

# untitled0

March 8, 2024

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[4]: import yfinance as yf
import numpy as np
import pandas as pd
import seaborn as sns
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
from sklearn.preprocessing import MinMaxScaler
import tensorflow as tf
from tensorflow.keras.models import Sequential
from tensorflow.keras.layers import Dense
stocks = ['AAPL', 'GOOGL', 'MSFT', 'AMZN', 'TPE', 'NFLX', 'TSLA', 'NVDA',
        ↪ 'INTC', 'AMD']
data = yf.download(stocks, start='2018-01-01', end='2024-03-08')
data = data['Adj Close'].pct_change().dropna()
X = data.iloc[:, :-1].values
y = data.iloc[:, -1].values
X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2,
        ↪ random_state=42)
scaler = MinMaxScaler()
X_train = scaler.fit_transform(X_train)
X_test = scaler.transform(X_test)
model = Sequential()
model.add(Dense(64, activation='relu', input_shape=(X_train.shape[1],)))
model.add(Dense(32, activation='relu'))
model.add(Dense(1))
model.compile(loss='mse', optimizer='adam')
history = model.fit(X_train, y_train, epochs=1000, batch_size=32,
        ↪ validation_data=(X_test, y_test))
predictions = model.predict(X_test)
df_predictions = pd.DataFrame({'Actual': y_test, 'Predicted': predictions.
        ↪ flatten()})
plt.figure(figsize=(12,6 ))
plt.subplot()
sns.histplot(data=df_predictions, x='Actual', kde=True, label='Actual',
        ↪ color='green')
sns.histplot(data=df_predictions, x='Predicted', kde=True, label='Predicted',
        ↪ color='red')
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plt.xlabel('Percentage Change')
plt.ylabel('Count')
plt.title('Distribution of Actual and Predicted Stock Prices')
plt.legend()
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[\*\*\*\*\*100%\*\*\*\*\*] 10 of 10 completed

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Epoch 2/1000
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Epoch 191/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
0.0011  
Epoch 192/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
0.0011  
Epoch 193/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0012 - val\_loss:  
0.0011  
Epoch 194/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
0.0010  
Epoch 195/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
0.0010  
Epoch 196/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
0.0011  
Epoch 197/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
0.0011  
Epoch 198/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
0.0010  
Epoch 199/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
0.0010  
Epoch 200/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
0.0011  
Epoch 201/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
0.0011  
Epoch 202/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
0.0011  
Epoch 203/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 204/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
0.0010  
Epoch 205/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
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Epoch 206/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:

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Epoch 207/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 208/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
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Epoch 209/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 210/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
0.0010  
Epoch 211/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 212/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
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Epoch 213/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 214/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 215/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 216/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 217/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
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Epoch 218/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 219/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 220/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 221/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
0.0010  
Epoch 222/1000  
39/39 [=====] - 0s 6ms/step - loss: 0.0011 - val\_loss:

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Epoch 223/1000  
39/39 [=====] - 0s 6ms/step - loss: 0.0011 - val\_loss:  
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Epoch 224/1000  
39/39 [=====] - 0s 6ms/step - loss: 0.0011 - val\_loss:  
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Epoch 225/1000  
39/39 [=====] - 0s 6ms/step - loss: 0.0011 - val\_loss:  
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Epoch 226/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
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Epoch 227/1000  
39/39 [=====] - 0s 5ms/step - loss: 0.0011 - val\_loss:  
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Epoch 228/1000  
39/39 [=====] - 0s 5ms/step - loss: 0.0011 - val\_loss:  
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Epoch 229/1000  
39/39 [=====] - 0s 6ms/step - loss: 0.0011 - val\_loss:  
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Epoch 230/1000  
39/39 [=====] - 0s 7ms/step - loss: 0.0011 - val\_loss:  
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Epoch 231/1000  
39/39 [=====] - 0s 7ms/step - loss: 0.0011 - val\_loss:  
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Epoch 232/1000  
39/39 [=====] - 0s 6ms/step - loss: 0.0011 - val\_loss:  
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Epoch 233/1000  
39/39 [=====] - 0s 7ms/step - loss: 0.0011 - val\_loss:  
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Epoch 234/1000  
39/39 [=====] - 0s 5ms/step - loss: 0.0011 - val\_loss:  
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Epoch 235/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 236/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
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Epoch 237/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 238/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:



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Epoch 239/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 240/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
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Epoch 241/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0010 - val\_loss:  
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Epoch 242/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 243/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 244/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
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Epoch 245/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
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Epoch 246/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 247/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 248/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 249/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
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Epoch 250/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 251/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
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Epoch 252/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 253/1000  
39/39 [=====] - 0s 5ms/step - loss: 0.0011 - val\_loss:  
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Epoch 254/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:

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Epoch 255/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 256/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
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Epoch 257/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
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Epoch 258/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 259/1000  
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Epoch 260/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 261/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 262/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 263/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 264/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 265/1000  
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Epoch 266/1000  
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Epoch 267/1000  
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Epoch 268/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 269/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 270/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:

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Epoch 271/1000  
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Epoch 272/1000  
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Epoch 273/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 274/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 275/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 276/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 277/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 278/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 279/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 280/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 281/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 282/1000  
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Epoch 283/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 284/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 285/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 286/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:

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Epoch 287/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 288/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val\_loss:  
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Epoch 289/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 290/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 291/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 292/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 293/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 294/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 295/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0010 - val\_loss:  
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Epoch 296/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0010 - val\_loss:  
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Epoch 297/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 298/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 299/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0010 - val\_loss:  
0.0010  
Epoch 300/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 301/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
0.0010  
Epoch 302/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:

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0.0011
Epoch 303/1000
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val_loss:
0.0011
Epoch 304/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0012
Epoch 305/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 306/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val_loss:
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Epoch 307/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 308/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 309/1000
39/39 [=====] - 0s 6ms/step - loss: 0.0011 - val_loss:
0.0011
Epoch 310/1000
39/39 [=====] - 0s 7ms/step - loss: 0.0011 - val_loss:
0.0012
Epoch 311/1000
39/39 [=====] - 0s 4ms/step - loss: 0.0011 - val_loss:
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Epoch 312/1000
39/39 [=====] - 0s 5ms/step - loss: 0.0010 - val_loss:
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Epoch 313/1000
39/39 [=====] - 0s 4ms/step - loss: 0.0010 - val_loss:
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Epoch 314/1000
39/39 [=====] - 0s 4ms/step - loss: 0.0010 - val_loss:
0.0010
Epoch 315/1000
39/39 [=====] - 0s 4ms/step - loss: 0.0010 - val_loss:
0.0013
Epoch 316/1000
39/39 [=====] - 0s 6ms/step - loss: 0.0011 - val_loss:
0.0010
Epoch 317/1000
39/39 [=====] - 0s 5ms/step - loss: 0.0011 - val_loss:
0.0011
Epoch 318/1000
39/39 [=====] - 0s 6ms/step - loss: 0.0010 - val_loss:

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0.0010  
Epoch 319/1000  
39/39 [=====] - 0s 6ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 320/1000  
39/39 [=====] - 0s 7ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 321/1000  
39/39 [=====] - 0s 5ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 322/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 323/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 324/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 325/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 326/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 327/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 328/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 329/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 330/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 331/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
0.0010  
Epoch 332/1000  
39/39 [=====] - 0s 9ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 333/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 334/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:

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Epoch 335/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 336/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
0.0011  
Epoch 337/1000  
39/39 [=====] - 0s 8ms/step - loss: 0.0010 - val\_loss:  
0.0010  
Epoch 338/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0010 - val\_loss:  
0.0010  
Epoch 339/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 340/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 341/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 342/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 343/1000  
39/39 [=====] - 0s 7ms/step - loss: 0.0010 - val\_loss:  
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Epoch 344/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 345/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 346/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 347/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 348/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
0.0010  
Epoch 349/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
0.0012  
Epoch 350/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:

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0.0011
Epoch 351/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val_loss:
0.0011
Epoch 352/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val_loss:
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Epoch 353/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 354/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0012
Epoch 355/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 356/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 357/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 358/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 359/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 360/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 361/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 362/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 363/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val_loss:
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Epoch 364/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 365/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val_loss:
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Epoch 366/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:

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0.0011
Epoch 367/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val_loss:
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Epoch 368/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val_loss:
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Epoch 369/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 370/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 371/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 372/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val_loss:
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Epoch 373/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 374/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 375/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 376/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 377/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 378/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 379/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 380/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 381/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
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Epoch 382/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:

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Epoch 383/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 384/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 385/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 386/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 387/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 388/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val\_loss:  
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Epoch 389/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 390/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 391/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
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Epoch 392/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 393/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 394/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
0.0010  
Epoch 395/1000  
39/39 [=====] - 0s 6ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 396/1000  
39/39 [=====] - 0s 5ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 397/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 398/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0010 - val\_loss:

0.0011  
Epoch 399/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0010 - val\_loss:  
0.0010  
Epoch 400/1000  
39/39 [=====] - 0s 5ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 401/1000  
39/39 [=====] - 0s 5ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 402/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 403/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 404/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 405/1000  
39/39 [=====] - 0s 5ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 406/1000  
39/39 [=====] - 0s 5ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 407/1000  
39/39 [=====] - 0s 5ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 408/1000  
39/39 [=====] - 0s 4ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 409/1000  
39/39 [=====] - 0s 6ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 410/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
0.0010  
Epoch 411/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 412/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 413/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:  
0.0011  
Epoch 414/1000  
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val\_loss:

