

PM

November 30, 2017

```
In [1]: import numpy as np
import pandas as pd
import os
import matplotlib.pyplot as plt
```

```
In [2]: os.listdir('data')
```

```
Out[2]: ['AllNO2_QH.csv',
'AllPM_QH.csv',
'Env_QH.csv',
'GradientTemp_15minDataSet.csv',
'micro_sud3.pkl',
'micro_sud3_normalized.pkl',
'Patm_15minDataSet.csv',
'pickles']
```

```
In [3]: df = pd.read_pickle('data/micro_sud3_normalized.pkl')
df = df.reset_index()
df.head(100)
```

```
Out[3]:
```

	index	date	PM_ref	PM_6182	PM_6179	PM_617B	\
0	15	2017-09-28 14:00:00	16.2	-1.178505	-1.137844	-1.134624	
1	16	2017-09-28 14:15:00	9.6	-1.108262	-1.085060	-1.121956	
2	17	2017-09-28 14:30:00	10.3	-1.178505	-1.169515	-1.257077	
3	18	2017-09-28 14:45:00	9.4	-1.137530	-1.000606	-1.206407	
4	19	2017-09-28 15:00:00	10.7	-1.166798	-1.164236	-1.138846	
5	20	2017-09-28 15:15:00	10.7	-1.166798	-1.201185	-1.037506	
6	21	2017-09-28 15:30:00	9.6	-1.078994	-1.169515	-1.007948	
7	22	2017-09-28 15:45:00	10.2	-1.032164	-1.132566	-0.995280	
8	23	2017-09-28 16:00:00	9.8	-1.043872	-1.095617	-0.910830	
9	24	2017-09-28 16:15:00	8.9	-1.043872	-1.042833	-1.181072	
10	25	2017-09-28 16:30:00	9.8	-0.915092	-0.889760	-1.185294	
11	26	2017-09-28 16:45:00	10.1	-0.920945	-0.784192	-1.029061	
12	27	2017-09-28 17:00:00	10.7	-0.862409	-0.842254	-0.969945	
13	28	2017-09-28 17:15:00	12.0	-0.932653	-0.778913	-0.915052	
14	29	2017-09-28 17:30:00	12.3	-0.903385	-0.905595	-0.817934	
15	30	2017-09-28 17:45:00	13.7	-0.967775	-0.805305	-0.843269	
16	31	2017-09-28 18:00:00	14.3	-0.698507	-0.615283	-0.910830	

17	32	2017-09-28 18:15:00	14.7	-0.885824	-0.662789	-0.847492
18	38	2017-09-28 19:45:00	9.4	-0.751190	-0.625840	-0.796821
19	39	2017-09-28 20:00:00	20.1	-0.827287	-0.757800	-0.813711
20	40	2017-09-28 20:15:00	20.0	-0.721922	-0.794749	-0.906607
21	41	2017-09-28 20:30:00	19.2	-0.598996	-0.757800	-0.915052
22	42	2017-09-28 20:45:00	17.9	-0.803873	-0.889760	-0.898162
23	43	2017-09-28 21:00:00	16.0	-0.757044	-0.842254	-0.733483
24	44	2017-09-28 21:15:00	16.0	-0.798019	-0.858089	-0.695481
25	45	2017-09-28 21:30:00	17.0	-0.973628	-0.873925	-0.670145
26	46	2017-09-28 21:45:00	18.5	-0.838995	-0.810584	-0.657478
27	47	2017-09-28 22:00:00	18.6	-0.838995	-0.831697	-0.678591
28	48	2017-09-28 22:15:00	18.8	-0.622410	-0.678624	-0.535024
29	49	2017-09-28 22:30:00	18.5	-0.657532	-0.652232	-0.678591
..
70	94	2017-09-29 09:45:00	26.6	-0.236071	-0.018825	-0.146552
71	95	2017-09-29 10:00:00	29.4	-0.236071	-0.134949	-0.311230
72	96	2017-09-29 10:15:00	29.9	-0.165827	0.033959	-0.370346
73	97	2017-09-29 10:30:00	30.1	-0.066315	0.023403	-0.218335
74	98	2017-09-29 10:45:00	29.7	-0.253631	-0.024103	0.056130
75	99	2017-09-29 11:00:00	27.5	-0.095583	0.134249	-0.176109
76	100	2017-09-29 11:15:00	26.4	-0.095583	0.213425	-0.150774
77	101	2017-09-29 11:30:00	26.3	-0.037047	0.313714	-0.015653
78	102	2017-09-29 11:45:00	28.0	-0.312168	0.055073	-0.129661
79	103	2017-09-29 12:00:00	28.8	-0.277046	-0.177176	-0.345011
80	106	2017-09-29 12:45:00	24.9	-0.312168	-0.076887	-0.450574
81	107	2017-09-29 13:00:00	23.0	-0.470216	-0.156063	-0.302785
82	108	2017-09-29 13:15:00	22.5	-0.645825	-0.467488	-0.391458
83	109	2017-09-29 13:30:00	20.9	-0.874116	-0.810584	-0.712371
84	110	2017-09-29 13:45:00	18.9	-0.897531	-0.794749	-0.953055
85	111	2017-09-29 14:00:00	17.4	-0.604849	-0.768357	-0.893940
86	112	2017-09-29 14:15:00	16.4	-0.680947	-0.678624	-0.991058
87	113	2017-09-29 14:30:00	18.4	-0.879970	-0.546664	-0.995280
88	114	2017-09-29 14:45:00	19.3	-0.774605	-0.573056	-0.868604
89	115	2017-09-29 15:00:00	19.9	-0.704361	-0.536107	-0.716593
90	116	2017-09-29 15:15:00	19.9	-0.581435	-0.778913	-0.771486
91	117	2017-09-29 15:30:00	18.9	-0.405826	-0.710294	-0.868604
92	118	2017-09-29 15:45:00	20.1	-0.575581	-0.414704	-0.817934
93	119	2017-09-29 16:00:00	22.6	-0.692654	-0.483323	-0.649033
94	120	2017-09-29 16:15:00	23.9	-0.446801	-0.610005	-0.767264
95	121	2017-09-29 16:30:00	25.7	-0.429240	-0.076887	-0.450574
96	122	2017-09-29 16:45:00	26.4	0.173684	0.355941	0.187028
97	123	2017-09-29 17:00:00	29.3	0.144416	0.398169	0.524831
98	124	2017-09-29 17:15:00	31.2	-0.259485	0.334828	0.305259
99	125	2017-09-29 17:30:00	30.7	-0.054608	0.387612	0.305259

