 - accuracy: 0.7830 - val_loss: 0.5120 - val
_accuracy: 0.7552
Epoch 645/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4743 - accuracy: 0.7830 - val_loss: 0.5119 - val
_accuracy: 0.7552
Epoch 646/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4743 - accuracy: 0.7830 - val_loss: 0.5120 - val
_accuracy: 0.7552
Epoch 647/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4742 - accuracy: 0.7830 - val_loss: 0.5119 - val
_accuracy: 0.7552
Epoch 648/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4742 - accuracy: 0.7847 - val_loss: 0.5119 - val
_accuracy: 0.7552
Epoch 649/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4741 - accuracy: 0.7830 - val_loss: 0.5119 - val
_accuracy: 0.7552
Epoch 650/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4739 - accuracy: 0.7830 - val_loss: 0.5119 - val
_accuracy: 0.7500
Epoch 651/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4739 - accuracy: 0.7830 - val_loss: 0.5119 - val
_accuracy: 0.7500
Epoch 652/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4739 - accuracy: 0.7830 - val_loss: 0.5118 - val
_accuracy: 0.7500
Epoch 653/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4739 - accuracy: 0.7830 - val_loss: 0.5118 - val
_accuracy: 0.7500
Epoch 654/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4738 - accuracy: 0.7830 - val_loss: 0.5119 - val
_accuracy: 0.7500
Epoch 655/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4739 - accuracy: 0.7830 - val_loss: 0.5118 - val
_accuracy: 0.7500
Epoch 656/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4738 - accuracy: 0.7847 - val_loss: 0.5118 - val
_accuracy: 0.7500
Epoch 657/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4736 - accuracy: 0.7830 - val_loss: 0.5118 - val
_accuracy: 0.7500
Epoch 658/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4736 - accuracy: 0.7830 - val_loss: 0.5118 - val
_accuracy: 0.7500
Epoch 659/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4736 - accuracy: 0.7830 - val_loss: 0.5118 - val
_accuracy: 0.7500
Epoch 660/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4736 - accuracy: 0.7847 - val_loss: 0.5117 - val
_accuracy: 0.7500
Epoch 661/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4735 - accuracy: 0.7847 - val_loss: 0.5117 - val
_accuracy: 0.7500
Epoch 662/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4734 - accuracy: 0.7847 - val_loss: 0.5117 - val
_accuracy: 0.7500
Epoch 663/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4734 - accuracy: 0.7830 - val_loss: 0.5117 - val
_accuracy: 0.7500
Epoch 664/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4733 - accuracy: 0.7830 - val_loss: 0.5118 - val
_accuracy: 0.7500
Epoch 665/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4733 - accuracy: 0.7830 - val_loss: 0.5118 - val
_accuracy: 0.7500
Epoch 666/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4732 - accuracy: 0.7847 - val_loss: 0.5117 - val
_accuracy: 0.7500
Epoch 667/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4731 - accuracy: 0.7830 - val_loss: 0.5117 - val
_accuracy: 0.7500
Epoch 668/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4730 - accuracy: 0.7830 - val_loss: 0.5117 - val
_accuracy: 0.7500
Epoch 669/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4730 - accuracy: 0.7865 - val_loss: 0.5117 - val
_accuracy: 0.7500
Epoch 670/1500
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18/18 [==============================] - 0s 3ms/step - loss: 0.4731 - accuracy: 0.7830 - val_loss: 0.5117 - val
_accuracy: 0.7500
Epoch 671/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4729 - accuracy: 0.7847 - val_loss: 0.5117 - val
_accuracy: 0.7500
Epoch 672/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4729 - accuracy: 0.7847 - val_loss: 0.5117 - val
_accuracy: 0.7500
Epoch 673/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4729 - accuracy: 0.7847 - val_loss: 0.5117 - val
_accuracy: 0.7500
Epoch 674/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4728 - accuracy: 0.7830 - val_loss: 0.5116 - val
_accuracy: 0.7500
Epoch 675/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4728 - accuracy: 0.7847 - val_loss: 0.5116 - val
_accuracy: 0.7500
Epoch 676/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4727 - accuracy: 0.7847 - val_loss: 0.5115 - val
_accuracy: 0.7500
Epoch 677/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4727 - accuracy: 0.7847 - val_loss: 0.5116 - val
_accuracy: 0.7500
Epoch 678/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4726 - accuracy: 0.7847 - val_loss: 0.5116 - val
_accuracy: 0.7500
Epoch 679/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4726 - accuracy: 0.7847 - val_loss: 0.5116 - val
_accuracy: 0.7500
Epoch 680/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4725 - accuracy: 0.7847 - val_loss: 0.5115 - val
_accuracy: 0.7500
Epoch 681/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4725 - accuracy: 0.7847 - val_loss: 0.5115 - val
_accuracy: 0.7500
Epoch 682/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4724 - accuracy: 0.7847 - val_loss: 0.5115 - val
_accuracy: 0.7500
Epoch 683/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4723 - accuracy: 0.7865 - val_loss: 0.5114 - val
_accuracy: 0.7500
Epoch 684/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4723 - accuracy: 0.7847 - val_loss: 0.5114 - val
_accuracy: 0.7500
Epoch 685/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4723 - accuracy: 0.7830 - val_loss: 0.5114 - val
_accuracy: 0.7500
Epoch 686/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4722 - accuracy: 0.7847 - val_loss: 0.5114 - val
_accuracy: 0.7500
Epoch 687/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4722 - accuracy: 0.7847 - val_loss: 0.5113 - val
_accuracy: 0.7500
Epoch 688/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4722 - accuracy: 0.7865 - val_loss: 0.5113 - val
_accuracy: 0.7500
Epoch 689/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4721 - accuracy: 0.7847 - val_loss: 0.5113 - val
_accuracy: 0.7500
Epoch 690/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4721 - accuracy: 0.7847 - val_loss: 0.5113 - val
_accuracy: 0.7500
Epoch 691/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4720 - accuracy: 0.7847 - val_loss: 0.5113 - val
_accuracy: 0.7500
Epoch 692/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4720 - accuracy: 0.7847 - val_loss: 0.5113 - val
_accuracy: 0.7500
Epoch 693/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4719 - accuracy: 0.7847 - val_loss: 0.5113 - val
_accuracy: 0.7500
Epoch 694/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4718 - accuracy: 0.7847 - val_loss: 0.5112 - val
_accuracy: 0.7500
Epoch 695/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4718 - accuracy: 0.7847 - val_loss: 0.5113 - val
_accuracy: 0.7500
Epoch 696/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4718 - accuracy: 0.7865 - val_loss: 0.5113 - val
_accuracy: 0.7500
Epoch 697/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4717 - accuracy: 0.7865 - val_loss: 0.5112 - val
_accuracy: 0.7500
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Epoch 698/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4717 - accuracy: 0.7847 - val_loss: 0.5112 - val
_accuracy: 0.7500
Epoch 699/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4716 - accuracy: 0.7865 - val_loss: 0.5111 - val
_accuracy: 0.7500
Epoch 700/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4715 - accuracy: 0.7847 - val_loss: 0.5112 - val
_accuracy: 0.7500
Epoch 701/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4716 - accuracy: 0.7847 - val_loss: 0.5112 - val
_accuracy: 0.7500
Epoch 702/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4715 - accuracy: 0.7865 - val_loss: 0.5111 - val
_accuracy: 0.7500
Epoch 703/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4714 - accuracy: 0.7865 - val_loss: 0.5110 - val
_accuracy: 0.7500
Epoch 704/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4714 - accuracy: 0.7865 - val_loss: 0.5110 - val
_accuracy: 0.7500
Epoch 705/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4714 - accuracy: 0.7847 - val_loss: 0.5110 - val
_accuracy: 0.7500
Epoch 706/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4713 - accuracy: 0.7847 - val_loss: 0.5110 - val
_accuracy: 0.7500
Epoch 707/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4712 - accuracy: 0.7847 - val_loss: 0.5110 - val
_accuracy: 0.7500
Epoch 708/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4712 - accuracy: 0.7865 - val_loss: 0.5109 - val
_accuracy: 0.7500
Epoch 709/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4712 - accuracy: 0.7865 - val_loss: 0.5108 - val
_accuracy: 0.7500
Epoch 710/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4711 - accuracy: 0.7830 - val_loss: 0.5109 - val
_accuracy: 0.7500
Epoch 711/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4712 - accuracy: 0.7830 - val_loss: 0.5108 - val
_accuracy: 0.7500
Epoch 712/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4711 - accuracy: 0.7865 - val_loss: 0.5108 - val
_accuracy: 0.7500
Epoch 713/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4710 - accuracy: 0.7847 - val_loss: 0.5108 - val
_accuracy: 0.7500
Epoch 714/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4709 - accuracy: 0.7830 - val_loss: 0.5108 - val
_accuracy: 0.7500
Epoch 715/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4709 - accuracy: 0.7847 - val_loss: 0.5108 - val
_accuracy: 0.7500
Epoch 716/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4709 - accuracy: 0.7830 - val_loss: 0.5108 - val
_accuracy: 0.7500
Epoch 717/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4708 - accuracy: 0.7847 - val_loss: 0.5108 - val
_accuracy: 0.7500
Epoch 718/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4708 - accuracy: 0.7865 - val_loss: 0.5108 - val
_accuracy: 0.7500
Epoch 719/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4707 - accuracy: 0.7865 - val_loss: 0.5107 - val
_accuracy: 0.7500
Epoch 720/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4707 - accuracy: 0.7865 - val_loss: 0.5107 - val
_accuracy: 0.7500
Epoch 721/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4706 - accuracy: 0.7865 - val_loss: 0.5106 - val
_accuracy: 0.7500
Epoch 722/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4705 - accuracy: 0.7830 - val_loss: 0.5106 - val
_accuracy: 0.7500
Epoch 723/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4705 - accuracy: 0.7830 - val_loss: 0.5106 - val
_accuracy: 0.7500
Epoch 724/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4705 - accuracy: 0.7865 - val_loss: 0.5105 - val
_accuracy: 0.7500
Epoch 725/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4705 - accuracy: 0.7847 - val_loss: 0.5105 - val
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_accuracy: 0.7500
Epoch 726/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4704 - accuracy: 0.7847 - val_loss: 0.5105 - val
_accuracy: 0.7500
Epoch 727/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4702 - accuracy: 0.7847 - val_loss: 0.5105 - val
_accuracy: 0.7500
Epoch 728/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4704 - accuracy: 0.7847 - val_loss: 0.5104 - val
_accuracy: 0.7500
Epoch 729/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4702 - accuracy: 0.7847 - val_loss: 0.5104 - val
_accuracy: 0.7500
Epoch 730/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4701 - accuracy: 0.7865 - val_loss: 0.5104 - val
_accuracy: 0.7500
Epoch 731/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4701 - accuracy: 0.7847 - val_loss: 0.5104 - val
_accuracy: 0.7500
Epoch 732/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4701 - accuracy: 0.7847 - val_loss: 0.5104 - val
_accuracy: 0.7500
Epoch 733/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4699 - accuracy: 0.7847 - val_loss: 0.5104 - val
_accuracy: 0.7448
Epoch 734/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4700 - accuracy: 0.7847 - val_loss: 0.5103 - val
_accuracy: 0.7500
Epoch 735/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4699 - accuracy: 0.7847 - val_loss: 0.5103 - val
_accuracy: 0.7448
Epoch 736/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4699 - accuracy: 0.7847 - val_loss: 0.5103 - val
_accuracy: 0.7448
Epoch 737/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4698 - accuracy: 0.7847 - val_loss: 0.5103 - val
_accuracy: 0.7448
Epoch 738/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4698 - accuracy: 0.7865 - val_loss: 0.5103 - val
_accuracy: 0.7448
Epoch 739/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4698 - accuracy: 0.7847 - val_loss: 0.5103 - val
_accuracy: 0.7448
Epoch 740/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4697 - accuracy: 0.7847 - val_loss: 0.5103 - val
_accuracy: 0.7448
Epoch 741/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4696 - accuracy: 0.7865 - val_loss: 0.5103 - val
_accuracy: 0.7448
Epoch 742/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4695 - accuracy: 0.7847 - val_loss: 0.5103 - val
_accuracy: 0.7448
Epoch 743/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4696 - accuracy: 0.7865 - val_loss: 0.5102 - val
_accuracy: 0.7448
Epoch 744/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4696 - accuracy: 0.7865 - val_loss: 0.5102 - val
_accuracy: 0.7448
Epoch 745/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4694 - accuracy: 0.7865 - val_loss: 0.5101 - val
_accuracy: 0.7448
Epoch 746/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4694 - accuracy: 0.7847 - val_loss: 0.5100 - val
_accuracy: 0.7448
Epoch 747/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4692 - accuracy: 0.7830 - val_loss: 0.5100 - val
_accuracy: 0.7448
Epoch 748/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4693 - accuracy: 0.7847 - val_loss: 0.5100 - val
_accuracy: 0.7448
Epoch 749/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4692 - accuracy: 0.7830 - val_loss: 0.5099 - val
_accuracy: 0.7448
Epoch 750/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4693 - accuracy: 0.7847 - val_loss: 0.5099 - val
_accuracy: 0.7448
Epoch 751/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4691 - accuracy: 0.7830 - val_loss: 0.5099 - val
_accuracy: 0.7448
Epoch 752/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4690 - accuracy: 0.7847 - val_loss: 0.5099 - val
_accuracy: 0.7448
Epoch 753/1500
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18/18 [==============================] - 0s 3ms/step - loss: 0.4690 - accuracy: 0.7865 - val_loss: 0.5099 - val
_accuracy: 0.7448
Epoch 754/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4690 - accuracy: 0.7847 - val_loss: 0.5099 - val
_accuracy: 0.7448
Epoch 755/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4690 - accuracy: 0.7847 - val_loss: 0.5099 - val
_accuracy: 0.7448
Epoch 756/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4690 - accuracy: 0.7847 - val_loss: 0.5099 - val
_accuracy: 0.7448
Epoch 757/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4689 - accuracy: 0.7847 - val_loss: 0.5099 - val
_accuracy: 0.7448
Epoch 758/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4689 - accuracy: 0.7865 - val_loss: 0.5099 - val
_accuracy: 0.7396
Epoch 759/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4688 - accuracy: 0.7830 - val_loss: 0.5099 - val
_accuracy: 0.7396
Epoch 760/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4687 - accuracy: 0.7830 - val_loss: 0.5098 - val
_accuracy: 0.7396
Epoch 761/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4688 - accuracy: 0.7865 - val_loss: 0.5098 - val
_accuracy: 0.7448
Epoch 762/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4686 - accuracy: 0.7830 - val_loss: 0.5098 - val
_accuracy: 0.7396
Epoch 763/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4686 - accuracy: 0.7830 - val_loss: 0.5098 - val
_accuracy: 0.7448
Epoch 764/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4685 - accuracy: 0.7847 - val_loss: 0.5097 - val
_accuracy: 0.7448
Epoch 765/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4686 - accuracy: 0.7830 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 766/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4685 - accuracy: 0.7830 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 767/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4685 - accuracy: 0.7830 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 768/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4684 - accuracy: 0.7830 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 769/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4684 - accuracy: 0.7847 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 770/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4683 - accuracy: 0.7847 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 771/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4682 - accuracy: 0.7847 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 772/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4682 - accuracy: 0.7830 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 773/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4682 - accuracy: 0.7847 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 774/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4681 - accuracy: 0.7830 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 775/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4681 - accuracy: 0.7847 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 776/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4681 - accuracy: 0.7830 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 777/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4680 - accuracy: 0.7830 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 778/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4680 - accuracy: 0.7847 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 779/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4679 - accuracy: 0.7830 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 780/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4678 - accuracy: 0.7847 - val_loss: 0.5096 - val
_accuracy: 0.7344
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Epoch 781/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4679 - accuracy: 0.7830 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 782/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4678 - accuracy: 0.7830 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 783/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4677 - accuracy: 0.7847 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 784/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4676 - accuracy: 0.7847 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 785/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4676 - accuracy: 0.7847 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 786/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4676 - accuracy: 0.7847 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 787/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4675 - accuracy: 0.7847 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 788/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4676 - accuracy: 0.7830 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 789/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4675 - accuracy: 0.7847 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 790/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4676 - accuracy: 0.7830 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 791/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4673 - accuracy: 0.7830 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 792/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4674 - accuracy: 0.7830 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 793/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4673 - accuracy: 0.7830 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 794/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4673 - accuracy: 0.7830 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 795/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4672 - accuracy: 0.7830 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 796/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4672 - accuracy: 0.7830 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 797/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4672 - accuracy: 0.7830 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 798/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4671 - accuracy: 0.7830 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 799/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4670 - accuracy: 0.7830 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 800/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4671 - accuracy: 0.7847 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 801/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4671 - accuracy: 0.7830 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 802/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4670 - accuracy: 0.7847 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 803/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4669 - accuracy: 0.7830 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 804/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4669 - accuracy: 0.7847 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 805/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4669 - accuracy: 0.7847 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 806/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4669 - accuracy: 0.7830 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 807/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4667 - accuracy: 0.7830 - val_loss: 0.5093 - val
_accuracy: 0.7344
Epoch 808/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4667 - accuracy: 0.7830 - val_loss: 0.5093 - val
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_accuracy: 0.7344
Epoch 809/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4667 - accuracy: 0.7847 - val_loss: 0.5093 - val
_accuracy: 0.7344
Epoch 810/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4666 - accuracy: 0.7830 - val_loss: 0.5093 - val
_accuracy: 0.7344
Epoch 811/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4666 - accuracy: 0.7830 - val_loss: 0.5093 - val
_accuracy: 0.7344
Epoch 812/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4665 - accuracy: 0.7847 - val_loss: 0.5093 - val
_accuracy: 0.7344
Epoch 813/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4665 - accuracy: 0.7830 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 814/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4665 - accuracy: 0.7865 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 815/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4665 - accuracy: 0.7830 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 816/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4664 - accuracy: 0.7865 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 817/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4663 - accuracy: 0.7865 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 818/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4664 - accuracy: 0.7847 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 819/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4663 - accuracy: 0.7865 - val_loss: 0.5093 - val
_accuracy: 0.7344
Epoch 820/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4663 - accuracy: 0.7830 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 821/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4663 - accuracy: 0.7830 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 822/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4662 - accuracy: 0.7865 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 823/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4661 - accuracy: 0.7847 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 824/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4661 - accuracy: 0.7830 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 825/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4661 - accuracy: 0.7865 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 826/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4661 - accuracy: 0.7812 - val_loss: 0.5091 - val
_accuracy: 0.7344
Epoch 827/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4660 - accuracy: 0.7830 - val_loss: 0.5091 - val
_accuracy: 0.7344
Epoch 828/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4659 - accuracy: 0.7830 - val_loss: 0.5091 - val
_accuracy: 0.7344
Epoch 829/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4660 - accuracy: 0.7830 - val_loss: 0.5090 - val
_accuracy: 0.7344
Epoch 830/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4659 - accuracy: 0.7847 - val_loss: 0.5090 - val
_accuracy: 0.7344
Epoch 831/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4660 - accuracy: 0.7847 - val_loss: 0.5090 - val
_accuracy: 0.7344
Epoch 832/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4659 - accuracy: 0.7830 - val_loss: 0.5090 - val
_accuracy: 0.7344
Epoch 833/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4659 - accuracy: 0.7830 - val_loss: 0.5089 - val
_accuracy: 0.7344
Epoch 834/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4658 - accuracy: 0.7847 - val_loss: 0.5089 - val
_accuracy: 0.7344
Epoch 835/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4657 - accuracy: 0.7847 - val_loss: 0.5089 - val
_accuracy: 0.7344
Epoch 836/1500
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18/18 [==============================] - 0s 3ms/step - loss: 0.4657 - accuracy: 0.7830 - val_loss: 0.5089 - val
_accuracy: 0.7344
Epoch 837/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4657 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7344
Epoch 838/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4656 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7344
Epoch 839/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4656 - accuracy: 0.7847 - val_loss: 0.5089 - val
_accuracy: 0.7344
Epoch 840/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4655 - accuracy: 0.7830 - val_loss: 0.5089 - val
_accuracy: 0.7344
Epoch 841/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4655 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7344
Epoch 842/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4655 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7344
Epoch 843/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4655 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7344
Epoch 844/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4654 - accuracy: 0.7830 - val_loss: 0.5089 - val
_accuracy: 0.7344
Epoch 845/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4654 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7344
Epoch 846/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4653 - accuracy: 0.7847 - val_loss: 0.5088 - val
_accuracy: 0.7344
Epoch 847/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4654 - accuracy: 0.7847 - val_loss: 0.5088 - val
_accuracy: 0.7344
Epoch 848/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4652 - accuracy: 0.7830 - val_loss: 0.5088 - val
_accuracy: 0.7344
Epoch 849/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4652 - accuracy: 0.7865 - val_loss: 0.5088 - val
_accuracy: 0.7344
Epoch 850/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4652 - accuracy: 0.7847 - val_loss: 0.5088 - val
_accuracy: 0.7344
Epoch 851/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4652 - accuracy: 0.7830 - val_loss: 0.5088 - val
_accuracy: 0.7344
Epoch 852/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4651 - accuracy: 0.7847 - val_loss: 0.5088 - val
_accuracy: 0.7344
Epoch 853/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4649 - accuracy: 0.7865 - val_loss: 0.5088 - val
_accuracy: 0.7344
Epoch 854/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4650 - accuracy: 0.7847 - val_loss: 0.5088 - val
_accuracy: 0.7344
Epoch 855/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4649 - accuracy: 0.7830 - val_loss: 0.5088 - val
_accuracy: 0.7344
Epoch 856/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4650 - accuracy: 0.7830 - val_loss: 0.5087 - val
_accuracy: 0.7344
Epoch 857/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4649 - accuracy: 0.7847 - val_loss: 0.5087 - val
_accuracy: 0.7344
Epoch 858/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4648 - accuracy: 0.7865 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 859/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4648 - accuracy: 0.7847 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 860/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4648 - accuracy: 0.7830 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 861/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4648 - accuracy: 0.7865 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 862/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4647 - accuracy: 0.7865 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 863/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4647 - accuracy: 0.7847 - val_loss: 0.5086 - val
_accuracy: 0.7344
```

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Epoch 864/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4646 - accuracy: 0.7847 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 865/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4646 - accuracy: 0.7865 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 866/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4646 - accuracy: 0.7847 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 867/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4646 - accuracy: 0.7865 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 868/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4645 - accuracy: 0.7865 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 869/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4645 - accuracy: 0.7865 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 870/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4644 - accuracy: 0.7847 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 871/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4644 - accuracy: 0.7865 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 872/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4645 - accuracy: 0.7865 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 873/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4644 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7344
Epoch 874/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4644 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7344
Epoch 875/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4643 - accuracy: 0.7847 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 876/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4643 - accuracy: 0.7865 - val_loss: 0.5086 - val
_accuracy: 0.7344
Epoch 877/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4641 - accuracy: 0.7830 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 878/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4643 - accuracy: 0.7865 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 879/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4643 - accuracy: 0.7812 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 880/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4641 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7344
Epoch 881/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4640 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7344
Epoch 882/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4641 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7344
Epoch 883/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4641 - accuracy: 0.7847 - val_loss: 0.5085 - val
_accuracy: 0.7344
Epoch 884/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4639 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7344
Epoch 885/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4640 - accuracy: 0.7847 - val_loss: 0.5085 - val
_accuracy: 0.7344
Epoch 886/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4640 - accuracy: 0.7847 - val_loss: 0.5085 - val
_accuracy: 0.7344
Epoch 887/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4638 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7344
Epoch 888/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4638 - accuracy: 0.7847 - val_loss: 0.5085 - val
_accuracy: 0.7344
Epoch 889/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4638 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7344
Epoch 890/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4637 - accuracy: 0.7847 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 891/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4638 - accuracy: 0.7865 - val_loss: 0.5084 - val
```