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0.0011
Epoch 415/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 416/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 417/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9749e-04 -
val_loss: 0.0011
Epoch 418/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val_loss:
0.0011
Epoch 419/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 420/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9521e-04 -
val_loss: 0.0011
Epoch 421/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 422/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 423/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 424/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0010
Epoch 425/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 426/1000
39/39 [=====] - 0s 3ms/step - loss: 9.8978e-04 -
val_loss: 0.0011
Epoch 427/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9097e-04 -
val_loss: 0.0011
Epoch 428/1000
39/39 [=====] - 0s 4ms/step - loss: 9.8165e-04 -
val_loss: 0.0011
Epoch 429/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0010
Epoch 430/1000
39/39 [=====] - 0s 4ms/step - loss: 0.0010 - val_loss:

```

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0.0011
Epoch 431/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 432/1000
39/39 [=====] - 0s 4ms/step - loss: 9.9726e-04 -
val_loss: 0.0012
Epoch 433/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9790e-04 -
val_loss: 0.0011
Epoch 434/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0010
Epoch 435/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9469e-04 -
val_loss: 0.0011
Epoch 436/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9502e-04 -
val_loss: 0.0011
Epoch 437/1000
39/39 [=====] - 0s 3ms/step - loss: 9.7994e-04 -
val_loss: 0.0013
Epoch 438/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0011 - val_loss:
0.0011
Epoch 439/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9254e-04 -
val_loss: 0.0011
Epoch 440/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 441/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 442/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 443/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 444/1000
39/39 [=====] - 0s 3ms/step - loss: 9.7777e-04 -
val_loss: 0.0011
Epoch 445/1000
39/39 [=====] - 0s 3ms/step - loss: 9.7416e-04 -
val_loss: 0.0010
Epoch 446/1000
39/39 [=====] - 0s 3ms/step - loss: 9.8162e-04 -

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val_loss: 0.0011
Epoch 447/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9693e-04 -
val_loss: 0.0012
Epoch 448/1000
39/39 [=====] - 0s 3ms/step - loss: 9.8695e-04 -
val_loss: 0.0011
Epoch 449/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0012
Epoch 450/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 451/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9219e-04 -
val_loss: 0.0011
Epoch 452/1000
39/39 [=====] - 0s 3ms/step - loss: 9.8858e-04 -
val_loss: 0.0011
Epoch 453/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9366e-04 -
val_loss: 0.0011
Epoch 454/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 455/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0010
Epoch 456/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 457/1000
39/39 [=====] - 0s 3ms/step - loss: 9.7335e-04 -
val_loss: 0.0011
Epoch 458/1000
39/39 [=====] - 0s 3ms/step - loss: 9.8420e-04 -
val_loss: 0.0011
Epoch 459/1000
39/39 [=====] - 0s 3ms/step - loss: 9.8266e-04 -
val_loss: 0.0011
Epoch 460/1000
39/39 [=====] - 0s 3ms/step - loss: 9.6673e-04 -
val_loss: 0.0011
Epoch 461/1000
39/39 [=====] - 0s 3ms/step - loss: 9.7138e-04 -
val_loss: 0.0012
Epoch 462/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9892e-04 -

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val_loss: 0.0011
Epoch 463/1000
39/39 [=====] - 0s 4ms/step - loss: 9.8425e-04 -
val_loss: 0.0011
Epoch 464/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 465/1000
39/39 [=====] - 0s 3ms/step - loss: 9.8302e-04 -
val_loss: 0.0011
Epoch 466/1000
39/39 [=====] - 0s 3ms/step - loss: 9.8103e-04 -
val_loss: 0.0011
Epoch 467/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 468/1000
39/39 [=====] - 0s 3ms/step - loss: 9.8165e-04 -
val_loss: 0.0011
Epoch 469/1000
39/39 [=====] - 0s 3ms/step - loss: 9.6920e-04 -
val_loss: 0.0011
Epoch 470/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 471/1000
39/39 [=====] - 0s 4ms/step - loss: 9.9753e-04 -
val_loss: 0.0011
Epoch 472/1000
39/39 [=====] - 0s 4ms/step - loss: 9.7497e-04 -
val_loss: 0.0011
Epoch 473/1000
39/39 [=====] - 0s 3ms/step - loss: 9.7518e-04 -
val_loss: 0.0011
Epoch 474/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9257e-04 -
val_loss: 0.0011
Epoch 475/1000
39/39 [=====] - 0s 3ms/step - loss: 9.7467e-04 -
val_loss: 0.0012
Epoch 476/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9493e-04 -
val_loss: 0.0012
Epoch 477/1000
39/39 [=====] - 0s 3ms/step - loss: 9.6073e-04 -
val_loss: 0.0012
Epoch 478/1000
39/39 [=====] - 0s 3ms/step - loss: 9.7179e-04 -

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val_loss: 0.0011
Epoch 479/1000
39/39 [=====] - 0s 3ms/step - loss: 9.5757e-04 -
val_loss: 0.0011
Epoch 480/1000
39/39 [=====] - 0s 3ms/step - loss: 9.8999e-04 -
val_loss: 0.0011
Epoch 481/1000
39/39 [=====] - 0s 3ms/step - loss: 9.7078e-04 -
val_loss: 0.0011
Epoch 482/1000
39/39 [=====] - 0s 3ms/step - loss: 9.5213e-04 -
val_loss: 0.0011
Epoch 483/1000
39/39 [=====] - 0s 3ms/step - loss: 9.5465e-04 -
val_loss: 0.0011
Epoch 484/1000
39/39 [=====] - 0s 3ms/step - loss: 9.6286e-04 -
val_loss: 0.0012
Epoch 485/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 486/1000
39/39 [=====] - 0s 4ms/step - loss: 9.7165e-04 -
val_loss: 0.0011
Epoch 487/1000
39/39 [=====] - 0s 4ms/step - loss: 9.6944e-04 -
val_loss: 0.0012
Epoch 488/1000
39/39 [=====] - 0s 7ms/step - loss: 9.8636e-04 -
val_loss: 0.0011
Epoch 489/1000
39/39 [=====] - 0s 6ms/step - loss: 9.9544e-04 -
val_loss: 0.0011
Epoch 490/1000
39/39 [=====] - 0s 6ms/step - loss: 9.8981e-04 -
val_loss: 0.0011
Epoch 491/1000
39/39 [=====] - 0s 6ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 492/1000
39/39 [=====] - 0s 5ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 493/1000
39/39 [=====] - 0s 6ms/step - loss: 9.8595e-04 -
val_loss: 0.0012
Epoch 494/1000
39/39 [=====] - 0s 5ms/step - loss: 9.8120e-04 -

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val_loss: 0.0011
Epoch 495/1000
39/39 [=====] - 0s 6ms/step - loss: 9.9730e-04 -
val_loss: 0.0012
Epoch 496/1000
39/39 [=====] - 0s 5ms/step - loss: 9.9328e-04 -
val_loss: 0.0011
Epoch 497/1000
39/39 [=====] - 0s 5ms/step - loss: 9.6498e-04 -
val_loss: 0.0012
Epoch 498/1000
39/39 [=====] - 0s 7ms/step - loss: 9.6010e-04 -
val_loss: 0.0012
Epoch 499/1000
39/39 [=====] - 0s 7ms/step - loss: 9.8092e-04 -
val_loss: 0.0010
Epoch 500/1000
39/39 [=====] - 0s 4ms/step - loss: 9.7319e-04 -
val_loss: 0.0011
Epoch 501/1000
39/39 [=====] - 0s 5ms/step - loss: 9.5566e-04 -
val_loss: 0.0011
Epoch 502/1000
39/39 [=====] - 0s 4ms/step - loss: 9.4175e-04 -
val_loss: 0.0011
Epoch 503/1000
39/39 [=====] - 0s 4ms/step - loss: 9.6668e-04 -
val_loss: 0.0012
Epoch 504/1000
39/39 [=====] - 0s 3ms/step - loss: 9.5157e-04 -
val_loss: 0.0011
Epoch 505/1000
39/39 [=====] - 0s 5ms/step - loss: 9.7448e-04 -
val_loss: 0.0012
Epoch 506/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 507/1000
39/39 [=====] - 0s 4ms/step - loss: 9.9218e-04 -
val_loss: 0.0011
Epoch 508/1000
39/39 [=====] - 0s 3ms/step - loss: 9.3729e-04 -
val_loss: 0.0011
Epoch 509/1000
39/39 [=====] - 0s 5ms/step - loss: 9.7512e-04 -
val_loss: 0.0011
Epoch 510/1000
39/39 [=====] - 0s 4ms/step - loss: 9.8852e-04 -

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val_loss: 0.0011
Epoch 511/1000
39/39 [=====] - 0s 3ms/step - loss: 9.8145e-04 -
val_loss: 0.0011
Epoch 512/1000
39/39 [=====] - 0s 3ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 513/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9654e-04 -
val_loss: 0.0011
Epoch 514/1000
39/39 [=====] - 0s 4ms/step - loss: 9.9006e-04 -
val_loss: 0.0011
Epoch 515/1000
39/39 [=====] - 0s 3ms/step - loss: 9.5308e-04 -
val_loss: 0.0011
Epoch 516/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9094e-04 -
val_loss: 0.0011
Epoch 517/1000
39/39 [=====] - 0s 3ms/step - loss: 9.5842e-04 -
val_loss: 0.0011
Epoch 518/1000
39/39 [=====] - 0s 4ms/step - loss: 9.8350e-04 -
val_loss: 0.0011
Epoch 519/1000
39/39 [=====] - 0s 3ms/step - loss: 9.3383e-04 -
val_loss: 0.0012
Epoch 520/1000
39/39 [=====] - 0s 4ms/step - loss: 9.4422e-04 -
val_loss: 0.0011
Epoch 521/1000
39/39 [=====] - 0s 4ms/step - loss: 9.6923e-04 -
val_loss: 0.0011
Epoch 522/1000
39/39 [=====] - 0s 4ms/step - loss: 9.7624e-04 -
val_loss: 0.0011
Epoch 523/1000
39/39 [=====] - 0s 3ms/step - loss: 9.5077e-04 -
val_loss: 0.0011
Epoch 524/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9407e-04 -
val_loss: 0.0011
Epoch 525/1000
39/39 [=====] - 0s 3ms/step - loss: 9.4891e-04 -
val_loss: 0.0012
Epoch 526/1000
39/39 [=====] - 0s 4ms/step - loss: 9.6027e-04 -

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val_loss: 0.0012
Epoch 527/1000
39/39 [=====] - 0s 3ms/step - loss: 9.5412e-04 -
val_loss: 0.0012
Epoch 528/1000
39/39 [=====] - 0s 4ms/step - loss: 9.3267e-04 -
val_loss: 0.0012
Epoch 529/1000
39/39 [=====] - 0s 3ms/step - loss: 9.4923e-04 -
val_loss: 0.0012
Epoch 530/1000
39/39 [=====] - 0s 4ms/step - loss: 9.4638e-04 -
val_loss: 0.0012
Epoch 531/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9130e-04 -
val_loss: 0.0011
Epoch 532/1000
39/39 [=====] - 0s 4ms/step - loss: 9.6396e-04 -
val_loss: 0.0011
Epoch 533/1000
39/39 [=====] - 0s 4ms/step - loss: 9.6837e-04 -
val_loss: 0.0011
Epoch 534/1000
39/39 [=====] - 0s 3ms/step - loss: 9.5660e-04 -
val_loss: 0.0011
Epoch 535/1000
39/39 [=====] - 0s 5ms/step - loss: 9.7264e-04 -
val_loss: 0.0011
Epoch 536/1000
39/39 [=====] - 0s 4ms/step - loss: 9.4844e-04 -
val_loss: 0.0012
Epoch 537/1000
39/39 [=====] - 0s 4ms/step - loss: 9.4333e-04 -
val_loss: 0.0012
Epoch 538/1000
39/39 [=====] - 0s 4ms/step - loss: 9.4234e-04 -
val_loss: 0.0012
Epoch 539/1000
39/39 [=====] - 0s 3ms/step - loss: 9.9127e-04 -
val_loss: 0.0011
Epoch 540/1000
39/39 [=====] - 0s 4ms/step - loss: 9.4843e-04 -
val_loss: 0.0011
Epoch 541/1000
39/39 [=====] - 0s 4ms/step - loss: 9.5642e-04 -
val_loss: 0.0011
Epoch 542/1000
39/39 [=====] - 0s 4ms/step - loss: 9.6110e-04 -

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val_loss: 0.0011
Epoch 543/1000
39/39 [=====] - 0s 4ms/step - loss: 9.9330e-04 -
val_loss: 0.0011
Epoch 544/1000
39/39 [=====] - 0s 4ms/step - loss: 9.3700e-04 -
val_loss: 0.0011
Epoch 545/1000
39/39 [=====] - 0s 4ms/step - loss: 9.4289e-04 -
val_loss: 0.0011
Epoch 546/1000
39/39 [=====] - 0s 3ms/step - loss: 9.2423e-04 -
val_loss: 0.0011
Epoch 547/1000
39/39 [=====] - 0s 3ms/step - loss: 9.2634e-04 -
val_loss: 0.0011
Epoch 548/1000
39/39 [=====] - 0s 3ms/step - loss: 9.6065e-04 -
val_loss: 0.0011
Epoch 549/1000
39/39 [=====] - 0s 4ms/step - loss: 9.5631e-04 -
val_loss: 0.0012
Epoch 550/1000
39/39 [=====] - 0s 4ms/step - loss: 9.4640e-04 -
val_loss: 0.0011
Epoch 551/1000
39/39 [=====] - 0s 3ms/step - loss: 9.4498e-04 -
val_loss: 0.0011
Epoch 552/1000
39/39 [=====] - 0s 3ms/step - loss: 9.4664e-04 -
val_loss: 0.0011
Epoch 553/1000
39/39 [=====] - 0s 3ms/step - loss: 9.2967e-04 -
val_loss: 0.0012
Epoch 554/1000
39/39 [=====] - 0s 4ms/step - loss: 9.6347e-04 -
val_loss: 0.0011
Epoch 555/1000
39/39 [=====] - 0s 4ms/step - loss: 9.3243e-04 -
val_loss: 0.0011
Epoch 556/1000
39/39 [=====] - 0s 4ms/step - loss: 9.8036e-04 -
val_loss: 0.0012
Epoch 557/1000
39/39 [=====] - 0s 4ms/step - loss: 9.8806e-04 -
val_loss: 0.0012
Epoch 558/1000
39/39 [=====] - 0s 3ms/step - loss: 9.4243e-04 -

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val_loss: 0.0011
Epoch 559/1000
39/39 [=====] - 0s 4ms/step - loss: 9.3434e-04 -
val_loss: 0.0012
Epoch 560/1000
39/39 [=====] - 0s 3ms/step - loss: 9.3143e-04 -
val_loss: 0.0012
Epoch 561/1000
39/39 [=====] - 0s 3ms/step - loss: 9.4530e-04 -
val_loss: 0.0012
Epoch 562/1000
39/39 [=====] - 0s 4ms/step - loss: 9.5337e-04 -
val_loss: 0.0011
Epoch 563/1000
39/39 [=====] - 0s 5ms/step - loss: 9.6488e-04 -
val_loss: 0.0011
Epoch 564/1000
39/39 [=====] - 0s 3ms/step - loss: 9.4697e-04 -
val_loss: 0.0012
Epoch 565/1000
39/39 [=====] - 0s 4ms/step - loss: 9.6559e-04 -
val_loss: 0.0012
Epoch 566/1000
39/39 [=====] - 0s 4ms/step - loss: 9.3031e-04 -
val_loss: 0.0011
Epoch 567/1000
39/39 [=====] - 0s 5ms/step - loss: 9.5404e-04 -
val_loss: 0.0011
Epoch 568/1000
39/39 [=====] - 0s 5ms/step - loss: 9.3222e-04 -
val_loss: 0.0011
Epoch 569/1000
39/39 [=====] - 0s 6ms/step - loss: 9.3044e-04 -
val_loss: 0.0011
Epoch 570/1000
39/39 [=====] - 0s 6ms/step - loss: 9.3306e-04 -
val_loss: 0.0012
Epoch 571/1000
39/39 [=====] - 0s 5ms/step - loss: 9.5236e-04 -
val_loss: 0.0011
Epoch 572/1000
39/39 [=====] - 0s 4ms/step - loss: 9.2649e-04 -
val_loss: 0.0012
Epoch 573/1000
39/39 [=====] - 0s 6ms/step - loss: 0.0010 - val_loss:
0.0011
Epoch 574/1000
39/39 [=====] - 0s 5ms/step - loss: 9.6575e-04 -

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val_loss: 0.0012
Epoch 575/1000
39/39 [=====] - 0s 7ms/step - loss: 9.2127e-04 -
val_loss: 0.0011
Epoch 576/1000
39/39 [=====] - 0s 6ms/step - loss: 9.3130e-04 -
val_loss: 0.0011
Epoch 577/1000
39/39 [=====] - 0s 7ms/step - loss: 9.4390e-04 -
val_loss: 0.0012
Epoch 578/1000
39/39 [=====] - 0s 5ms/step - loss: 9.6287e-04 -
val_loss: 0.0011
Epoch 579/1000
39/39 [=====] - 0s 5ms/step - loss: 9.1614e-04 -
val_loss: 0.0011
Epoch 580/1000
39/39 [=====] - 0s 5ms/step - loss: 9.1817e-04 -
val_loss: 0.0011
Epoch 581/1000
39/39 [=====] - 0s 5ms/step - loss: 9.9455e-04 -
val_loss: 0.0011
Epoch 582/1000
39/39 [=====] - 0s 4ms/step - loss: 9.3022e-04 -
val_loss: 0.0011
Epoch 583/1000
39/39 [=====] - 0s 3ms/step - loss: 9.1149e-04 -
val_loss: 0.0012
Epoch 584/1000
39/39 [=====] - 0s 4ms/step - loss: 9.1398e-04 -
val_loss: 0.0011
Epoch 585/1000
39/39 [=====] - 0s 3ms/step - loss: 9.5222e-04 -
val_loss: 0.0011
Epoch 586/1000
39/39 [=====] - 0s 3ms/step - loss: 9.3234e-04 -
val_loss: 0.0011
Epoch 587/1000
39/39 [=====] - 0s 3ms/step - loss: 9.0518e-04 -
val_loss: 0.0011
Epoch 588/1000
39/39 [=====] - 0s 4ms/step - loss: 9.0662e-04 -
val_loss: 0.0012
Epoch 589/1000
39/39 [=====] - 0s 4ms/step - loss: 9.5511e-04 -
val_loss: 0.0012
Epoch 590/1000
39/39 [=====] - 0s 4ms/step - loss: 9.2686e-04 -

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val_loss: 0.0012
Epoch 591/1000
39/39 [=====] - 0s 4ms/step - loss: 9.5807e-04 -
val_loss: 0.0012
Epoch 592/1000
39/39 [=====] - 0s 3ms/step - loss: 9.1871e-04 -
val_loss: 0.0012
Epoch 593/1000
39/39 [=====] - 0s 4ms/step - loss: 9.5890e-04 -
val_loss: 0.0012
Epoch 594/1000
39/39 [=====] - 0s 4ms/step - loss: 9.2565e-04 -
val_loss: 0.0011
Epoch 595/1000
39/39 [=====] - 0s 3ms/step - loss: 9.0697e-04 -
val_loss: 0.0013
Epoch 596/1000
39/39 [=====] - 0s 3ms/step - loss: 9.3165e-04 -
val_loss: 0.0012
Epoch 597/1000
39/39 [=====] - 0s 4ms/step - loss: 9.0747e-04 -
val_loss: 0.0011
Epoch 598/1000
39/39 [=====] - 0s 5ms/step - loss: 9.5798e-04 -
val_loss: 0.0012
Epoch 599/1000
39/39 [=====] - 0s 3ms/step - loss: 9.2711e-04 -
val_loss: 0.0011
Epoch 600/1000
39/39 [=====] - 0s 3ms/step - loss: 8.9671e-04 -
val_loss: 0.0012
Epoch 601/1000
39/39 [=====] - 0s 3ms/step - loss: 9.0594e-04 -
val_loss: 0.0012
Epoch 602/1000
39/39 [=====] - 0s 4ms/step - loss: 9.1820e-04 -
val_loss: 0.0012
Epoch 603/1000
39/39 [=====] - 0s 3ms/step - loss: 9.0652e-04 -
val_loss: 0.0011
Epoch 604/1000
39/39 [=====] - 0s 3ms/step - loss: 9.2058e-04 -
val_loss: 0.0011
Epoch 605/1000
39/39 [=====] - 0s 4ms/step - loss: 9.0235e-04 -
val_loss: 0.0011
Epoch 606/1000
39/39 [=====] - 0s 3ms/step - loss: 9.1259e-04 -

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val_loss: 0.0011
Epoch 607/1000
39/39 [=====] - 0s 3ms/step - loss: 9.1320e-04 -
val_loss: 0.0011
Epoch 608/1000
39/39 [=====] - 0s 4ms/step - loss: 9.0540e-04 -
val_loss: 0.0012
Epoch 609/1000
39/39 [=====] - 0s 3ms/step - loss: 9.1099e-04 -
val_loss: 0.0012
Epoch 610/1000
39/39 [=====] - 0s 3ms/step - loss: 9.1435e-04 -
val_loss: 0.0012
Epoch 611/1000
39/39 [=====] - 0s 3ms/step - loss: 9.1172e-04 -
val_loss: 0.0012
Epoch 612/1000
39/39 [=====] - 0s 3ms/step - loss: 9.0866e-04 -
val_loss: 0.0012
Epoch 613/1000
39/39 [=====] - 0s 3ms/step - loss: 9.1098e-04 -
val_loss: 0.0011
Epoch 614/1000
39/39 [=====] - 0s 3ms/step - loss: 9.4001e-04 -
val_loss: 0.0011
Epoch 615/1000
39/39 [=====] - 0s 4ms/step - loss: 9.2196e-04 -
val_loss: 0.0012
Epoch 616/1000
39/39 [=====] - 0s 4ms/step - loss: 9.2098e-04 -
val_loss: 0.0012
Epoch 617/1000
39/39 [=====] - 0s 3ms/step - loss: 9.0993e-04 -
val_loss: 0.0012
Epoch 618/1000
39/39 [=====] - 0s 3ms/step - loss: 9.3747e-04 -
val_loss: 0.0012
Epoch 619/1000
39/39 [=====] - 0s 4ms/step - loss: 9.1473e-04 -
val_loss: 0.0012
Epoch 620/1000
39/39 [=====] - 0s 4ms/step - loss: 9.0795e-04 -
val_loss: 0.0012
Epoch 621/1000
39/39 [=====] - 0s 3ms/step - loss: 9.5336e-04 -
val_loss: 0.0012
Epoch 622/1000
39/39 [=====] - 0s 4ms/step - loss: 9.1136e-04 -
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val_loss: 0.0012
Epoch 623/1000
39/39 [=====] - 0s 4ms/step - loss: 9.0625e-04 -
val_loss: 0.0011
Epoch 624/1000
39/39 [=====] - 0s 4ms/step - loss: 8.9801e-04 -
val_loss: 0.0012
Epoch 625/1000
39/39 [=====] - 0s 4ms/step - loss: 9.3263e-04 -
val_loss: 0.0011
Epoch 626/1000
39/39 [=====] - 0s 4ms/step - loss: 9.1461e-04 -
val_loss: 0.0012
Epoch 627/1000
39/39 [=====] - 0s 4ms/step - loss: 8.7411e-04 -
val_loss: 0.0012
Epoch 628/1000
39/39 [=====] - 0s 4ms/step - loss: 8.7660e-04 -
val_loss: 0.0012
Epoch 629/1000
39/39 [=====] - 0s 4ms/step - loss: 8.9093e-04 -
val_loss: 0.0011
Epoch 630/1000
39/39 [=====] - 0s 3ms/step - loss: 9.0871e-04 -
val_loss: 0.0011
Epoch 631/1000
39/39 [=====] - 0s 3ms/step - loss: 9.1640e-04 -
val_loss: 0.0012
Epoch 632/1000
39/39 [=====] - 0s 4ms/step - loss: 9.0891e-04 -
val_loss: 0.0012
Epoch 633/1000
39/39 [=====] - 0s 4ms/step - loss: 9.0238e-04 -
val_loss: 0.0011
Epoch 634/1000
39/39 [=====] - 0s 4ms/step - loss: 9.2111e-04 -
val_loss: 0.0012
Epoch 635/1000
39/39 [=====] - 0s 3ms/step - loss: 9.5057e-04 -
val_loss: 0.0012
Epoch 636/1000
39/39 [=====] - 0s 4ms/step - loss: 9.1553e-04 -
val_loss: 0.0012
Epoch 637/1000
39/39 [=====] - 0s 3ms/step - loss: 8.9607e-04 -
val_loss: 0.0011
Epoch 638/1000
39/39 [=====] - 0s 3ms/step - loss: 8.8436e-04 -

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val_loss: 0.0012
Epoch 639/1000
39/39 [=====] - 0s 3ms/step - loss: 8.8161e-04 -
val_loss: 0.0012
Epoch 640/1000
39/39 [=====] - 0s 4ms/step - loss: 9.2561e-04 -
val_loss: 0.0013
Epoch 641/1000
39/39 [=====] - 0s 3ms/step - loss: 9.2343e-04 -
val_loss: 0.0012
Epoch 642/1000
39/39 [=====] - 0s 4ms/step - loss: 8.9615e-04 -
val_loss: 0.0012
Epoch 643/1000
39/39 [=====] - 0s 3ms/step - loss: 9.1203e-04 -
val_loss: 0.0012
Epoch 644/1000
39/39 [=====] - 0s 4ms/step - loss: 8.9449e-04 -
val_loss: 0.0013
Epoch 645/1000
39/39 [=====] - 0s 3ms/step - loss: 9.0116e-04 -
val_loss: 0.0012
Epoch 646/1000
39/39 [=====] - 0s 3ms/step - loss: 8.7851e-04 -
val_loss: 0.0012
Epoch 647/1000
39/39 [=====] - 0s 4ms/step - loss: 9.1962e-04 -
val_loss: 0.0012
Epoch 648/1000
39/39 [=====] - 0s 4ms/step - loss: 9.0219e-04 -
val_loss: 0.0012
Epoch 649/1000
39/39 [=====] - 0s 5ms/step - loss: 9.0182e-04 -
val_loss: 0.0012
Epoch 650/1000
39/39 [=====] - 0s 5ms/step - loss: 8.7593e-04 -
val_loss: 0.0012
Epoch 651/1000
39/39 [=====] - 0s 5ms/step - loss: 8.8880e-04 -
val_loss: 0.0012
Epoch 652/1000
39/39 [=====] - 0s 7ms/step - loss: 8.7725e-04 -
val_loss: 0.0012
Epoch 653/1000
39/39 [=====] - 0s 4ms/step - loss: 9.3475e-04 -
val_loss: 0.0011
Epoch 654/1000
39/39 [=====] - 0s 5ms/step - loss: 8.8860e-04 -
```