	PM25_6182	PM25_6179	PM25_617B	N02_ref	N02_61FD	N02_61F0	N02_61EF	\
0	-1.183081	-1.128074	-1.148204	10.1	-0.392423	-0.621107	-0.419097	
1	-1.101652	-1.071229	-1.128278	9.9	-0.392423	-0.621107	-0.419097	

2	-1.176817	-1.167865	-1.252817	16.1	-0.392423	-0.621107	-0.419097
3	-1.139235	-1.008700	-1.222928	10.9	-0.392423	-0.621107	-0.419097
4	-1.164290	-1.167865	-1.148204	16.0	-0.392423	-0.621107	-0.419097
5	-1.158026	-1.196288	-1.038610	9.7	-0.392423	-0.621107	-0.419097
6	-1.070333	-1.162181	-0.998757	10.0	-0.392423	-0.621107	-0.419097
7	-1.032750	-1.122389	-0.988794	19.1	-0.392423	-0.621107	-0.419097
8	-1.039014	-1.093967	-0.919052	15.0	-0.392423	-0.621107	-0.419097
9	-1.039014	-1.037122	-1.173112	19.4	-0.392423	-0.621107	-0.419097
10	-0.913739	-0.889325	-1.178094	20.6	-0.392423	-0.621107	-0.419097
11	-0.926266	-0.787005	-1.013702	17.3	-0.392423	-0.576624	-0.419097
12	-0.869892	-0.843850	-0.963886	16.3	-0.392423	-0.621107	-0.419097
13	-0.932530	-0.775636	-0.914070	16.4	-0.392423	-0.621107	-0.419097
14	-0.901211	-0.900694	-0.814439	22.0	-0.392423	-0.621107	-0.419097
15	-0.963849	-0.804058	-0.844329	28.2	-0.392423	-0.525787	-0.419097
16	-0.688243	-0.616470	-0.904107	27.1	-0.392423	-0.589334	-0.419097
17	-0.876156	-0.667631	-0.839347	21.9	-0.392423	-0.589334	-0.419097
18	-0.744617	-0.616470	-0.794513	32.4	-0.392423	-0.363744	-0.419097
19	-0.826046	-0.741529	-0.819421	37.0	-0.392423	-0.427290	-0.419097
20	-0.725825	-0.787005	-0.889163	27.5	-0.392423	-0.576624	-0.419097
21	-0.600550	-0.752898	-0.914070	25.6	-0.392423	-0.589334	-0.419097
22	-0.807254	-0.895010	-0.899126	27.3	-0.392423	-0.621107	-0.419097
23	-0.750880	-0.838165	-0.729752	26.3	-0.392423	-0.589334	-0.419097
24	-0.788463	-0.860903	-0.684918	27.0	-0.392423	-0.621107	-0.419097
25	-0.963849	-0.872272	-0.655029	25.7	-0.392423	-0.621107	-0.419097
26	-0.832310	-0.809743	-0.660010	23.2	-0.392423	-0.621107	-0.419097
27	-0.838573	-0.821112	-0.674955	21.2	-0.392423	-0.621107	-0.419097
28	-0.619341	-0.684684	-0.540453	20.8	-0.392423	-0.621107	-0.419097
29	-0.663188	-0.656262	-0.674955	22.3	-0.392423	-0.621107	-0.419097
..
70	-0.243514	-0.025284	-0.156872	40.8	-0.392423	-0.106382	-0.419097
71	-0.243514	-0.150342	-0.311301	29.2	-0.392423	-0.459064	-0.419097
72	-0.168349	0.014508	-0.381043	32.3	-0.392423	-0.331971	-0.266085
73	-0.086920	0.020192	-0.206688	27.2	-0.392423	-0.363744	-0.419097
74	-0.262306	-0.002546	0.062317	20.5	-0.392423	-0.427290	-0.419097
75	-0.099448	0.133882	-0.161853	12.3	-0.392423	-0.621107	-0.419097
76	-0.086920	0.207780	-0.161853	16.2	-0.392423	-0.621107	-0.419097
77	-0.024282	0.298732	-0.017388	32.0	-0.392423	-0.192169	-0.419097
78	-0.299888	0.054299	-0.131964	17.8	-0.392423	-0.621107	-0.419097
79	-0.268570	-0.167396	-0.341190	30.7	-0.392423	-0.459064	-0.419097
80	-0.299888	-0.087813	-0.440821	21.3	-0.392423	-0.589334	-0.419097
81	-0.462747	-0.161711	-0.301337	14.3	-0.392423	-0.589334	-0.419097
82	-0.644396	-0.468674	-0.381043	16.1	-0.392423	-0.621107	-0.419097
83	-0.863628	-0.792689	-0.689900	8.9	-0.392423	-0.621107	-0.419097
84	-0.888684	-0.792689	-0.948941	11.6	-0.392423	-0.621107	-0.419097
85	-0.606814	-0.764267	-0.889163	13.5	-0.392423	-0.621107	-0.419097
86	-0.688243	-0.696053	-0.963886	17.2	-0.392423	-0.557560	-0.419097
87	-0.876156	-0.553941	-0.983812	12.2	-0.392423	-0.621107	-0.419097
88	-0.763408	-0.582363	-0.864255	21.3	-0.392423	-0.621107	-0.419097