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_accuracy: 0.7344
Epoch 892/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4636 - accuracy: 0.7865 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 893/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4638 - accuracy: 0.7847 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 894/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4636 - accuracy: 0.7865 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 895/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4637 - accuracy: 0.7882 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 896/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4635 - accuracy: 0.7830 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 897/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4635 - accuracy: 0.7882 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 898/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4635 - accuracy: 0.7865 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 899/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4634 - accuracy: 0.7882 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 900/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4635 - accuracy: 0.7865 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 901/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4634 - accuracy: 0.7865 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 902/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4633 - accuracy: 0.7865 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 903/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4633 - accuracy: 0.7865 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 904/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4634 - accuracy: 0.7847 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 905/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4633 - accuracy: 0.7865 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 906/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4632 - accuracy: 0.7882 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 907/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4632 - accuracy: 0.7882 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 908/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4632 - accuracy: 0.7882 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 909/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4632 - accuracy: 0.7882 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 910/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4631 - accuracy: 0.7847 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 911/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4631 - accuracy: 0.7882 - val_loss: 0.5082 - val
_accuracy: 0.7344
Epoch 912/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4631 - accuracy: 0.7847 - val_loss: 0.5082 - val
_accuracy: 0.7344
Epoch 913/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4632 - accuracy: 0.7882 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 914/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4630 - accuracy: 0.7882 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 915/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4630 - accuracy: 0.7865 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 916/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4629 - accuracy: 0.7882 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 917/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4629 - accuracy: 0.7882 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 918/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4629 - accuracy: 0.7865 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 919/1500
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18/18 [==============================] - 0s 3ms/step - loss: 0.4629 - accuracy: 0.7865 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 920/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4628 - accuracy: 0.7882 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 921/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4628 - accuracy: 0.7847 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 922/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4627 - accuracy: 0.7865 - val_loss: 0.5082 - val
_accuracy: 0.7344
Epoch 923/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4627 - accuracy: 0.7882 - val_loss: 0.5082 - val
_accuracy: 0.7344
Epoch 924/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4627 - accuracy: 0.7882 - val_loss: 0.5082 - val
_accuracy: 0.7344
Epoch 925/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4627 - accuracy: 0.7882 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 926/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4626 - accuracy: 0.7882 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 927/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4626 - accuracy: 0.7882 - val_loss: 0.5083 - val
_accuracy: 0.7344
Epoch 928/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4627 - accuracy: 0.7882 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 929/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4625 - accuracy: 0.7882 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 930/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4625 - accuracy: 0.7865 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 931/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4625 - accuracy: 0.7882 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 932/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4626 - accuracy: 0.7882 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 933/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4625 - accuracy: 0.7882 - val_loss: 0.5084 - val
_accuracy: 0.7344
Epoch 934/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4624 - accuracy: 0.7865 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 935/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4623 - accuracy: 0.7882 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 936/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4624 - accuracy: 0.7847 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 937/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4624 - accuracy: 0.7882 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 938/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4624 - accuracy: 0.7847 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 939/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4622 - accuracy: 0.7882 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 940/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4623 - accuracy: 0.7882 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 941/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4623 - accuracy: 0.7882 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 942/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4621 - accuracy: 0.7865 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 943/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4622 - accuracy: 0.7847 - val_loss: 0.5083 - val
_accuracy: 0.7292
Epoch 944/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4622 - accuracy: 0.7865 - val_loss: 0.5083 - val
_accuracy: 0.7292
Epoch 945/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4621 - accuracy: 0.7865 - val_loss: 0.5083 - val
_accuracy: 0.7292
Epoch 946/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4621 - accuracy: 0.7865 - val_loss: 0.5082 - val
_accuracy: 0.7292
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Epoch 947/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4620 - accuracy: 0.7882 - val_loss: 0.5083 - val
_accuracy: 0.7292
Epoch 948/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4621 - accuracy: 0.7882 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 949/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4619 - accuracy: 0.7882 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 950/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4620 - accuracy: 0.7882 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 951/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4620 - accuracy: 0.7847 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 952/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4619 - accuracy: 0.7847 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 953/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4619 - accuracy: 0.7847 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 954/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4618 - accuracy: 0.7865 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 955/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4619 - accuracy: 0.7882 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 956/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4618 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 957/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4617 - accuracy: 0.7882 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 958/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4618 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 959/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4617 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 960/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4617 - accuracy: 0.7882 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 961/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4617 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 962/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4617 - accuracy: 0.7865 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 963/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4615 - accuracy: 0.7865 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 964/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4616 - accuracy: 0.7865 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 965/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4615 - accuracy: 0.7882 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 966/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4615 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 967/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4615 - accuracy: 0.7882 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 968/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4615 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 969/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4615 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 970/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4615 - accuracy: 0.7865 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 971/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4615 - accuracy: 0.7847 - val_loss: 0.5084 - val
_accuracy: 0.7292
Epoch 972/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4614 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 973/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4614 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 974/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4614 - accuracy: 0.7847 - val_loss: 0.5085 - val
```

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_accuracy: 0.7292
Epoch 975/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4613 - accuracy: 0.7882 - val_loss: 0.5086 - val
_accuracy: 0.7292
Epoch 976/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4614 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 977/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4613 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 978/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4613 - accuracy: 0.7847 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 979/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4612 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 980/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4612 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 981/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4612 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 982/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4612 - accuracy: 0.7882 - val_loss: 0.5086 - val
_accuracy: 0.7292
Epoch 983/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4611 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 984/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4612 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 985/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4612 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 986/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4611 - accuracy: 0.7847 - val_loss: 0.5086 - val
_accuracy: 0.7292
Epoch 987/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4610 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 988/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4610 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 989/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4610 - accuracy: 0.7865 - val_loss: 0.5085 - val
_accuracy: 0.7292
Epoch 990/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4609 - accuracy: 0.7865 - val_loss: 0.5086 - val
_accuracy: 0.7292
Epoch 991/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4609 - accuracy: 0.7865 - val_loss: 0.5086 - val
_accuracy: 0.7292
Epoch 992/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4610 - accuracy: 0.7847 - val_loss: 0.5086 - val
_accuracy: 0.7292
Epoch 993/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4608 - accuracy: 0.7865 - val_loss: 0.5086 - val
_accuracy: 0.7292
Epoch 994/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4609 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 995/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4609 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 996/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4609 - accuracy: 0.7847 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 997/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4607 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 998/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4608 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 999/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4607 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 1000/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4606 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 1001/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4606 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 1002/1500
```