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val_loss: 0.0012
Epoch 655/1000
39/39 [=====] - 0s 5ms/step - loss: 9.2763e-04 -
val_loss: 0.0011
Epoch 656/1000
39/39 [=====] - 0s 4ms/step - loss: 8.9439e-04 -
val_loss: 0.0012
Epoch 657/1000
39/39 [=====] - 0s 6ms/step - loss: 8.8887e-04 -
val_loss: 0.0012
Epoch 658/1000
39/39 [=====] - 0s 7ms/step - loss: 8.7669e-04 -
val_loss: 0.0012
Epoch 659/1000
39/39 [=====] - 0s 6ms/step - loss: 9.2619e-04 -
val_loss: 0.0012
Epoch 660/1000
39/39 [=====] - 0s 7ms/step - loss: 8.9313e-04 -
val_loss: 0.0012
Epoch 661/1000
39/39 [=====] - 0s 7ms/step - loss: 8.7369e-04 -
val_loss: 0.0013
Epoch 662/1000
39/39 [=====] - 0s 6ms/step - loss: 8.7774e-04 -
val_loss: 0.0012
Epoch 663/1000
39/39 [=====] - 0s 6ms/step - loss: 9.2466e-04 -
val_loss: 0.0012
Epoch 664/1000
39/39 [=====] - 0s 5ms/step - loss: 8.9547e-04 -
val_loss: 0.0012
Epoch 665/1000
39/39 [=====] - 0s 4ms/step - loss: 9.2242e-04 -
val_loss: 0.0012
Epoch 666/1000
39/39 [=====] - 0s 4ms/step - loss: 9.0614e-04 -
val_loss: 0.0012
Epoch 667/1000
39/39 [=====] - 0s 5ms/step - loss: 9.2113e-04 -
val_loss: 0.0013
Epoch 668/1000
39/39 [=====] - 0s 3ms/step - loss: 8.7947e-04 -
val_loss: 0.0012
Epoch 669/1000
39/39 [=====] - 0s 3ms/step - loss: 8.6617e-04 -
val_loss: 0.0012
Epoch 670/1000
39/39 [=====] - 0s 4ms/step - loss: 8.8411e-04 -
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val_loss: 0.0012
Epoch 671/1000
39/39 [=====] - 0s 4ms/step - loss: 9.1331e-04 -
val_loss: 0.0012
Epoch 672/1000
39/39 [=====] - 0s 4ms/step - loss: 9.3631e-04 -
val_loss: 0.0012
Epoch 673/1000
39/39 [=====] - 0s 3ms/step - loss: 9.2483e-04 -
val_loss: 0.0012
Epoch 674/1000
39/39 [=====] - 0s 3ms/step - loss: 9.0282e-04 -
val_loss: 0.0012
Epoch 675/1000
39/39 [=====] - 0s 4ms/step - loss: 8.7071e-04 -
val_loss: 0.0012
Epoch 676/1000
39/39 [=====] - 0s 3ms/step - loss: 9.1169e-04 -
val_loss: 0.0012
Epoch 677/1000
39/39 [=====] - 0s 3ms/step - loss: 8.8885e-04 -
val_loss: 0.0012
Epoch 678/1000
39/39 [=====] - 0s 4ms/step - loss: 8.9272e-04 -
val_loss: 0.0012
Epoch 679/1000
39/39 [=====] - 0s 4ms/step - loss: 8.5962e-04 -
val_loss: 0.0012
Epoch 680/1000
39/39 [=====] - 0s 4ms/step - loss: 8.6881e-04 -
val_loss: 0.0012
Epoch 681/1000
39/39 [=====] - 0s 4ms/step - loss: 8.8051e-04 -
val_loss: 0.0012
Epoch 682/1000
39/39 [=====] - 0s 4ms/step - loss: 9.1223e-04 -
val_loss: 0.0012
Epoch 683/1000
39/39 [=====] - 0s 5ms/step - loss: 8.7303e-04 -
val_loss: 0.0013
Epoch 684/1000
39/39 [=====] - 0s 5ms/step - loss: 9.1868e-04 -
val_loss: 0.0013
Epoch 685/1000
39/39 [=====] - 0s 5ms/step - loss: 9.2875e-04 -
val_loss: 0.0012
Epoch 686/1000
39/39 [=====] - 0s 4ms/step - loss: 8.8015e-04 -
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val_loss: 0.0012
Epoch 687/1000
39/39 [=====] - 0s 4ms/step - loss: 8.9006e-04 -
val_loss: 0.0012
Epoch 688/1000
39/39 [=====] - 0s 4ms/step - loss: 8.8654e-04 -
val_loss: 0.0012
Epoch 689/1000
39/39 [=====] - 0s 4ms/step - loss: 8.8210e-04 -
val_loss: 0.0012
Epoch 690/1000
39/39 [=====] - 0s 4ms/step - loss: 8.8050e-04 -
val_loss: 0.0012
Epoch 691/1000
39/39 [=====] - 0s 4ms/step - loss: 8.7755e-04 -
val_loss: 0.0012
Epoch 692/1000
39/39 [=====] - 0s 4ms/step - loss: 8.8099e-04 -
val_loss: 0.0012
Epoch 693/1000
39/39 [=====] - 0s 4ms/step - loss: 8.7852e-04 -
val_loss: 0.0012
Epoch 694/1000
39/39 [=====] - 0s 3ms/step - loss: 8.5999e-04 -
val_loss: 0.0013
Epoch 695/1000
39/39 [=====] - 0s 3ms/step - loss: 9.2612e-04 -
val_loss: 0.0012
Epoch 696/1000
39/39 [=====] - 0s 3ms/step - loss: 8.4960e-04 -
val_loss: 0.0012
Epoch 697/1000
39/39 [=====] - 0s 3ms/step - loss: 8.6188e-04 -
val_loss: 0.0012
Epoch 698/1000
39/39 [=====] - 0s 3ms/step - loss: 8.9550e-04 -
val_loss: 0.0012
Epoch 699/1000
39/39 [=====] - 0s 5ms/step - loss: 8.9916e-04 -
val_loss: 0.0012
Epoch 700/1000
39/39 [=====] - 0s 3ms/step - loss: 8.8010e-04 -
val_loss: 0.0012
Epoch 701/1000
39/39 [=====] - 0s 3ms/step - loss: 8.8901e-04 -
val_loss: 0.0012
Epoch 702/1000
39/39 [=====] - 0s 3ms/step - loss: 8.5605e-04 -