89	-0.694506	-0.553941	-0.729752	18.6	-0.392423	-0.621107	-0.419097
90	-0.575495	-0.781320	-0.774587	25.7	-0.392423	-0.589334	-0.419097
91	-0.400109	-0.701737	-0.864255	45.4	-0.331906	0.344797	-0.209981
92	-0.575495	-0.411829	-0.814439	49.9	-0.350061	-0.071431	-0.419097
93	-0.688243	-0.497096	-0.635103	58.8	-0.271390	0.668883	-0.317089
94	-0.462747	-0.627839	-0.749679	50.4	0.097758	-0.007885	0.203151
95	-0.431428	-0.087813	-0.440821	77.2	0.466906	0.668883	0.565278
96	0.176159	0.327154	0.186856	86.4	1.017602	1.269396	1.600657
97	0.144840	0.389684	0.505677	88.7	1.084170	0.506840	2.013788
98	-0.262306	0.349892	0.296451	87.3	1.326234	1.765057	1.804672
99	-0.049337	0.401053	0.281506	124.1	3.044891	2.861231	3.344989

	temp	rh	tgrad	pressure	pluvio
0	1.986031	-1.114144	-0.922393	0.315942	-0.150524
1	2.057032	-1.123212	-0.977185	0.335134	-0.150524
2	2.080699	-1.232038	-1.086769	0.315942	-0.150524
3	2.009698	-1.259245	-0.812809	0.315942	-0.150524
4	1.867697	-1.141350	-0.922393	0.315942	-0.150524
5	1.749363	-1.050662	-0.867601	0.315942	-0.150524
6	1.654695	-0.959974	-0.812809	0.315942	-0.150524
7	1.583695	-0.887423	-0.758017	0.315942	-0.150524
8	1.536361	-0.851148	-0.758017	0.315942	-0.150524
9	1.489027	-0.851148	-0.703225	0.335134	-0.150524
10	1.441693	-0.805804	-0.648433	0.315942	-0.150524
11	1.370693	-0.715116	-0.648433	0.315942	-0.150524
12	1.299692	-0.642565	-0.648433	0.335134	-0.150524
13	1.228692	-0.506533	-0.593641	0.335134	-0.150524
14	1.134024	-0.397707	-0.538849	0.354326	-0.150524
15	1.063024	-0.288882	-0.429265	0.354326	-0.150524
16	0.992023	-0.189125	-0.319681	0.373518	-0.150524
17	0.921022	-0.044024	-0.264889	0.392710	-0.150524
18	0.613353	0.382210	0.009071	0.431095	-0.150524
19	0.566019	0.427554	-0.155305	0.431095	-0.150524
20	0.518686	0.509174	0.009071	0.431095	-0.150524
21	0.495019	0.554518	0.063863	0.431095	-0.150524
22	0.495019	0.581724	0.173447	0.431095	-0.150524
23	0.471352	0.581724	0.118655	0.431095	-0.150524
24	0.471352	0.636137	0.009071	0.411902	-0.150524
25	0.447685	0.672412	0.173447	0.392710	-0.150524
26	0.447685	0.672412	0.118655	0.392710	-0.150524
27	0.471352	0.672412	0.228239	0.392710	-0.150524
28	0.471352	0.672412	0.611783	0.373518	-0.150524
29	0.447685	0.717756	0.830951	0.373518	-0.150524
..
70	1.252359	-0.370501	-1.031977	-0.183054	-0.150524
71	1.276025	-0.352363	-1.251145	-0.202246	-0.150524
72	1.323359	-0.352363	-1.031977	-0.221438	-0.150524
73	1.394360	-0.307019	-1.141561	-0.240630	-0.150524

```

74  1.465360 -0.343295 -1.086769 -0.240630 -0.150524
75  1.536361 -0.433983 -0.977185 -0.221438 -0.150524
76  1.489027 -0.397707 -1.086769 -0.221438 -0.150524
77  1.465360 -0.370501 -0.977185 -0.202246 -0.150524
78  1.465360 -0.352363 -1.031977 -0.221438 -0.150524
79  1.441693 -0.370501 -1.031977 -0.202246 -0.150524
80  1.441693 -0.361432 -1.031977 -0.279014 -0.150524
81  1.441693 -0.397707 -0.922393 -0.298206 -0.150524
82  1.560028 -0.433983 -1.141561 -0.298206 -0.150524
83  1.867697 -0.706047 -1.086769 -0.317398 -0.150524
84  1.915031 -0.987180 -0.977185 -0.298206  0.647429
85  1.796696 -0.932767 -0.922393 -0.317398 -0.150524
86  1.725696 -0.896492 -0.922393 -0.298206 -0.150524
87  1.702029 -0.950905 -0.867601 -0.317398 -0.150524
88  1.654695 -0.932767 -0.703225 -0.317398 -0.150524
89  1.607362 -0.914630 -0.703225 -0.298206 -0.150524
90  1.536361 -0.896492 -0.648433 -0.298206 -0.150524
91  1.489027 -0.914630 -0.648433 -0.298206 -0.150524
92  1.394360 -0.842079 -0.648433 -0.279014 -0.150524
93  1.299692 -0.751391 -0.648433 -0.279014  0.647429
94  1.252359 -0.742322 -0.703225 -0.240630  0.647429
95  1.157691 -0.461189 -0.812809 -0.240630 -0.150524
96  1.063024 -0.325157 -0.812809 -0.183054 -0.150524
97  0.944689 -0.216331 -0.758017 -0.144669  0.647429
98  0.850022 -0.053093 -0.593641 -0.106285  3.041287
99  0.708021  0.110146 -0.538849 -0.106285  7.031051

```

```
[100 rows x 18 columns]
```

```
In [4]: df = df[['date', 'PM_ref', 'PM_6182', 'PM_6179', 'PM_617B', 'PM25_6182', 'PM25_617B', 'PM25_617A',
                'temp', 'rh', 'tgrad', 'pressure', 'pluvio']]
```

1 Premier modèle: simple DNN

```
In [5]: from keras.models import Sequential
        from keras.layers import Dense
        from keras.callbacks import EarlyStopping

        def baseline_model(dense_size, input_dim, loss='mean_squared_error', optimizer='adam'):
            # create model
            model = Sequential()
            model.add(Dense(dense_size, input_dim=input_dim, kernel_initializer='normal', activation='relu'))
            model.add(Dense(1, kernel_initializer='normal'))
            # Compile model
            model.compile(loss=loss, optimizer=optimizer)
            model.summary()
            return model