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18/18 [==============================] - 0s 4ms/step - loss: 0.4607 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 1003/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4606 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 1004/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4606 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 1005/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4606 - accuracy: 0.7865 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1006/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4606 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1007/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4605 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1008/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4608 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1009/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4605 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1010/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4605 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 1011/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4604 - accuracy: 0.7865 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1012/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4604 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 1013/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4603 - accuracy: 0.7865 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 1014/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4603 - accuracy: 0.7882 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1015/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4603 - accuracy: 0.7865 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1016/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4602 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1017/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4604 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1018/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4603 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1019/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4602 - accuracy: 0.7865 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1020/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4602 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1021/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4602 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1022/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4602 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1023/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4601 - accuracy: 0.7865 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1024/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4602 - accuracy: 0.7847 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1025/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4601 - accuracy: 0.7899 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1026/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4601 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1027/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4600 - accuracy: 0.7865 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1028/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4600 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1029/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4599 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
```

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Epoch 1030/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4599 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1031/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4599 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1032/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4599 - accuracy: 0.7847 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1033/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4600 - accuracy: 0.7865 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1034/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4598 - accuracy: 0.7882 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1035/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4599 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1036/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4599 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1037/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4597 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1038/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4597 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1039/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4598 - accuracy: 0.7865 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1040/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4597 - accuracy: 0.7882 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1041/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4598 - accuracy: 0.7865 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1042/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4597 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1043/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4597 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1044/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4596 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1045/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4595 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1046/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4595 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1047/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4596 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1048/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4596 - accuracy: 0.7899 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1049/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4595 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1050/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4594 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1051/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4594 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1052/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4595 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1053/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4594 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1054/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4594 - accuracy: 0.7882 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1055/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4593 - accuracy: 0.7882 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1056/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4592 - accuracy: 0.7899 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1057/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4594 - accuracy: 0.7882 - val_loss: 0.5090 - val
```