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val_loss: 0.0012
Epoch 703/1000
39/39 [=====] - 0s 3ms/step - loss: 8.8656e-04 -
val_loss: 0.0012
Epoch 704/1000
39/39 [=====] - 0s 3ms/step - loss: 8.5922e-04 -
val_loss: 0.0012
Epoch 705/1000
39/39 [=====] - 0s 3ms/step - loss: 8.8018e-04 -
val_loss: 0.0013
Epoch 706/1000
39/39 [=====] - 0s 5ms/step - loss: 8.6856e-04 -
val_loss: 0.0012
Epoch 707/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4720e-04 -
val_loss: 0.0013
Epoch 708/1000
39/39 [=====] - 0s 4ms/step - loss: 8.8625e-04 -
val_loss: 0.0012
Epoch 709/1000
39/39 [=====] - 0s 4ms/step - loss: 8.6128e-04 -
val_loss: 0.0012
Epoch 710/1000
39/39 [=====] - 0s 6ms/step - loss: 8.6442e-04 -
val_loss: 0.0013
Epoch 711/1000
39/39 [=====] - 0s 6ms/step - loss: 8.9653e-04 -
val_loss: 0.0012
Epoch 712/1000
39/39 [=====] - 0s 6ms/step - loss: 8.5640e-04 -
val_loss: 0.0012
Epoch 713/1000
39/39 [=====] - 0s 5ms/step - loss: 8.8526e-04 -
val_loss: 0.0012
Epoch 714/1000
39/39 [=====] - 0s 5ms/step - loss: 8.7816e-04 -
val_loss: 0.0012
Epoch 715/1000
39/39 [=====] - 0s 6ms/step - loss: 8.5910e-04 -
val_loss: 0.0012
Epoch 716/1000
39/39 [=====] - 0s 6ms/step - loss: 8.4874e-04 -
val_loss: 0.0012
Epoch 717/1000
39/39 [=====] - 0s 5ms/step - loss: 8.6849e-04 -
val_loss: 0.0012
Epoch 718/1000
39/39 [=====] - 0s 4ms/step - loss: 8.9953e-04 -