```

Using TensorFlow backend.

```
In [6]: df = df.reindex(np.random.permutation(df.index))

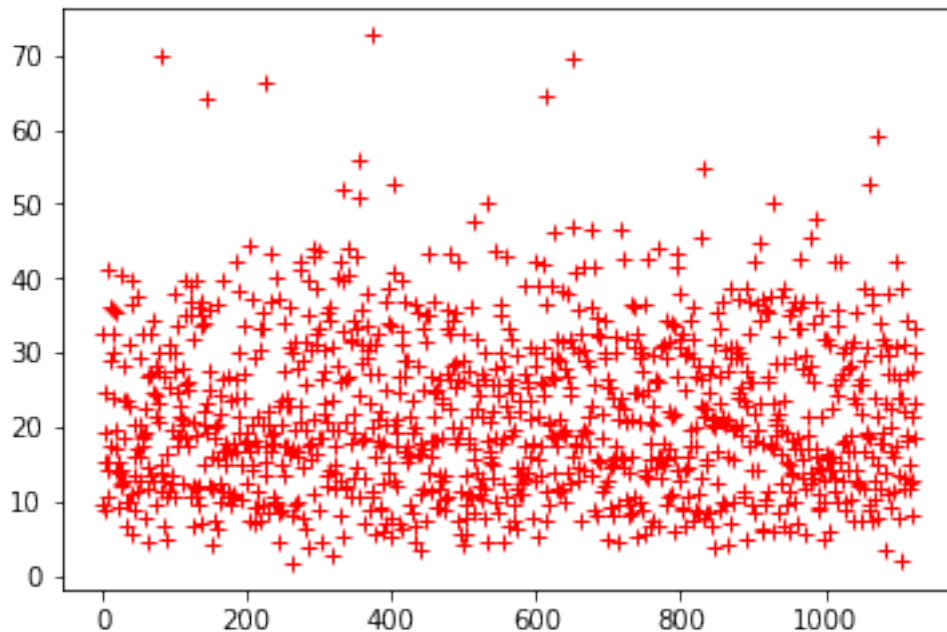
def split_dataframe(dataframe, percent):
    nb_rows = int(np.floor(percent * len(dataframe)))
    return dataframe[:nb_rows], dataframe[nb_rows:]

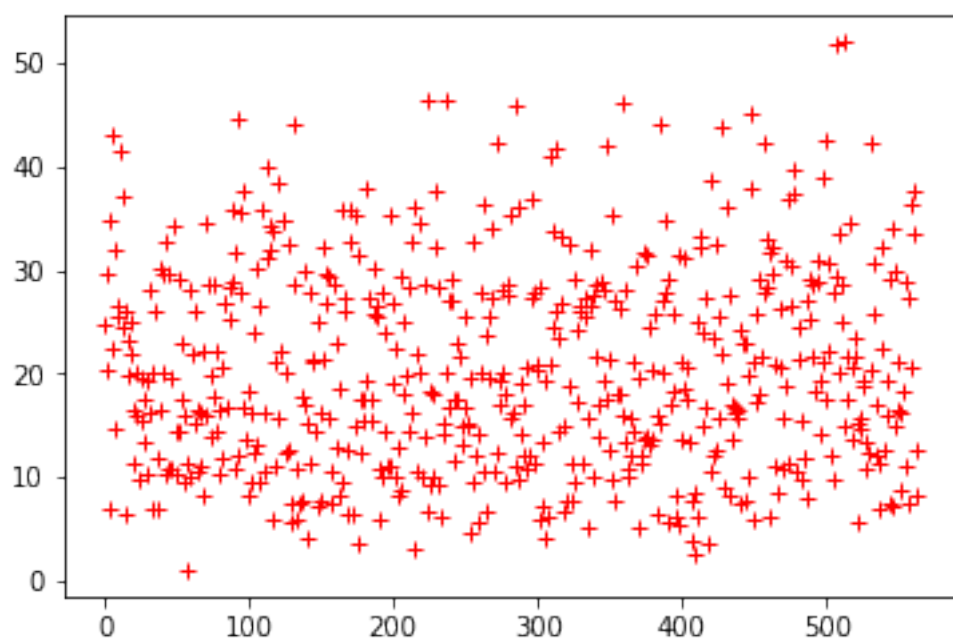
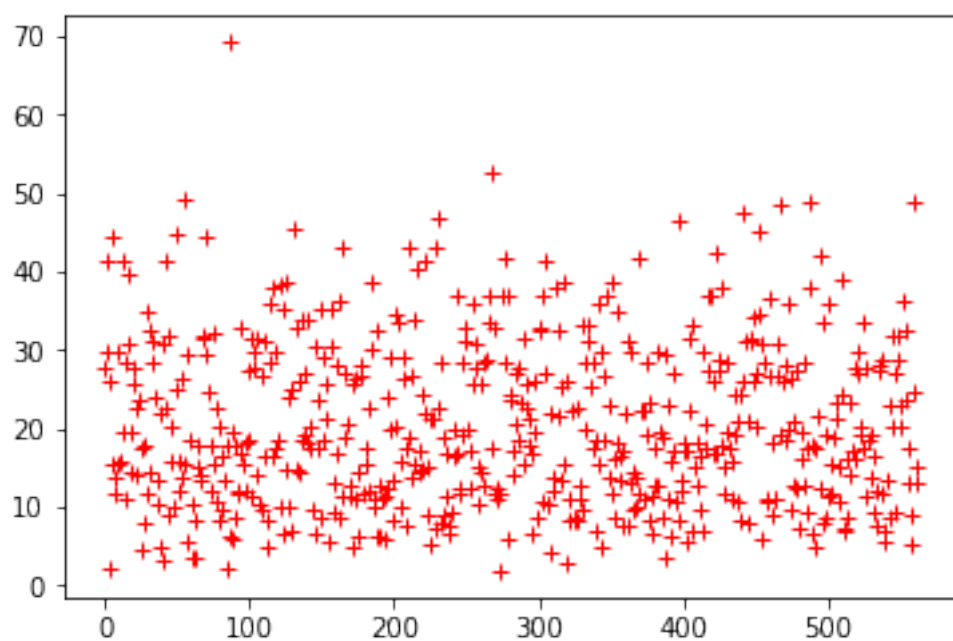
def dataframe_to_xy(df):
    return (np.array(df[['PM_6182', 'PM_6179', 'PM_617B', 'PM25_6182', 'PM25_6179',\
                        'PM25_617B', 'temp', 'rh',\
                        'tgrad', 'pressure', 'pluvio']]),\
            np.array(df['PM_ref']))

df_train, df_test = split_dataframe(df, 0.5)
df_valid, df_test = split_dataframe(df_test, 0.5)

X_train, y_train = dataframe_to_xy(df_train)
X_valid, y_valid = dataframe_to_xy(df_valid)
X_test, y_test = dataframe_to_xy(df_test)

In [7]: plt.plot(y_train, '+r')
plt.show()
plt.plot(y_valid, '+r')
plt.show()
plt.plot(y_test, '+r')
plt.show()
```





```
In [8]: model = baseline_model(32, X_train.shape[1], 'mean_squared_error', 'adagrad')
        early_stopping = EarlyStopping(monitor='val_loss', verbose=1, mode='auto', patience=10)
        history = model.fit(X_train, y_train, batch_size=32, epochs=5000, validation_data=(X_val, y_val))
```