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_accuracy: 0.7292
Epoch 1058/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4593 - accuracy: 0.7899 - val_loss: 0.5091 - val
_accuracy: 0.7292
Epoch 1059/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4592 - accuracy: 0.7899 - val_loss: 0.5091 - val
_accuracy: 0.7292
Epoch 1060/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4592 - accuracy: 0.7865 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1061/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4593 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1062/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4592 - accuracy: 0.7882 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1063/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4591 - accuracy: 0.7899 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1064/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4591 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1065/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4591 - accuracy: 0.7847 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1066/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4591 - accuracy: 0.7899 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1067/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4590 - accuracy: 0.7899 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1068/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4591 - accuracy: 0.7899 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1069/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4590 - accuracy: 0.7882 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 1070/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4590 - accuracy: 0.7899 - val_loss: 0.5087 - val
_accuracy: 0.7292
Epoch 1071/1500
18/18 [==============================] - 0s 7ms/step - loss: 0.4589 - accuracy: 0.7899 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1072/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4590 - accuracy: 0.7899 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1073/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4589 - accuracy: 0.7917 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1074/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4588 - accuracy: 0.7899 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1075/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4588 - accuracy: 0.7917 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1076/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4588 - accuracy: 0.7899 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1077/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4587 - accuracy: 0.7917 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1078/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4589 - accuracy: 0.7917 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1079/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4588 - accuracy: 0.7917 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1080/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4589 - accuracy: 0.7847 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1081/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4586 - accuracy: 0.7917 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1082/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4589 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1083/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4587 - accuracy: 0.7899 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1084/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4586 - accuracy: 0.7917 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1085/1500
```

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18/18 [==============================] - 0s 3ms/step - loss: 0.4588 - accuracy: 0.7917 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1086/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4585 - accuracy: 0.7917 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1087/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4585 - accuracy: 0.7917 - val_loss: 0.5091 - val
_accuracy: 0.7292
Epoch 1088/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4585 - accuracy: 0.7899 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1089/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4586 - accuracy: 0.7865 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1090/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4585 - accuracy: 0.7917 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1091/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4585 - accuracy: 0.7917 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1092/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4584 - accuracy: 0.7899 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1093/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4584 - accuracy: 0.7917 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1094/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4585 - accuracy: 0.7917 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1095/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4583 - accuracy: 0.7899 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1096/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4584 - accuracy: 0.7899 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1097/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4583 - accuracy: 0.7934 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1098/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4582 - accuracy: 0.7934 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1099/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4581 - accuracy: 0.7917 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1100/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4582 - accuracy: 0.7917 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1101/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4581 - accuracy: 0.7917 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1102/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4581 - accuracy: 0.7934 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1103/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4581 - accuracy: 0.7934 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1104/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4581 - accuracy: 0.7899 - val_loss: 0.5088 - val
_accuracy: 0.7292
Epoch 1105/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4582 - accuracy: 0.7917 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1106/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4581 - accuracy: 0.7917 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1107/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4581 - accuracy: 0.7934 - val_loss: 0.5090 - val
_accuracy: 0.7344
Epoch 1108/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4580 - accuracy: 0.7882 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1109/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4579 - accuracy: 0.7917 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1110/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4580 - accuracy: 0.7917 - val_loss: 0.5089 - val
_accuracy: 0.7292
Epoch 1111/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4580 - accuracy: 0.7934 - val_loss: 0.5090 - val
_accuracy: 0.7292
Epoch 1112/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4580 - accuracy: 0.7917 - val_loss: 0.5091 - val
_accuracy: 0.7344
```