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val_loss: 0.0013
Epoch 719/1000
39/39 [=====] - 0s 4ms/step - loss: 8.6168e-04 -
val_loss: 0.0012
Epoch 720/1000
39/39 [=====] - 0s 5ms/step - loss: 8.7091e-04 -
val_loss: 0.0012
Epoch 721/1000
39/39 [=====] - 0s 6ms/step - loss: 8.7780e-04 -
val_loss: 0.0012
Epoch 722/1000
39/39 [=====] - 0s 7ms/step - loss: 8.8367e-04 -
val_loss: 0.0014
Epoch 723/1000
39/39 [=====] - 0s 6ms/step - loss: 8.9733e-04 -
val_loss: 0.0012
Epoch 724/1000
39/39 [=====] - 0s 6ms/step - loss: 8.9473e-04 -
val_loss: 0.0012
Epoch 725/1000
39/39 [=====] - 0s 7ms/step - loss: 8.8293e-04 -
val_loss: 0.0012
Epoch 726/1000
39/39 [=====] - 0s 7ms/step - loss: 8.7611e-04 -
val_loss: 0.0013
Epoch 727/1000
39/39 [=====] - 0s 7ms/step - loss: 8.7951e-04 -
val_loss: 0.0013
Epoch 728/1000
39/39 [=====] - 0s 7ms/step - loss: 8.9762e-04 -
val_loss: 0.0012
Epoch 729/1000
39/39 [=====] - 0s 7ms/step - loss: 8.9537e-04 -
val_loss: 0.0013
Epoch 730/1000
39/39 [=====] - 0s 7ms/step - loss: 8.4225e-04 -
val_loss: 0.0012
Epoch 731/1000
39/39 [=====] - 0s 8ms/step - loss: 8.6890e-04 -
val_loss: 0.0012
Epoch 732/1000
39/39 [=====] - 0s 6ms/step - loss: 8.5826e-04 -
val_loss: 0.0012
Epoch 733/1000
39/39 [=====] - 0s 7ms/step - loss: 9.0152e-04 -
val_loss: 0.0012
Epoch 734/1000
39/39 [=====] - 0s 7ms/step - loss: 9.0382e-04 -
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val_loss: 0.0012
Epoch 735/1000
39/39 [=====] - 0s 6ms/step - loss: 8.5023e-04 -
val_loss: 0.0013
Epoch 736/1000
39/39 [=====] - 0s 7ms/step - loss: 8.5506e-04 -
val_loss: 0.0012
Epoch 737/1000
39/39 [=====] - 0s 8ms/step - loss: 8.5299e-04 -
val_loss: 0.0012
Epoch 738/1000
39/39 [=====] - 0s 8ms/step - loss: 8.5382e-04 -
val_loss: 0.0012
Epoch 739/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4421e-04 -
val_loss: 0.0012
Epoch 740/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4134e-04 -
val_loss: 0.0012
Epoch 741/1000
39/39 [=====] - 0s 5ms/step - loss: 8.1814e-04 -
val_loss: 0.0012
Epoch 742/1000
39/39 [=====] - 0s 5ms/step - loss: 8.7444e-04 -
val_loss: 0.0012
Epoch 743/1000
39/39 [=====] - 0s 3ms/step - loss: 9.3939e-04 -
val_loss: 0.0011
Epoch 744/1000
39/39 [=====] - 0s 5ms/step - loss: 9.0496e-04 -
val_loss: 0.0012
Epoch 745/1000
39/39 [=====] - 0s 4ms/step - loss: 8.7134e-04 -
val_loss: 0.0013
Epoch 746/1000
39/39 [=====] - 0s 4ms/step - loss: 8.6350e-04 -
val_loss: 0.0012
Epoch 747/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4999e-04 -
val_loss: 0.0012
Epoch 748/1000
39/39 [=====] - 0s 4ms/step - loss: 8.5952e-04 -
val_loss: 0.0013
Epoch 749/1000
39/39 [=====] - 0s 5ms/step - loss: 8.7251e-04 -
val_loss: 0.0013
Epoch 750/1000
39/39 [=====] - 0s 5ms/step - loss: 8.8148e-04 -
```



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val_loss: 0.0012
Epoch 751/1000
39/39 [=====] - 0s 5ms/step - loss: 8.5745e-04 -
val_loss: 0.0012
Epoch 752/1000
39/39 [=====] - 0s 4ms/step - loss: 8.5839e-04 -
val_loss: 0.0012
Epoch 753/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4890e-04 -
val_loss: 0.0012
Epoch 754/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3635e-04 -
val_loss: 0.0013
Epoch 755/1000
39/39 [=====] - 0s 3ms/step - loss: 8.3212e-04 -
val_loss: 0.0012
Epoch 756/1000
39/39 [=====] - 0s 5ms/step - loss: 8.8326e-04 -
val_loss: 0.0013
Epoch 757/1000
39/39 [=====] - 0s 4ms/step - loss: 8.6890e-04 -
val_loss: 0.0012
Epoch 758/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4840e-04 -
val_loss: 0.0012
Epoch 759/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4527e-04 -
val_loss: 0.0012
Epoch 760/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4047e-04 -
val_loss: 0.0013
Epoch 761/1000
39/39 [=====] - 0s 5ms/step - loss: 8.5086e-04 -
val_loss: 0.0012
Epoch 762/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3652e-04 -
val_loss: 0.0012
Epoch 763/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4978e-04 -
val_loss: 0.0013
Epoch 764/1000
39/39 [=====] - 0s 4ms/step - loss: 8.5211e-04 -
val_loss: 0.0012
Epoch 765/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4696e-04 -
val_loss: 0.0012
Epoch 766/1000
39/39 [=====] - 0s 4ms/step - loss: 8.7315e-04 -
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val_loss: 0.0012
Epoch 767/1000
39/39 [=====] - 0s 4ms/step - loss: 8.8672e-04 -
val_loss: 0.0012
Epoch 768/1000
39/39 [=====] - 0s 5ms/step - loss: 8.3847e-04 -
val_loss: 0.0012
Epoch 769/1000
39/39 [=====] - 0s 5ms/step - loss: 8.4482e-04 -
val_loss: 0.0012
Epoch 770/1000
39/39 [=====] - 0s 5ms/step - loss: 8.5273e-04 -
val_loss: 0.0012
Epoch 771/1000
39/39 [=====] - 0s 4ms/step - loss: 8.5871e-04 -
val_loss: 0.0012
Epoch 772/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3497e-04 -
val_loss: 0.0012
Epoch 773/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2896e-04 -
val_loss: 0.0012
Epoch 774/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4818e-04 -
val_loss: 0.0012
Epoch 775/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3741e-04 -
val_loss: 0.0012
Epoch 776/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2761e-04 -
val_loss: 0.0013
Epoch 777/1000
39/39 [=====] - 0s 4ms/step - loss: 8.5545e-04 -
val_loss: 0.0012
Epoch 778/1000
39/39 [=====] - 0s 4ms/step - loss: 8.5475e-04 -
val_loss: 0.0012
Epoch 779/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3021e-04 -
val_loss: 0.0013
Epoch 780/1000
39/39 [=====] - 0s 4ms/step - loss: 8.7796e-04 -
val_loss: 0.0012
Epoch 781/1000
39/39 [=====] - 0s 4ms/step - loss: 9.3769e-04 -
val_loss: 0.0012
Epoch 782/1000
39/39 [=====] - 0s 4ms/step - loss: 8.7937e-04 -

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val_loss: 0.0012
Epoch 783/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4112e-04 -
val_loss: 0.0013
Epoch 784/1000
39/39 [=====] - 0s 4ms/step - loss: 8.5666e-04 -
val_loss: 0.0012
Epoch 785/1000
39/39 [=====] - 0s 4ms/step - loss: 8.5667e-04 -
val_loss: 0.0012
Epoch 786/1000
39/39 [=====] - 0s 5ms/step - loss: 8.6337e-04 -
val_loss: 0.0013
Epoch 787/1000
39/39 [=====] - 0s 4ms/step - loss: 8.7839e-04 -
val_loss: 0.0013
Epoch 788/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4018e-04 -
val_loss: 0.0012
Epoch 789/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3486e-04 -
val_loss: 0.0013
Epoch 790/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2910e-04 -
val_loss: 0.0013
Epoch 791/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2793e-04 -
val_loss: 0.0013
Epoch 792/1000
39/39 [=====] - 0s 5ms/step - loss: 8.4908e-04 -
val_loss: 0.0013
Epoch 793/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4299e-04 -
val_loss: 0.0012
Epoch 794/1000
39/39 [=====] - 0s 5ms/step - loss: 8.6671e-04 -
val_loss: 0.0012
Epoch 795/1000
39/39 [=====] - 0s 3ms/step - loss: 8.3196e-04 -
val_loss: 0.0013
Epoch 796/1000
39/39 [=====] - 0s 6ms/step - loss: 8.6341e-04 -
val_loss: 0.0012
Epoch 797/1000
39/39 [=====] - 0s 6ms/step - loss: 8.6220e-04 -
val_loss: 0.0012
Epoch 798/1000
39/39 [=====] - 0s 7ms/step - loss: 8.2602e-04 -

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val_loss: 0.0013
Epoch 799/1000
39/39 [=====] - 0s 7ms/step - loss: 8.8991e-04 -
val_loss: 0.0012
Epoch 800/1000
39/39 [=====] - 0s 6ms/step - loss: 8.6628e-04 -
val_loss: 0.0013
Epoch 801/1000
39/39 [=====] - 0s 7ms/step - loss: 8.8808e-04 -
val_loss: 0.0012
Epoch 802/1000
39/39 [=====] - 0s 7ms/step - loss: 8.9225e-04 -
val_loss: 0.0013
Epoch 803/1000
39/39 [=====] - 0s 7ms/step - loss: 8.6796e-04 -
val_loss: 0.0013
Epoch 804/1000
39/39 [=====] - 0s 6ms/step - loss: 8.7176e-04 -
val_loss: 0.0012
Epoch 805/1000
39/39 [=====] - 0s 7ms/step - loss: 8.5110e-04 -
val_loss: 0.0012
Epoch 806/1000
39/39 [=====] - 0s 6ms/step - loss: 8.3016e-04 -
val_loss: 0.0013
Epoch 807/1000
39/39 [=====] - 0s 9ms/step - loss: 8.5157e-04 -
val_loss: 0.0012
Epoch 808/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4969e-04 -
val_loss: 0.0013
Epoch 809/1000
39/39 [=====] - 0s 5ms/step - loss: 8.6351e-04 -
val_loss: 0.0013
Epoch 810/1000
39/39 [=====] - 0s 5ms/step - loss: 8.4956e-04 -
val_loss: 0.0012
Epoch 811/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4370e-04 -
val_loss: 0.0012
Epoch 812/1000
39/39 [=====] - 0s 3ms/step - loss: 8.3267e-04 -
val_loss: 0.0012
Epoch 813/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4205e-04 -
val_loss: 0.0012
Epoch 814/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2790e-04 -
```