Layer (type)	Output Shape	Param #
dense_1 (Dense)	(None, 32)	384
dense_2 (Dense)	(None, 1)	33

Total params: 417

Trainable params: 417

Non-trainable params: 0

Train on 1126 samples, validate on 563 samples

Epoch 1/5000

1126/1126 [=====] - 0s 212us/step - loss: 564.0047 - val_loss: 469.793

Epoch 2/5000

1126/1126 [=====] - 0s 32us/step - loss: 491.8054 - val_loss: 409.022

Epoch 3/5000

1126/1126 [=====] - 0s 34us/step - loss: 428.7359 - val_loss: 358.613

Epoch 4/5000

1126/1126 [=====] - 0s 34us/step - loss: 376.8241 - val_loss: 317.672

Epoch 5/5000

1126/1126 [=====] - 0s 32us/step - loss: 334.8560 - val_loss: 284.817

Epoch 6/5000

1126/1126 [=====] - 0s 32us/step - loss: 301.2061 - val_loss: 258.721

Epoch 7/5000

1126/1126 [=====] - 0s 32us/step - loss: 274.3550 - val_loss: 238.651

Epoch 8/5000

1126/1126 [=====] - 0s 34us/step - loss: 253.5230 - val_loss: 222.676

Epoch 9/5000

1126/1126 [=====] - 0s 34us/step - loss: 236.7312 - val_loss: 209.353

Epoch 10/5000

1126/1126 [=====] - 0s 35us/step - loss: 222.6338 - val_loss: 198.765

Epoch 11/5000

1126/1126 [=====] - 0s 31us/step - loss: 211.2956 - val_loss: 189.795

Epoch 12/5000

1126/1126 [=====] - 0s 31us/step - loss: 201.6296 - val_loss: 182.346

Epoch 13/5000

1126/1126 [=====] - 0s 31us/step - loss: 193.5104 - val_loss: 176.180

Epoch 14/5000

1126/1126 [=====] - 0s 32us/step - loss: 186.7263 - val_loss: 171.178

Epoch 15/5000

1126/1126 [=====] - 0s 31us/step - loss: 181.1088 - val_loss: 166.434

Epoch 16/5000

1126/1126 [=====] - 0s 32us/step - loss: 175.8243 - val_loss: 162.397

Epoch 17/5000
1126/1126 [=====] - 0s 33us/step - loss: 171.2504 - val_loss: 158.8467
Epoch 18/5000
1126/1126 [=====] - 0s 33us/step - loss: 167.1539 - val_loss: 155.5179
Epoch 19/5000
1126/1126 [=====] - 0s 32us/step - loss: 163.3231 - val_loss: 152.5547
Epoch 20/5000
1126/1126 [=====] - 0s 32us/step - loss: 159.9074 - val_loss: 149.7077
Epoch 21/5000
1126/1126 [=====] - 0s 32us/step - loss: 156.6793 - val_loss: 147.0633
Epoch 22/5000
1126/1126 [=====] - 0s 32us/step - loss: 153.6782 - val_loss: 144.4748
Epoch 23/5000
1126/1126 [=====] - 0s 32us/step - loss: 150.7755 - val_loss: 142.0274
Epoch 24/5000
1126/1126 [=====] - 0s 31us/step - loss: 148.0945 - val_loss: 139.6988
Epoch 25/5000
1126/1126 [=====] - 0s 33us/step - loss: 145.5333 - val_loss: 137.5122
Epoch 26/5000
1126/1126 [=====] - 0s 31us/step - loss: 143.1240 - val_loss: 135.3818
Epoch 27/5000
1126/1126 [=====] - 0s 33us/step - loss: 140.7436 - val_loss: 133.2819
Epoch 28/5000
1126/1126 [=====] - 0s 32us/step - loss: 138.4487 - val_loss: 131.2938
Epoch 29/5000
1126/1126 [=====] - 0s 31us/step - loss: 136.2705 - val_loss: 129.3855
Epoch 30/5000
1126/1126 [=====] - 0s 31us/step - loss: 134.2210 - val_loss: 127.5046
Epoch 31/5000
1126/1126 [=====] - 0s 32us/step - loss: 132.2626 - val_loss: 125.7277
Epoch 32/5000
1126/1126 [=====] - 0s 31us/step - loss: 130.4081 - val_loss: 124.0316
Epoch 33/5000
1126/1126 [=====] - 0s 31us/step - loss: 128.6136 - val_loss: 122.4347
Epoch 34/5000
1126/1126 [=====] - 0s 32us/step - loss: 126.9158 - val_loss: 120.8899
Epoch 35/5000
1126/1126 [=====] - 0s 30us/step - loss: 125.2680 - val_loss: 119.3611
Epoch 36/5000
1126/1126 [=====] - 0s 30us/step - loss: 123.7104 - val_loss: 117.8697
Epoch 37/5000
1126/1126 [=====] - 0s 34us/step - loss: 122.1594 - val_loss: 116.3994
Epoch 38/5000
1126/1126 [=====] - 0s 32us/step - loss: 120.6594 - val_loss: 115.0083
Epoch 39/5000
1126/1126 [=====] - 0s 30us/step - loss: 119.2480 - val_loss: 113.7211
Epoch 40/5000
1126/1126 [=====] - 0s 33us/step - loss: 117.9076 - val_loss: 112.4397