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Epoch 1113/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4579 - accuracy: 0.7934 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 1114/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4579 - accuracy: 0.7917 - val_loss: 0.5091 - val
_accuracy: 0.7344
Epoch 1115/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4579 - accuracy: 0.7899 - val_loss: 0.5091 - val
_accuracy: 0.7344
Epoch 1116/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4579 - accuracy: 0.7934 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 1117/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4578 - accuracy: 0.7899 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 1118/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4579 - accuracy: 0.7917 - val_loss: 0.5092 - val
_accuracy: 0.7344
Epoch 1119/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4577 - accuracy: 0.7917 - val_loss: 0.5091 - val
_accuracy: 0.7344
Epoch 1120/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4577 - accuracy: 0.7899 - val_loss: 0.5091 - val
_accuracy: 0.7344
Epoch 1121/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4578 - accuracy: 0.7917 - val_loss: 0.5090 - val
_accuracy: 0.7344
Epoch 1122/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4577 - accuracy: 0.7934 - val_loss: 0.5091 - val
_accuracy: 0.7396
Epoch 1123/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4577 - accuracy: 0.7917 - val_loss: 0.5091 - val
_accuracy: 0.7396
Epoch 1124/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4576 - accuracy: 0.7882 - val_loss: 0.5090 - val
_accuracy: 0.7396
Epoch 1125/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4575 - accuracy: 0.7899 - val_loss: 0.5089 - val
_accuracy: 0.7344
Epoch 1126/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4576 - accuracy: 0.7917 - val_loss: 0.5090 - val
_accuracy: 0.7396
Epoch 1127/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4575 - accuracy: 0.7899 - val_loss: 0.5089 - val
_accuracy: 0.7344
Epoch 1128/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4575 - accuracy: 0.7934 - val_loss: 0.5090 - val
_accuracy: 0.7396
Epoch 1129/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4575 - accuracy: 0.7934 - val_loss: 0.5090 - val
_accuracy: 0.7396
Epoch 1130/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4574 - accuracy: 0.7917 - val_loss: 0.5091 - val
_accuracy: 0.7396
Epoch 1131/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4575 - accuracy: 0.7917 - val_loss: 0.5090 - val
_accuracy: 0.7396
Epoch 1132/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4574 - accuracy: 0.7917 - val_loss: 0.5091 - val
_accuracy: 0.7396
Epoch 1133/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4574 - accuracy: 0.7934 - val_loss: 0.5092 - val
_accuracy: 0.7396
Epoch 1134/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4574 - accuracy: 0.7882 - val_loss: 0.5091 - val
_accuracy: 0.7396
Epoch 1135/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4572 - accuracy: 0.7917 - val_loss: 0.5092 - val
_accuracy: 0.7396
Epoch 1136/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4572 - accuracy: 0.7917 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1137/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4572 - accuracy: 0.7917 - val_loss: 0.5092 - val
_accuracy: 0.7396
Epoch 1138/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4572 - accuracy: 0.7917 - val_loss: 0.5092 - val
_accuracy: 0.7396
Epoch 1139/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4573 - accuracy: 0.7917 - val_loss: 0.5092 - val
_accuracy: 0.7396
Epoch 1140/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4572 - accuracy: 0.7917 - val_loss: 0.5092 - val
```

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_accuracy: 0.7396
Epoch 1141/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4571 - accuracy: 0.7917 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1142/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4571 - accuracy: 0.7917 - val_loss: 0.5092 - val
_accuracy: 0.7396
Epoch 1143/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4572 - accuracy: 0.7917 - val_loss: 0.5092 - val
_accuracy: 0.7396
Epoch 1144/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4571 - accuracy: 0.7917 - val_loss: 0.5092 - val
_accuracy: 0.7396
Epoch 1145/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4570 - accuracy: 0.7917 - val_loss: 0.5092 - val
_accuracy: 0.7396
Epoch 1146/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4570 - accuracy: 0.7882 - val_loss: 0.5092 - val
_accuracy: 0.7396
Epoch 1147/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4569 - accuracy: 0.7917 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1148/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4570 - accuracy: 0.7917 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1149/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4569 - accuracy: 0.7917 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1150/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4569 - accuracy: 0.7917 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1151/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4568 - accuracy: 0.7917 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1152/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4569 - accuracy: 0.7882 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1153/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4569 - accuracy: 0.7917 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1154/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4568 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1155/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4569 - accuracy: 0.7899 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1156/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4568 - accuracy: 0.7899 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1157/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4567 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1158/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4569 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1159/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4566 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1160/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4567 - accuracy: 0.7882 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1161/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4567 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1162/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4566 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1163/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4565 - accuracy: 0.7882 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1164/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4566 - accuracy: 0.7917 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1165/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4566 - accuracy: 0.7899 - val_loss: 0.5092 - val
_accuracy: 0.7396
Epoch 1166/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7899 - val_loss: 0.5092 - val
_accuracy: 0.7396
Epoch 1167/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4565 - accuracy: 0.7934 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1168/1500
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18/18 [==============================] - 0s 4ms/step - loss: 0.4565 - accuracy: 0.7917 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1169/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4564 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1170/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4564 - accuracy: 0.7899 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1171/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4565 - accuracy: 0.7899 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1172/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4564 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1173/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4564 - accuracy: 0.7899 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1174/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4562 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1175/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4562 - accuracy: 0.7899 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1176/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4562 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1177/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4562 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1178/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4564 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1179/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4561 - accuracy: 0.7899 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1180/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4561 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1181/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4561 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1182/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4560 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1183/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4561 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1184/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4560 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1185/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4560 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1186/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4559 - accuracy: 0.7899 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1187/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4560 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1188/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4560 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1189/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4560 - accuracy: 0.7917 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1190/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4559 - accuracy: 0.7899 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1191/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4559 - accuracy: 0.7917 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1192/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4558 - accuracy: 0.7917 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1193/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4557 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1194/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4557 - accuracy: 0.7917 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1195/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4557 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
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Epoch 1196/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4558 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1197/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4556 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1198/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4556 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1199/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4556 - accuracy: 0.7917 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1200/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4556 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1201/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4556 - accuracy: 0.7917 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1202/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4554 - accuracy: 0.7899 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1203/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4555 - accuracy: 0.7917 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1204/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4554 - accuracy: 0.7899 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1205/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4553 - accuracy: 0.7934 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1206/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4554 - accuracy: 0.7899 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1207/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4554 - accuracy: 0.7899 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1208/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4554 - accuracy: 0.7899 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1209/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4552 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1210/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4554 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1211/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4553 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1212/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4553 - accuracy: 0.7917 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1213/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4552 - accuracy: 0.7934 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1214/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4552 - accuracy: 0.7882 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1215/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4552 - accuracy: 0.7899 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1216/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4552 - accuracy: 0.7899 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1217/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4551 - accuracy: 0.7899 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1218/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4551 - accuracy: 0.7934 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1219/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4551 - accuracy: 0.7934 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1220/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4549 - accuracy: 0.7917 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1221/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4551 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1222/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4550 - accuracy: 0.7934 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1223/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4550 - accuracy: 0.7899 - val_loss: 0.5096 - val
```