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val_loss: 0.0012
Epoch 815/1000
39/39 [=====] - 0s 3ms/step - loss: 8.1884e-04 -
val_loss: 0.0013
Epoch 816/1000
39/39 [=====] - 0s 5ms/step - loss: 8.4189e-04 -
val_loss: 0.0012
Epoch 817/1000
39/39 [=====] - 0s 4ms/step - loss: 8.7143e-04 -
val_loss: 0.0012
Epoch 818/1000
39/39 [=====] - 0s 4ms/step - loss: 8.5825e-04 -
val_loss: 0.0013
Epoch 819/1000
39/39 [=====] - 0s 3ms/step - loss: 8.6427e-04 -
val_loss: 0.0013
Epoch 820/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4043e-04 -
val_loss: 0.0013
Epoch 821/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4398e-04 -
val_loss: 0.0012
Epoch 822/1000
39/39 [=====] - 0s 5ms/step - loss: 8.0637e-04 -
val_loss: 0.0013
Epoch 823/1000
39/39 [=====] - 0s 5ms/step - loss: 8.5853e-04 -
val_loss: 0.0013
Epoch 824/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4546e-04 -
val_loss: 0.0013
Epoch 825/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3901e-04 -
val_loss: 0.0012
Epoch 826/1000
39/39 [=====] - 0s 4ms/step - loss: 8.8615e-04 -
val_loss: 0.0013
Epoch 827/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2988e-04 -
val_loss: 0.0012
Epoch 828/1000
39/39 [=====] - 0s 4ms/step - loss: 8.6532e-04 -
val_loss: 0.0012
Epoch 829/1000
39/39 [=====] - 0s 5ms/step - loss: 8.3945e-04 -
val_loss: 0.0012
Epoch 830/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3762e-04 -
```

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val_loss: 0.0012
Epoch 831/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1356e-04 -
val_loss: 0.0013
Epoch 832/1000
39/39 [=====] - 0s 5ms/step - loss: 8.4473e-04 -
val_loss: 0.0012
Epoch 833/1000
39/39 [=====] - 0s 5ms/step - loss: 8.3920e-04 -
val_loss: 0.0013
Epoch 834/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1884e-04 -
val_loss: 0.0012
Epoch 835/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2286e-04 -
val_loss: 0.0012
Epoch 836/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1896e-04 -
val_loss: 0.0013
Epoch 837/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2797e-04 -
val_loss: 0.0013
Epoch 838/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4015e-04 -
val_loss: 0.0013
Epoch 839/1000
39/39 [=====] - 0s 4ms/step - loss: 8.5671e-04 -
val_loss: 0.0012
Epoch 840/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4164e-04 -
val_loss: 0.0013
Epoch 841/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3121e-04 -
val_loss: 0.0013
Epoch 842/1000
39/39 [=====] - 0s 4ms/step - loss: 8.6562e-04 -
val_loss: 0.0012
Epoch 843/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3802e-04 -
val_loss: 0.0013
Epoch 844/1000
39/39 [=====] - 0s 3ms/step - loss: 8.3008e-04 -
val_loss: 0.0013
Epoch 845/1000
39/39 [=====] - 0s 4ms/step - loss: 8.8621e-04 -
val_loss: 0.0012
Epoch 846/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4470e-04 -
```