Epoch 41/5000
1126/1126 [=====] - 0s 31us/step - loss: 116.6400 - val_loss: 111.223
Epoch 42/5000
1126/1126 [=====] - 0s 32us/step - loss: 115.3726 - val_loss: 110.098
Epoch 43/5000
1126/1126 [=====] - 0s 33us/step - loss: 114.2055 - val_loss: 108.954
Epoch 44/5000
1126/1126 [=====] - 0s 32us/step - loss: 113.0619 - val_loss: 107.852
Epoch 45/5000
1126/1126 [=====] - 0s 32us/step - loss: 111.9161 - val_loss: 106.775
Epoch 46/5000
1126/1126 [=====] - 0s 31us/step - loss: 110.7985 - val_loss: 105.762
Epoch 47/5000
1126/1126 [=====] - 0s 31us/step - loss: 109.8048 - val_loss: 104.768
Epoch 48/5000
1126/1126 [=====] - 0s 32us/step - loss: 108.8190 - val_loss: 103.812
Epoch 49/5000
1126/1126 [=====] - 0s 30us/step - loss: 107.8787 - val_loss: 102.923
Epoch 50/5000
1126/1126 [=====] - 0s 30us/step - loss: 106.9817 - val_loss: 102.059
Epoch 51/5000
1126/1126 [=====] - 0s 31us/step - loss: 106.1281 - val_loss: 101.210
Epoch 52/5000
1126/1126 [=====] - 0s 31us/step - loss: 105.2739 - val_loss: 100.360
Epoch 53/5000
1126/1126 [=====] - 0s 31us/step - loss: 104.4313 - val_loss: 99.5239
Epoch 54/5000
1126/1126 [=====] - 0s 32us/step - loss: 103.6500 - val_loss: 98.7286
Epoch 55/5000
1126/1126 [=====] - 0s 30us/step - loss: 102.8781 - val_loss: 97.9915
Epoch 56/5000
1126/1126 [=====] - 0s 32us/step - loss: 102.1381 - val_loss: 97.2851
Epoch 57/5000
1126/1126 [=====] - 0s 30us/step - loss: 101.4185 - val_loss: 96.5544
Epoch 58/5000
1126/1126 [=====] - 0s 33us/step - loss: 100.7105 - val_loss: 95.8696
Epoch 59/5000
1126/1126 [=====] - 0s 32us/step - loss: 100.0271 - val_loss: 95.1967
Epoch 60/5000
1126/1126 [=====] - 0s 31us/step - loss: 99.3679 - val_loss: 94.5018
Epoch 61/5000
1126/1126 [=====] - 0s 30us/step - loss: 98.7118 - val_loss: 93.8279
Epoch 62/5000
1126/1126 [=====] - 0s 30us/step - loss: 98.0785 - val_loss: 93.1873
Epoch 63/5000
1126/1126 [=====] - 0s 31us/step - loss: 97.4580 - val_loss: 92.5601
Epoch 64/5000
1126/1126 [=====] - 0s 31us/step - loss: 96.8589 - val_loss: 91.9724

Epoch 65/5000
1126/1126 [=====] - 0s 33us/step - loss: 96.2676 - val_loss: 91.3522
Epoch 66/5000
1126/1126 [=====] - 0s 30us/step - loss: 95.6798 - val_loss: 90.7944
Epoch 67/5000
1126/1126 [=====] - 0s 31us/step - loss: 95.1183 - val_loss: 90.2265
Epoch 68/5000
1126/1126 [=====] - 0s 33us/step - loss: 94.5430 - val_loss: 89.6740
Epoch 69/5000
1126/1126 [=====] - 0s 31us/step - loss: 94.0131 - val_loss: 89.1193
Epoch 70/5000
1126/1126 [=====] - 0s 31us/step - loss: 93.4802 - val_loss: 88.5746
Epoch 71/5000
1126/1126 [=====] - 0s 32us/step - loss: 92.9731 - val_loss: 88.0721
Epoch 72/5000
1126/1126 [=====] - 0s 31us/step - loss: 92.4391 - val_loss: 87.5820
Epoch 73/5000
1126/1126 [=====] - 0s 30us/step - loss: 91.9453 - val_loss: 87.1070
Epoch 74/5000
1126/1126 [=====] - 0s 30us/step - loss: 91.4664 - val_loss: 86.5965
Epoch 75/5000
1126/1126 [=====] - 0s 29us/step - loss: 90.9779 - val_loss: 86.1177
Epoch 76/5000
1126/1126 [=====] - 0s 30us/step - loss: 90.5149 - val_loss: 85.6505
Epoch 77/5000
1126/1126 [=====] - 0s 30us/step - loss: 90.0623 - val_loss: 85.1874
Epoch 78/5000
1126/1126 [=====] - 0s 31us/step - loss: 89.6125 - val_loss: 84.7290
Epoch 79/5000
1126/1126 [=====] - 0s 31us/step - loss: 89.1680 - val_loss: 84.2876
Epoch 80/5000
1126/1126 [=====] - 0s 31us/step - loss: 88.7364 - val_loss: 83.8399
Epoch 81/5000
1126/1126 [=====] - 0s 31us/step - loss: 88.3209 - val_loss: 83.4459
Epoch 82/5000
1126/1126 [=====] - 0s 30us/step - loss: 87.9108 - val_loss: 83.0384
Epoch 83/5000
1126/1126 [=====] - 0s 32us/step - loss: 87.5108 - val_loss: 82.6150
Epoch 84/5000
1126/1126 [=====] - 0s 31us/step - loss: 87.0963 - val_loss: 82.1984
Epoch 85/5000
1126/1126 [=====] - 0s 30us/step - loss: 86.6911 - val_loss: 81.7716
Epoch 86/5000
1126/1126 [=====] - 0s 30us/step - loss: 86.2910 - val_loss: 81.3695
Epoch 87/5000
1126/1126 [=====] - 0s 31us/step - loss: 85.9097 - val_loss: 80.9570
Epoch 88/5000
1126/1126 [=====] - 0s 30us/step - loss: 85.5241 - val_loss: 80.5747