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_accuracy: 0.7396
Epoch 1224/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4549 - accuracy: 0.7917 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1225/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4550 - accuracy: 0.7899 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1226/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4550 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1227/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4549 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1228/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4547 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1229/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4549 - accuracy: 0.7934 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1230/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4547 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1231/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4548 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1232/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4547 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1233/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4546 - accuracy: 0.7934 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1234/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4547 - accuracy: 0.7934 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1235/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4546 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1236/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4546 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1237/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4545 - accuracy: 0.7899 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1238/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4546 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1239/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4546 - accuracy: 0.7899 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1240/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4546 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1241/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4545 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1242/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4544 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1243/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4544 - accuracy: 0.7899 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1244/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4544 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1245/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4543 - accuracy: 0.7934 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1246/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4544 - accuracy: 0.7917 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1247/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4544 - accuracy: 0.7899 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1248/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4544 - accuracy: 0.7882 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1249/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4543 - accuracy: 0.7882 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1250/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4543 - accuracy: 0.7899 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1251/1500
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18/18 [==============================] - 0s 3ms/step - loss: 0.4543 - accuracy: 0.7899 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1252/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4543 - accuracy: 0.7917 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1253/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4542 - accuracy: 0.7899 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1254/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4541 - accuracy: 0.7934 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1255/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4541 - accuracy: 0.7899 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1256/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4541 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1257/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4541 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1258/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4540 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1259/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4541 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1260/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4540 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1261/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4540 - accuracy: 0.7899 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1262/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4539 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1263/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4539 - accuracy: 0.7934 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1264/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4539 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1265/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4538 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1266/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4539 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1267/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4539 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1268/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4538 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1269/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4538 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1270/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4537 - accuracy: 0.7934 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1271/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4538 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1272/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4538 - accuracy: 0.7917 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1273/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4537 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1274/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4538 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1275/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4537 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1276/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4536 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1277/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4538 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1278/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4537 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
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Epoch 1279/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4536 - accuracy: 0.7899 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1280/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4536 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1281/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4536 - accuracy: 0.7934 - val_loss: 0.5093 - val
_accuracy: 0.7396
Epoch 1282/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4534 - accuracy: 0.7951 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1283/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4535 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1284/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4535 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1285/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4534 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1286/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4534 - accuracy: 0.7934 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1287/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4534 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1288/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4534 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1289/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4534 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1290/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4534 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1291/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4532 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1292/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4534 - accuracy: 0.7934 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1293/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4531 - accuracy: 0.7917 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1294/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4531 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1295/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4532 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1296/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4531 - accuracy: 0.7934 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1297/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4531 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1298/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4532 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1299/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4532 - accuracy: 0.7951 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1300/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4530 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1301/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4530 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1302/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4529 - accuracy: 0.7951 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1303/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4530 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1304/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4529 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1305/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4530 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1306/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4530 - accuracy: 0.7934 - val_loss: 0.5095 - val
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_accuracy: 0.7396
Epoch 1307/1500
18/18 [==============================] - 0s 7ms/step - loss: 0.4530 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1308/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4528 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1309/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4528 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1310/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4528 - accuracy: 0.7934 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1311/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4529 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1312/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4528 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1313/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4527 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1314/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4528 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1315/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4527 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1316/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4527 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1317/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4526 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1318/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4527 - accuracy: 0.7917 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1319/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4526 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1320/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4526 - accuracy: 0.7917 - val_loss: 0.5095 - val
_accuracy: 0.7396
Epoch 1321/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4526 - accuracy: 0.7917 - val_loss: 0.5094 - val
_accuracy: 0.7396
Epoch 1322/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4526 - accuracy: 0.7986 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1323/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4524 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1324/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4525 - accuracy: 0.7969 - val_loss: 0.5098 - val
_accuracy: 0.7396
Epoch 1325/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4525 - accuracy: 0.7934 - val_loss: 0.5098 - val
_accuracy: 0.7396
Epoch 1326/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4525 - accuracy: 0.7951 - val_loss: 0.5098 - val
_accuracy: 0.7396
Epoch 1327/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4524 - accuracy: 0.7934 - val_loss: 0.5098 - val
_accuracy: 0.7396
Epoch 1328/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4525 - accuracy: 0.7934 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1329/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4525 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1330/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4524 - accuracy: 0.7917 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1331/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4524 - accuracy: 0.7934 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1332/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4524 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1333/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4523 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1334/1500
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18/18 [==============================] - 0s 5ms/step - loss: 0.4524 - accuracy: 0.7934 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1335/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4523 - accuracy: 0.7934 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1336/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4522 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1337/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4521 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1338/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4524 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1339/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4521 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1340/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4521 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1341/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4522 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1342/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4521 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1343/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4521 - accuracy: 0.7969 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1344/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4520 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7396
Epoch 1345/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4520 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1346/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4521 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1347/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4520 - accuracy: 0.7969 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1348/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4519 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 1349/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4520 - accuracy: 0.7969 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1350/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4519 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1351/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4519 - accuracy: 0.7951 - val_loss: 0.5098 - val
_accuracy: 0.7396
Epoch 1352/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4518 - accuracy: 0.7969 - val_loss: 0.5098 - val
_accuracy: 0.7396
Epoch 1353/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4517 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7396
Epoch 1354/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4517 - accuracy: 0.7969 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 1355/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4518 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1356/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4520 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1357/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4517 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1358/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4516 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1359/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4516 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1360/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4516 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1361/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4516 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
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Epoch 1362/1500
18/18 [==============================] - 0s 7ms/step - loss: 0.4515 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1363/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4515 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1364/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4516 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1365/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4514 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1366/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4515 - accuracy: 0.7934 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 1367/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4514 - accuracy: 0.7969 - val_loss: 0.5093 - val
_accuracy: 0.7344
Epoch 1368/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4514 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1369/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4514 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1370/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4513 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1371/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4514 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1372/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4512 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1373/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4513 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1374/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4511 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1375/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4512 - accuracy: 0.7951 - val_loss: 0.5093 - val
_accuracy: 0.7344
Epoch 1376/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4513 - accuracy: 0.7969 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 1377/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4511 - accuracy: 0.7951 - val_loss: 0.5093 - val
_accuracy: 0.7344
Epoch 1378/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4511 - accuracy: 0.7969 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 1379/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4511 - accuracy: 0.7969 - val_loss: 0.5093 - val
_accuracy: 0.7344
Epoch 1380/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4511 - accuracy: 0.7951 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 1381/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4511 - accuracy: 0.7951 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 1382/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4510 - accuracy: 0.7951 - val_loss: 0.5093 - val
_accuracy: 0.7344
Epoch 1383/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4510 - accuracy: 0.7969 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 1384/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4511 - accuracy: 0.7969 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 1385/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4510 - accuracy: 0.7969 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 1386/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4510 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1387/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4510 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1388/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4509 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1389/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4508 - accuracy: 0.7951 - val_loss: 0.5095 - val
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_accuracy: 0.7344
Epoch 1390/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4509 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1391/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4509 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1392/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4508 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1393/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4507 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1394/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4507 - accuracy: 0.7969 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 1395/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4507 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1396/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4507 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1397/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4507 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1398/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4505 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1399/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4506 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1400/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4505 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1401/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4505 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1402/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4505 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1403/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4505 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1404/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4504 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1405/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4505 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 1406/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4504 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1407/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4504 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1408/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4504 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1409/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4503 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1410/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4503 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1411/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4502 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1412/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4502 - accuracy: 0.7934 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1413/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4502 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1414/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4501 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1415/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4502 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1416/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4503 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1417/1500
```