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val_loss: 0.0012
Epoch 847/1000
39/39 [=====] - 0s 4ms/step - loss: 8.7241e-04 -
val_loss: 0.0014
Epoch 848/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4920e-04 -
val_loss: 0.0012
Epoch 849/1000
39/39 [=====] - 0s 5ms/step - loss: 8.3980e-04 -
val_loss: 0.0013
Epoch 850/1000
39/39 [=====] - 0s 6ms/step - loss: 8.1289e-04 -
val_loss: 0.0013
Epoch 851/1000
39/39 [=====] - 0s 5ms/step - loss: 8.6043e-04 -
val_loss: 0.0013
Epoch 852/1000
39/39 [=====] - 0s 6ms/step - loss: 8.2275e-04 -
val_loss: 0.0012
Epoch 853/1000
39/39 [=====] - 0s 7ms/step - loss: 7.9682e-04 -
val_loss: 0.0013
Epoch 854/1000
39/39 [=====] - 0s 5ms/step - loss: 8.3422e-04 -
val_loss: 0.0013
Epoch 855/1000
39/39 [=====] - 0s 6ms/step - loss: 8.6329e-04 -
val_loss: 0.0013
Epoch 856/1000
39/39 [=====] - 0s 4ms/step - loss: 8.8276e-04 -
val_loss: 0.0013
Epoch 857/1000
39/39 [=====] - 0s 5ms/step - loss: 8.8567e-04 -
val_loss: 0.0013
Epoch 858/1000
39/39 [=====] - 0s 5ms/step - loss: 9.0171e-04 -
val_loss: 0.0013
Epoch 859/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1205e-04 -
val_loss: 0.0013
Epoch 860/1000
39/39 [=====] - 0s 4ms/step - loss: 8.7011e-04 -
val_loss: 0.0013
Epoch 861/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3404e-04 -
val_loss: 0.0013
Epoch 862/1000
39/39 [=====] - 0s 4ms/step - loss: 8.6271e-04 -
```

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val_loss: 0.0013
Epoch 863/1000
39/39 [=====] - 0s 3ms/step - loss: 8.2709e-04 -
val_loss: 0.0013
Epoch 864/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3170e-04 -
val_loss: 0.0013
Epoch 865/1000
39/39 [=====] - 0s 6ms/step - loss: 8.1387e-04 -
val_loss: 0.0013
Epoch 866/1000
39/39 [=====] - 0s 6ms/step - loss: 8.1815e-04 -
val_loss: 0.0013
Epoch 867/1000
39/39 [=====] - 0s 6ms/step - loss: 8.4261e-04 -
val_loss: 0.0013
Epoch 868/1000
39/39 [=====] - 0s 7ms/step - loss: 8.5608e-04 -
val_loss: 0.0013
Epoch 869/1000
39/39 [=====] - 0s 6ms/step - loss: 8.0458e-04 -
val_loss: 0.0013
Epoch 870/1000
39/39 [=====] - 0s 6ms/step - loss: 8.3049e-04 -
val_loss: 0.0013
Epoch 871/1000
39/39 [=====] - 0s 6ms/step - loss: 8.1621e-04 -
val_loss: 0.0013
Epoch 872/1000
39/39 [=====] - 0s 7ms/step - loss: 8.2551e-04 -
val_loss: 0.0013
Epoch 873/1000
39/39 [=====] - 0s 5ms/step - loss: 8.5116e-04 -
val_loss: 0.0013
Epoch 874/1000
39/39 [=====] - 0s 6ms/step - loss: 8.2343e-04 -
val_loss: 0.0013
Epoch 875/1000
39/39 [=====] - 0s 6ms/step - loss: 8.1908e-04 -
val_loss: 0.0013
Epoch 876/1000
39/39 [=====] - 0s 7ms/step - loss: 8.3549e-04 -
val_loss: 0.0013
Epoch 877/1000
39/39 [=====] - 0s 6ms/step - loss: 8.2823e-04 -
val_loss: 0.0013
Epoch 878/1000
39/39 [=====] - 0s 5ms/step - loss: 8.5352e-04 -
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val_loss: 0.0014
Epoch 879/1000
39/39 [=====] - 0s 3ms/step - loss: 8.5669e-04 -
val_loss: 0.0014
Epoch 880/1000
39/39 [=====] - 0s 4ms/step - loss: 8.0887e-04 -
val_loss: 0.0013
Epoch 881/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1393e-04 -
val_loss: 0.0013
Epoch 882/1000
39/39 [=====] - 0s 4ms/step - loss: 7.9095e-04 -
val_loss: 0.0013
Epoch 883/1000
39/39 [=====] - 0s 5ms/step - loss: 8.2458e-04 -
val_loss: 0.0012
Epoch 884/1000
39/39 [=====] - 0s 6ms/step - loss: 8.0832e-04 -
val_loss: 0.0013
Epoch 885/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3234e-04 -
val_loss: 0.0013
Epoch 886/1000
39/39 [=====] - 0s 5ms/step - loss: 8.7831e-04 -
val_loss: 0.0014
Epoch 887/1000
39/39 [=====] - 0s 3ms/step - loss: 8.2889e-04 -
val_loss: 0.0013
Epoch 888/1000
39/39 [=====] - 0s 4ms/step - loss: 8.0152e-04 -
val_loss: 0.0012
Epoch 889/1000
39/39 [=====] - 0s 6ms/step - loss: 8.2116e-04 -
val_loss: 0.0014
Epoch 890/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3876e-04 -
val_loss: 0.0013
Epoch 891/1000
39/39 [=====] - 0s 3ms/step - loss: 8.4375e-04 -
val_loss: 0.0013
Epoch 892/1000
39/39 [=====] - 0s 3ms/step - loss: 8.3621e-04 -
val_loss: 0.0013
Epoch 893/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1859e-04 -
val_loss: 0.0013
Epoch 894/1000
39/39 [=====] - 0s 4ms/step - loss: 7.9178e-04 -

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val_loss: 0.0013
Epoch 895/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1172e-04 -
val_loss: 0.0013
Epoch 896/1000
39/39 [=====] - 0s 5ms/step - loss: 8.2430e-04 -
val_loss: 0.0013
Epoch 897/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2363e-04 -
val_loss: 0.0013
Epoch 898/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3454e-04 -
val_loss: 0.0012
Epoch 899/1000
39/39 [=====] - 0s 4ms/step - loss: 8.5903e-04 -
val_loss: 0.0013
Epoch 900/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4539e-04 -
val_loss: 0.0013
Epoch 901/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1889e-04 -
val_loss: 0.0013
Epoch 902/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2818e-04 -
val_loss: 0.0013
Epoch 903/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1976e-04 -
val_loss: 0.0013
Epoch 904/1000
39/39 [=====] - 0s 3ms/step - loss: 8.1636e-04 -
val_loss: 0.0013
Epoch 905/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2134e-04 -
val_loss: 0.0013
Epoch 906/1000
39/39 [=====] - 0s 3ms/step - loss: 8.3606e-04 -
val_loss: 0.0013
Epoch 907/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2030e-04 -
val_loss: 0.0013
Epoch 908/1000
39/39 [=====] - 0s 5ms/step - loss: 8.4031e-04 -
val_loss: 0.0013
Epoch 909/1000
39/39 [=====] - 0s 3ms/step - loss: 8.3537e-04 -
val_loss: 0.0012
Epoch 910/1000
39/39 [=====] - 0s 6ms/step - loss: 8.3054e-04 -

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val_loss: 0.0013
Epoch 911/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2515e-04 -
val_loss: 0.0013
Epoch 912/1000
39/39 [=====] - 0s 4ms/step - loss: 7.8298e-04 -
val_loss: 0.0013
Epoch 913/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1521e-04 -
val_loss: 0.0013
Epoch 914/1000
39/39 [=====] - 0s 5ms/step - loss: 8.1929e-04 -
val_loss: 0.0013
Epoch 915/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1845e-04 -
val_loss: 0.0012
Epoch 916/1000
39/39 [=====] - 0s 4ms/step - loss: 8.0504e-04 -
val_loss: 0.0013
Epoch 917/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4976e-04 -
val_loss: 0.0013
Epoch 918/1000
39/39 [=====] - 0s 4ms/step - loss: 8.6512e-04 -
val_loss: 0.0013
Epoch 919/1000
39/39 [=====] - 0s 5ms/step - loss: 7.9807e-04 -
val_loss: 0.0013
Epoch 920/1000
39/39 [=====] - 0s 5ms/step - loss: 8.1193e-04 -
val_loss: 0.0013
Epoch 921/1000
39/39 [=====] - 0s 4ms/step - loss: 7.8392e-04 -
val_loss: 0.0013
Epoch 922/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1739e-04 -
val_loss: 0.0014
Epoch 923/1000
39/39 [=====] - 0s 4ms/step - loss: 7.9755e-04 -
val_loss: 0.0014
Epoch 924/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2103e-04 -
val_loss: 0.0014
Epoch 925/1000
39/39 [=====] - 0s 5ms/step - loss: 8.0232e-04 -
val_loss: 0.0014
Epoch 926/1000
39/39 [=====] - 0s 5ms/step - loss: 8.2175e-04 -
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val_loss: 0.0013
Epoch 927/1000
39/39 [=====] - 0s 5ms/step - loss: 8.1345e-04 -
val_loss: 0.0012
Epoch 928/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3318e-04 -
val_loss: 0.0013
Epoch 929/1000
39/39 [=====] - 0s 4ms/step - loss: 8.7699e-04 -
val_loss: 0.0012
Epoch 930/1000
39/39 [=====] - 0s 5ms/step - loss: 8.6923e-04 -
val_loss: 0.0013
Epoch 931/1000
39/39 [=====] - 0s 5ms/step - loss: 8.3369e-04 -
val_loss: 0.0013
Epoch 932/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1827e-04 -
val_loss: 0.0013
Epoch 933/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2121e-04 -
val_loss: 0.0014
Epoch 934/1000
39/39 [=====] - 0s 4ms/step - loss: 8.0178e-04 -
val_loss: 0.0013
Epoch 935/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2099e-04 -
val_loss: 0.0013
Epoch 936/1000
39/39 [=====] - 0s 5ms/step - loss: 8.0807e-04 -
val_loss: 0.0013
Epoch 937/1000
39/39 [=====] - 0s 7ms/step - loss: 8.2254e-04 -
val_loss: 0.0013
Epoch 938/1000
39/39 [=====] - 0s 5ms/step - loss: 8.4293e-04 -
val_loss: 0.0013
Epoch 939/1000
39/39 [=====] - 0s 6ms/step - loss: 8.4329e-04 -
val_loss: 0.0013
Epoch 940/1000
39/39 [=====] - 0s 6ms/step - loss: 8.3853e-04 -
val_loss: 0.0013
Epoch 941/1000
39/39 [=====] - 0s 7ms/step - loss: 8.2338e-04 -
val_loss: 0.0013
Epoch 942/1000
39/39 [=====] - 0s 6ms/step - loss: 8.0906e-04 -
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val_loss: 0.0013
Epoch 943/1000
39/39 [=====] - 0s 6ms/step - loss: 7.9708e-04 -
val_loss: 0.0013
Epoch 944/1000
39/39 [=====] - 0s 7ms/step - loss: 8.4948e-04 -
val_loss: 0.0012
Epoch 945/1000
39/39 [=====] - 0s 8ms/step - loss: 8.0302e-04 -
val_loss: 0.0013
Epoch 946/1000
39/39 [=====] - 0s 9ms/step - loss: 8.1843e-04 -
val_loss: 0.0012
Epoch 947/1000
39/39 [=====] - 0s 8ms/step - loss: 7.8340e-04 -
val_loss: 0.0013
Epoch 948/1000
39/39 [=====] - 0s 8ms/step - loss: 8.8786e-04 -
val_loss: 0.0013
Epoch 949/1000
39/39 [=====] - 0s 8ms/step - loss: 8.9741e-04 -
val_loss: 0.0013
Epoch 950/1000
39/39 [=====] - 0s 6ms/step - loss: 8.2887e-04 -
val_loss: 0.0013
Epoch 951/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4524e-04 -
val_loss: 0.0012
Epoch 952/1000
39/39 [=====] - 0s 5ms/step - loss: 7.9659e-04 -
val_loss: 0.0013
Epoch 953/1000
39/39 [=====] - 0s 5ms/step - loss: 7.9095e-04 -
val_loss: 0.0013
Epoch 954/1000
39/39 [=====] - 0s 5ms/step - loss: 7.9988e-04 -
val_loss: 0.0013
Epoch 955/1000
39/39 [=====] - 0s 4ms/step - loss: 8.0623e-04 -
val_loss: 0.0013
Epoch 956/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3683e-04 -
val_loss: 0.0013
Epoch 957/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2880e-04 -
val_loss: 0.0013
Epoch 958/1000
39/39 [=====] - 0s 5ms/step - loss: 8.0206e-04 -

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val_loss: 0.0013
Epoch 959/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4922e-04 -
val_loss: 0.0013
Epoch 960/1000
39/39 [=====] - 0s 5ms/step - loss: 8.5918e-04 -
val_loss: 0.0012
Epoch 961/1000
39/39 [=====] - 0s 4ms/step - loss: 8.4469e-04 -
val_loss: 0.0013
Epoch 962/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2369e-04 -
val_loss: 0.0014
Epoch 963/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1640e-04 -
val_loss: 0.0013
Epoch 964/1000
39/39 [=====] - 0s 4ms/step - loss: 7.7222e-04 -
val_loss: 0.0013
Epoch 965/1000
39/39 [=====] - 0s 4ms/step - loss: 7.8528e-04 -
val_loss: 0.0013
Epoch 966/1000
39/39 [=====] - 0s 5ms/step - loss: 8.3031e-04 -
val_loss: 0.0013
Epoch 967/1000
39/39 [=====] - 0s 5ms/step - loss: 8.1156e-04 -
val_loss: 0.0013
Epoch 968/1000
39/39 [=====] - 0s 4ms/step - loss: 8.0048e-04 -
val_loss: 0.0013
Epoch 969/1000
39/39 [=====] - 0s 5ms/step - loss: 8.0926e-04 -
val_loss: 0.0014
Epoch 970/1000
39/39 [=====] - 0s 4ms/step - loss: 7.9972e-04 -
val_loss: 0.0013
Epoch 971/1000
39/39 [=====] - 0s 4ms/step - loss: 7.8214e-04 -
val_loss: 0.0013
Epoch 972/1000
39/39 [=====] - 0s 5ms/step - loss: 8.0543e-04 -
val_loss: 0.0013
Epoch 973/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1820e-04 -
val_loss: 0.0013
Epoch 974/1000
39/39 [=====] - 0s 4ms/step - loss: 7.8769e-04 -
```