Epoch 89/5000
1126/1126 [=====] - 0s 30us/step - loss: 85.1507 - val_loss: 80.1730
Epoch 90/5000
1126/1126 [=====] - 0s 30us/step - loss: 84.7568 - val_loss: 79.7786
Epoch 91/5000
1126/1126 [=====] - 0s 31us/step - loss: 84.3765 - val_loss: 79.4097
Epoch 92/5000
1126/1126 [=====] - 0s 34us/step - loss: 84.0150 - val_loss: 78.9978
Epoch 93/5000
1126/1126 [=====] - 0s 37us/step - loss: 83.6466 - val_loss: 78.6485
Epoch 94/5000
1126/1126 [=====] - 0s 30us/step - loss: 83.2945 - val_loss: 78.2776
Epoch 95/5000
1126/1126 [=====] - 0s 31us/step - loss: 82.9334 - val_loss: 77.9149
Epoch 96/5000
1126/1126 [=====] - 0s 30us/step - loss: 82.5606 - val_loss: 77.5576
Epoch 97/5000
1126/1126 [=====] - 0s 32us/step - loss: 82.2367 - val_loss: 77.1766
Epoch 98/5000
1126/1126 [=====] - 0s 31us/step - loss: 81.8965 - val_loss: 76.8665
Epoch 99/5000
1126/1126 [=====] - 0s 30us/step - loss: 81.5835 - val_loss: 76.5206
Epoch 100/5000
1126/1126 [=====] - 0s 30us/step - loss: 81.2545 - val_loss: 76.1967
Epoch 101/5000
1126/1126 [=====] - 0s 31us/step - loss: 80.9100 - val_loss: 75.8777
Epoch 102/5000
1126/1126 [=====] - 0s 30us/step - loss: 80.6062 - val_loss: 75.5655
Epoch 103/5000
1126/1126 [=====] - 0s 30us/step - loss: 80.2859 - val_loss: 75.2260
Epoch 104/5000
1126/1126 [=====] - 0s 32us/step - loss: 79.9852 - val_loss: 74.9241
Epoch 105/5000
1126/1126 [=====] - 0s 31us/step - loss: 79.6647 - val_loss: 74.6346
Epoch 106/5000
1126/1126 [=====] - 0s 30us/step - loss: 79.3891 - val_loss: 74.3126
Epoch 107/5000
1126/1126 [=====] - 0s 30us/step - loss: 79.0801 - val_loss: 74.0154
Epoch 108/5000
1126/1126 [=====] - 0s 32us/step - loss: 78.7904 - val_loss: 73.7291
Epoch 109/5000
1126/1126 [=====] - 0s 29us/step - loss: 78.4981 - val_loss: 73.4347
Epoch 110/5000
1126/1126 [=====] - 0s 30us/step - loss: 78.2128 - val_loss: 73.1026
Epoch 111/5000
1126/1126 [=====] - 0s 31us/step - loss: 77.9181 - val_loss: 72.8165
Epoch 112/5000
1126/1126 [=====] - 0s 31us/step - loss: 77.6350 - val_loss: 72.5451

Epoch 113/5000
1126/1126 [=====] - 0s 31us/step - loss: 77.3665 - val_loss: 72.2621
Epoch 114/5000
1126/1126 [=====] - 0s 31us/step - loss: 77.0916 - val_loss: 71.9821
Epoch 115/5000
1126/1126 [=====] - 0s 31us/step - loss: 76.8323 - val_loss: 71.6880
Epoch 116/5000
1126/1126 [=====] - 0s 32us/step - loss: 76.5615 - val_loss: 71.4346
Epoch 117/5000
1126/1126 [=====] - 0s 31us/step - loss: 76.3036 - val_loss: 71.1756
Epoch 118/5000
1126/1126 [=====] - 0s 31us/step - loss: 76.0397 - val_loss: 70.9117
Epoch 119/5000
1126/1126 [=====] - 0s 30us/step - loss: 75.7959 - val_loss: 70.6616
Epoch 120/5000
1126/1126 [=====] - 0s 32us/step - loss: 75.5276 - val_loss: 70.3771
Epoch 121/5000
1126/1126 [=====] - 0s 31us/step - loss: 75.2580 - val_loss: 70.1268
Epoch 122/5000
1126/1126 [=====] - 0s 30us/step - loss: 75.0150 - val_loss: 69.8619
Epoch 123/5000
1126/1126 [=====] - 0s 32us/step - loss: 74.7670 - val_loss: 69.6326
Epoch 124/5000
1126/1126 [=====] - 0s 30us/step - loss: 74.5275 - val_loss: 69.3862
Epoch 125/5000
1126/1126 [=====] - 0s 30us/step - loss: 74.2931 - val_loss: 69.1337
Epoch 126/5000
1126/1126 [=====] - 0s 30us/step - loss: 74.0601 - val_loss: 68.8785
Epoch 127/5000
1126/1126 [=====] - 0s 31us/step - loss: 73.8013 - val_loss: 68.6506
Epoch 128/5000
1126/1126 [=====] - 0s 30us/step - loss: 73.5678 - val_loss: 68.4396
Epoch 129/5000
1126/1126 [=====] - 0s 31us/step - loss: 73.3367 - val_loss: 68.2137
Epoch 130/5000
1126/1126 [=====] - 0s 29us/step - loss: 73.1045 - val_loss: 68.0034
Epoch 131/5000
1126/1126 [=====] - 0s 32us/step - loss: 72.8788 - val_loss: 67.8008
Epoch 132/5000
1126/1126 [=====] - 0s 30us/step - loss: 72.6624 - val_loss: 67.5630
Epoch 133/5000
1126/1126 [=====] - 0s 31us/step - loss: 72.4372 - val_loss: 67.3396
Epoch 134/5000
1126/1126 [=====] - 0s 29us/step - loss: 72.2041 - val_loss: 67.0986
Epoch 135/5000
1126/1126 [=====] - 0s 31us/step - loss: 71.9809 - val_loss: 66.8728
Epoch 136/5000
1126/1126 [=====] - 0s 31us/step - loss: 71.7465 - val_loss: 66.6594