```
18/18 [==============================] - 0s 3ms/step - loss: 0.4501 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1418/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4500 - accuracy: 0.7969 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1419/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4502 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1420/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4501 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1421/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4500 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1422/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4499 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1423/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4499 - accuracy: 0.7951 - val_loss: 0.5095 - val
_accuracy: 0.7344
Epoch 1424/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4499 - accuracy: 0.7934 - val_loss: 0.5094 - val
_accuracy: 0.7344
Epoch 1425/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4499 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1426/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4497 - accuracy: 0.7969 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1427/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4498 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 1428/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4496 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 1429/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4497 - accuracy: 0.7951 - val_loss: 0.5098 - val
_accuracy: 0.7344
Epoch 1430/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4497 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 1431/1500
18/18 [==============================] - 0s 3ms/step - loss: 0.4496 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1432/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4496 - accuracy: 0.7969 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 1433/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4497 - accuracy: 0.7934 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1434/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4496 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1435/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4495 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1436/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4494 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1437/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4495 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1438/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4494 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 1439/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4493 - accuracy: 0.7969 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 1440/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4493 - accuracy: 0.7969 - val_loss: 0.5098 - val
_accuracy: 0.7344
Epoch 1441/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4494 - accuracy: 0.7969 - val_loss: 0.5098 - val
_accuracy: 0.7344
Epoch 1442/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4493 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 1443/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4492 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7344
Epoch 1444/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4492 - accuracy: 0.7951 - val_loss: 0.5096 - val
_accuracy: 0.7344
```

```
Epoch 1445/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4491 - accuracy: 0.7969 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 1446/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4492 - accuracy: 0.7969 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 1447/1500
18/18 [==============================] - 0s 7ms/step - loss: 0.4493 - accuracy: 0.7951 - val_loss: 0.5098 - val
_accuracy: 0.7344
Epoch 1448/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4492 - accuracy: 0.7951 - val_loss: 0.5098 - val
_accuracy: 0.7344
Epoch 1449/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4490 - accuracy: 0.7951 - val_loss: 0.5098 - val
_accuracy: 0.7344
Epoch 1450/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4490 - accuracy: 0.7951 - val_loss: 0.5099 - val
_accuracy: 0.7344
Epoch 1451/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4490 - accuracy: 0.7951 - val_loss: 0.5098 - val
_accuracy: 0.7344
Epoch 1452/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4491 - accuracy: 0.7951 - val_loss: 0.5097 - val
_accuracy: 0.7344
Epoch 1453/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4490 - accuracy: 0.7934 - val_loss: 0.5098 - val
_accuracy: 0.7344
Epoch 1454/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4489 - accuracy: 0.7951 - val_loss: 0.5098 - val
_accuracy: 0.7344
Epoch 1455/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4488 - accuracy: 0.7951 - val_loss: 0.5098 - val
_accuracy: 0.7344
Epoch 1456/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4488 - accuracy: 0.7969 - val_loss: 0.5099 - val
_accuracy: 0.7344
Epoch 1457/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4488 - accuracy: 0.7951 - val_loss: 0.5099 - val
_accuracy: 0.7344
Epoch 1458/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4487 - accuracy: 0.7951 - val_loss: 0.5099 - val
_accuracy: 0.7344
Epoch 1459/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4487 - accuracy: 0.7951 - val_loss: 0.5099 - val
_accuracy: 0.7344
Epoch 1460/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4488 - accuracy: 0.7951 - val_loss: 0.5100 - val
_accuracy: 0.7344
Epoch 1461/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4488 - accuracy: 0.7951 - val_loss: 0.5099 - val
_accuracy: 0.7344
Epoch 1462/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4486 - accuracy: 0.7951 - val_loss: 0.5099 - val
_accuracy: 0.7344
Epoch 1463/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4487 - accuracy: 0.7969 - val_loss: 0.5099 - val
_accuracy: 0.7344
Epoch 1464/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4487 - accuracy: 0.7969 - val_loss: 0.5099 - val
_accuracy: 0.7344
Epoch 1465/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4486 - accuracy: 0.7951 - val_loss: 0.5100 - val
_accuracy: 0.7344
Epoch 1466/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4485 - accuracy: 0.7951 - val_loss: 0.5100 - val
_accuracy: 0.7344
Epoch 1467/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4485 - accuracy: 0.7969 - val_loss: 0.5099 - val
_accuracy: 0.7344
Epoch 1468/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4484 - accuracy: 0.7969 - val_loss: 0.5098 - val
_accuracy: 0.7344
Epoch 1469/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4485 - accuracy: 0.7934 - val_loss: 0.5099 - val
_accuracy: 0.7344
Epoch 1470/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4484 - accuracy: 0.7951 - val_loss: 0.5100 - val
_accuracy: 0.7344
Epoch 1471/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4484 - accuracy: 0.7951 - val_loss: 0.5100 - val
_accuracy: 0.7344
Epoch 1472/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4485 - accuracy: 0.7969 - val_loss: 0.5100 - val
```

```
_accuracy: 0.7344
Epoch 1473/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4484 - accuracy: 0.7969 - val_loss: 0.5100 - val
_accuracy: 0.7344
Epoch 1474/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4484 - accuracy: 0.7969 - val_loss: 0.5100 - val
_accuracy: 0.7344
Epoch 1475/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4483 - accuracy: 0.7969 - val_loss: 0.5101 - val
_accuracy: 0.7344
Epoch 1476/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4483 - accuracy: 0.7969 - val_loss: 0.5101 - val
_accuracy: 0.7344
Epoch 1477/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4483 - accuracy: 0.7969 - val_loss: 0.5100 - val
_accuracy: 0.7344
Epoch 1478/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4482 - accuracy: 0.7951 - val_loss: 0.5102 - val
_accuracy: 0.7344
Epoch 1479/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4482 - accuracy: 0.7969 - val_loss: 0.5102 - val
_accuracy: 0.7344
Epoch 1480/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4480 - accuracy: 0.7969 - val_loss: 0.5102 - val
_accuracy: 0.7344
Epoch 1481/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4481 - accuracy: 0.7951 - val_loss: 0.5101 - val
_accuracy: 0.7344
Epoch 1482/1500
18/18 [==============================] - 0s 4ms/step - loss: 0.4482 - accuracy: 0.7969 - val_loss: 0.5102 - val
_accuracy: 0.7344
Epoch 1483/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4479 - accuracy: 0.7969 - val_loss: 0.5103 - val
_accuracy: 0.7344
Epoch 1484/1500
18/18 [==============================] - 0s 8ms/step - loss: 0.4480 - accuracy: 0.7969 - val_loss: 0.5103 - val
_accuracy: 0.7344
Epoch 1485/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4479 - accuracy: 0.7969 - val_loss: 0.5103 - val
_accuracy: 0.7344
Epoch 1486/1500
18/18 [==============================] - 0s 7ms/step - loss: 0.4479 - accuracy: 0.7969 - val_loss: 0.5103 - val
_accuracy: 0.7344
Epoch 1487/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4479 - accuracy: 0.7969 - val_loss: 0.5101 - val
_accuracy: 0.7344
Epoch 1488/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4479 - accuracy: 0.7969 - val_loss: 0.5101 - val
_accuracy: 0.7344
Epoch 1489/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4479 - accuracy: 0.7969 - val_loss: 0.5103 - val
_accuracy: 0.7344
Epoch 1490/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4478 - accuracy: 0.7969 - val_loss: 0.5104 - val
_accuracy: 0.7344
Epoch 1491/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4477 - accuracy: 0.7969 - val_loss: 0.5105 - val
_accuracy: 0.7344
Epoch 1492/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4478 - accuracy: 0.7969 - val_loss: 0.5106 - val
_accuracy: 0.7344
Epoch 1493/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4477 - accuracy: 0.7969 - val_loss: 0.5106 - val
_accuracy: 0.7344
Epoch 1494/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4476 - accuracy: 0.7969 - val_loss: 0.5104 - val
_accuracy: 0.7344
Epoch 1495/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4475 - accuracy: 0.7969 - val_loss: 0.5104 - val
_accuracy: 0.7344
Epoch 1496/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4475 - accuracy: 0.7969 - val_loss: 0.5105 - val
_accuracy: 0.7344
Epoch 1497/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4475 - accuracy: 0.7969 - val_loss: 0.5105 - val
_accuracy: 0.7344
Epoch 1498/1500
18/18 [==============================] - 0s 5ms/step - loss: 0.4474 - accuracy: 0.7969 - val_loss: 0.5105 - val
_accuracy: 0.7344
Epoch 1499/1500
18/18 [==============================] - 0s 6ms/step - loss: 0.4477 - accuracy: 0.7969 - val_loss: 0.5106 - val
_accuracy: 0.7344
Epoch 1500/1500
```