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val_loss: 0.0014
Epoch 975/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1034e-04 -
val_loss: 0.0013
Epoch 976/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1336e-04 -
val_loss: 0.0013
Epoch 977/1000
39/39 [=====] - 0s 4ms/step - loss: 8.2059e-04 -
val_loss: 0.0014
Epoch 978/1000
39/39 [=====] - 0s 4ms/step - loss: 8.0484e-04 -
val_loss: 0.0013
Epoch 979/1000
39/39 [=====] - 0s 4ms/step - loss: 7.9171e-04 -
val_loss: 0.0012
Epoch 980/1000
39/39 [=====] - 0s 3ms/step - loss: 8.2623e-04 -
val_loss: 0.0013
Epoch 981/1000
39/39 [=====] - 0s 3ms/step - loss: 8.3574e-04 -
val_loss: 0.0013
Epoch 982/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1151e-04 -
val_loss: 0.0013
Epoch 983/1000
39/39 [=====] - 0s 3ms/step - loss: 8.1831e-04 -
val_loss: 0.0014
Epoch 984/1000
39/39 [=====] - 0s 4ms/step - loss: 7.9779e-04 -
val_loss: 0.0013
Epoch 985/1000
39/39 [=====] - 0s 4ms/step - loss: 7.9522e-04 -
val_loss: 0.0013
Epoch 986/1000
39/39 [=====] - 0s 3ms/step - loss: 7.9032e-04 -
val_loss: 0.0013
Epoch 987/1000
39/39 [=====] - 0s 4ms/step - loss: 7.6374e-04 -
val_loss: 0.0014
Epoch 988/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1490e-04 -
val_loss: 0.0013
Epoch 989/1000
39/39 [=====] - 0s 4ms/step - loss: 8.0401e-04 -
val_loss: 0.0013
Epoch 990/1000
39/39 [=====] - 0s 3ms/step - loss: 8.2295e-04 -

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val_loss: 0.0013
Epoch 991/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3063e-04 -
val_loss: 0.0013
Epoch 992/1000
39/39 [=====] - 0s 4ms/step - loss: 8.3295e-04 -
val_loss: 0.0013
Epoch 993/1000
39/39 [=====] - 0s 3ms/step - loss: 8.0526e-04 -
val_loss: 0.0014
Epoch 994/1000
39/39 [=====] - 0s 4ms/step - loss: 7.8269e-04 -
val_loss: 0.0013
Epoch 995/1000
39/39 [=====] - 0s 4ms/step - loss: 7.7796e-04 -
val_loss: 0.0013
Epoch 996/1000
39/39 [=====] - 0s 3ms/step - loss: 8.1157e-04 -
val_loss: 0.0013
Epoch 997/1000
39/39 [=====] - 0s 4ms/step - loss: 7.9196e-04 -
val_loss: 0.0013
Epoch 998/1000
39/39 [=====] - 0s 4ms/step - loss: 8.0326e-04 -
val_loss: 0.0014
Epoch 999/1000
39/39 [=====] - 0s 4ms/step - loss: 8.1126e-04 -
val_loss: 0.0014
Epoch 1000/1000
39/39 [=====] - 0s 4ms/step - loss: 7.8944e-04 -
val_loss: 0.0013
10/10 [=====] - 0s 2ms/step

```

[4]: <matplotlib.legend.Legend at 0x7b3653c3b370>