```
18/18 [==============================] - 0s 5ms/step - loss: 0.4474 - accuracy: 0.7951 - val_loss: 0.5106 - val
_accuracy: 0.7344
```

In [74]:

```python
run_hist_2.history.keys()
```

Out[74]:

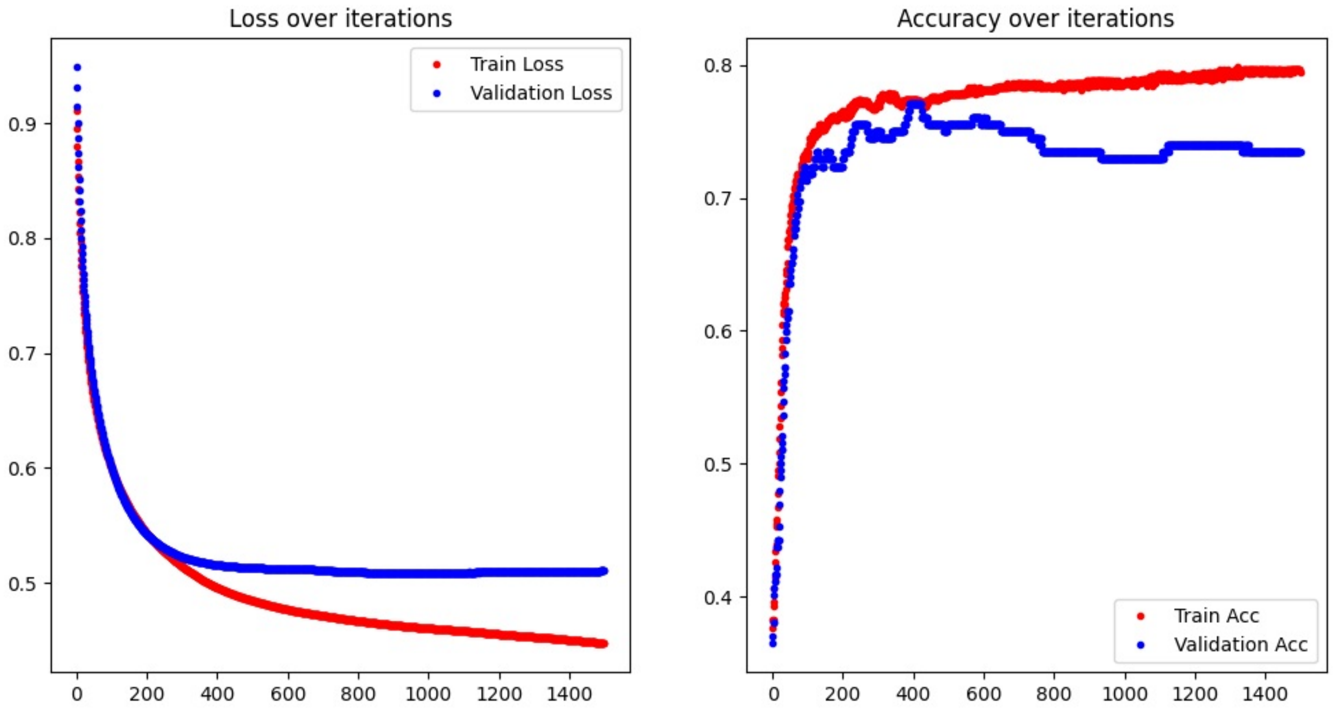
```
dict_keys(['loss', 'accuracy', 'val_loss', 'val_accuracy'])
```

In [107…

```python
n = len(run_hist_2.history["loss"])

fig = plt.figure(figsize=(12, 6))
ax = fig.add_subplot(1, 2, 1)
ax.plot(range(n), (run_hist_2.history["loss"]),'r.', label="Train Loss")
ax.plot(range(n), (run_hist_2.history["val_loss"]),'b.', label="Validation Loss")
ax.legend()
ax.set_title('Loss over iterations')

ax = fig.add_subplot(1, 2, 2)
ax.plot(range(n), (run_hist_2.history["accuracy"]),'r.', label="Train Acc")
ax.plot(range(n), (run_hist_2.history["val_accuracy"]),'b.', label="Validation Acc")
ax.legend(loc='lower right')
ax.set_title('Accuracy over iterations')
```

Out[107]:

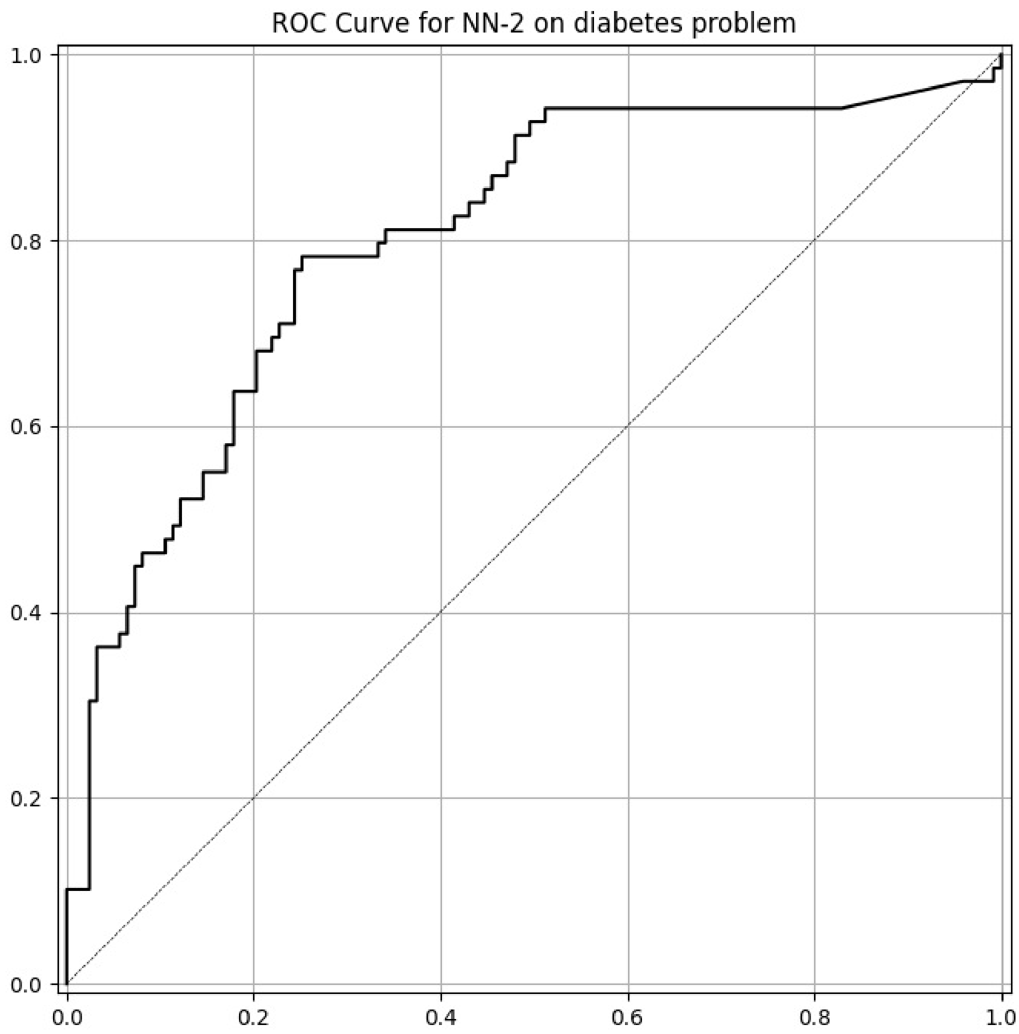
```
Text(0.5, 1.0, 'Accuracy over iterations')
```




In [108…

```python
# Make predictions on test data
y_pred_prob_nn_2 = model_2.predict(X_test_norm)

# Obtain predicted class labels by taking the index of the highest probability for each example
y_pred_class_nn_2 = y_pred_prob_nn_2.argmax(axis=-1)

print('')
print('accuracy is {:.3f}'.format(accuracy_score(y_test,y_pred_class_nn_2)))
print('roc-auc is {:.3f}'.format(roc_auc_score(y_test,y_pred_prob_nn_2)))

plot_roc(y_test, y_pred_prob_nn_2, 'NN-2')
```

```
6/6 [==============================] - 0s 2ms/step

accuracy is 0.641
roc-auc is 0.801
```




## Authors

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