Epoch 137/5000
1126/1126 [=====] - 0s 32us/step - loss: 71.5287 - val_loss: 66.4578
Epoch 138/5000
1126/1126 [=====] - 0s 31us/step - loss: 71.3215 - val_loss: 66.2499
Epoch 139/5000
1126/1126 [=====] - 0s 31us/step - loss: 71.1092 - val_loss: 66.0334
Epoch 140/5000
1126/1126 [=====] - 0s 31us/step - loss: 70.9096 - val_loss: 65.8391
Epoch 141/5000
1126/1126 [=====] - 0s 31us/step - loss: 70.6960 - val_loss: 65.6502
Epoch 142/5000
1126/1126 [=====] - 0s 31us/step - loss: 70.4792 - val_loss: 65.4616
Epoch 143/5000
1126/1126 [=====] - 0s 30us/step - loss: 70.2844 - val_loss: 65.2695
Epoch 144/5000
1126/1126 [=====] - 0s 32us/step - loss: 70.0802 - val_loss: 65.0694
Epoch 145/5000
1126/1126 [=====] - 0s 31us/step - loss: 69.8816 - val_loss: 64.8749
Epoch 146/5000
1126/1126 [=====] - 0s 33us/step - loss: 69.6723 - val_loss: 64.6721
Epoch 147/5000
1126/1126 [=====] - 0s 30us/step - loss: 69.4747 - val_loss: 64.4795
Epoch 148/5000
1126/1126 [=====] - 0s 32us/step - loss: 69.2837 - val_loss: 64.2744
Epoch 149/5000
1126/1126 [=====] - 0s 32us/step - loss: 69.0937 - val_loss: 64.1058
Epoch 150/5000
1126/1126 [=====] - 0s 31us/step - loss: 68.8939 - val_loss: 63.9266
Epoch 151/5000
1126/1126 [=====] - 0s 31us/step - loss: 68.7167 - val_loss: 63.7650
Epoch 152/5000
1126/1126 [=====] - 0s 30us/step - loss: 68.5455 - val_loss: 63.6228
Epoch 153/5000
1126/1126 [=====] - 0s 31us/step - loss: 68.3710 - val_loss: 63.4395
Epoch 154/5000
1126/1126 [=====] - 0s 31us/step - loss: 68.1886 - val_loss: 63.2510
Epoch 155/5000
1126/1126 [=====] - 0s 31us/step - loss: 68.0112 - val_loss: 63.0683
Epoch 156/5000
1126/1126 [=====] - 0s 29us/step - loss: 67.8374 - val_loss: 62.9141
Epoch 157/5000
1126/1126 [=====] - 0s 33us/step - loss: 67.6659 - val_loss: 62.7501
Epoch 158/5000
1126/1126 [=====] - 0s 31us/step - loss: 67.5099 - val_loss: 62.6081
Epoch 159/5000
1126/1126 [=====] - 0s 31us/step - loss: 67.3410 - val_loss: 62.4515
Epoch 160/5000
1126/1126 [=====] - 0s 31us/step - loss: 67.1866 - val_loss: 62.2765

Epoch 161/5000
1126/1126 [=====] - 0s 31us/step - loss: 67.0387 - val_loss: 62.1089
Epoch 162/5000
1126/1126 [=====] - 0s 32us/step - loss: 66.8799 - val_loss: 61.9635
Epoch 163/5000
1126/1126 [=====] - 0s 30us/step - loss: 66.7373 - val_loss: 61.8137
Epoch 164/5000
1126/1126 [=====] - 0s 30us/step - loss: 66.5816 - val_loss: 61.6908
Epoch 165/5000
1126/1126 [=====] - 0s 30us/step - loss: 66.4392 - val_loss: 61.5485
Epoch 166/5000
1126/1126 [=====] - 0s 31us/step - loss: 66.2978 - val_loss: 61.4149
Epoch 167/5000
1126/1126 [=====] - 0s 30us/step - loss: 66.1387 - val_loss: 61.2855
Epoch 168/5000
1126/1126 [=====] - 0s 30us/step - loss: 66.0012 - val_loss: 61.1724
Epoch 169/5000
1126/1126 [=====] - 0s 30us/step - loss: 65.8690 - val_loss: 61.0249
Epoch 170/5000
1126/1126 [=====] - 0s 32us/step - loss: 65.7350 - val_loss: 60.8778
Epoch 171/5000
1126/1126 [=====] - 0s 35us/step - loss: 65.6006 - val_loss: 60.7551
Epoch 172/5000
1126/1126 [=====] - 0s 31us/step - loss: 65.4605 - val_loss: 60.6271
Epoch 173/5000
1126/1126 [=====] - 0s 32us/step - loss: 65.3260 - val_loss: 60.4836
Epoch 174/5000
1126/1126 [=====] - 0s 30us/step - loss: 65.1906 - val_loss: 60.3690
Epoch 175/5000
1126/1126 [=====] - 0s 30us/step - loss: 65.0593 - val_loss: 60.2424
Epoch 176/5000
1126/1126 [=====] - 0s 33us/step - loss: 64.9418 - val_loss: 60.1248
Epoch 177/5000
1126/1126 [=====] - 0s 31us/step - loss: 64.8100 - val_loss: 60.0189
Epoch 178/5000
1126/1126 [=====] - 0s 31us/step - loss: 64.6847 - val_loss: 59.8828
Epoch 179/5000
1126/1126 [=====] - 0s 30us/step - loss: 64.5676 - val_loss: 59.7671
Epoch 180/5000
1126/1126 [=====] - 0s 31us/step - loss: 64.4373 - val_loss: 59.6454
Epoch 181/5000
1126/1126 [=====] - 0s 30us/step - loss: 64.3125 - val_loss: 59.5274
Epoch 182/5000
1126/1126 [=====] - 0s 30us/step - loss: 64.1962 - val_loss: 59.4193
Epoch 183/5000
1126/1126 [=====] - 0s 31us/step - loss: 64.0854 - val_loss: 59.2989
Epoch 184/5000
1126/1126 [=====] - 0s 30us/step - loss: 63.9730 - val_loss: 59.2031

Epoch 185/5000
1126/1126 [=====] - 0s 31us/step - loss: 63.8540 - val_loss: 59.1043
Epoch 186/5000
1126/1126 [=====] - 0s 30us/step - loss: 63.7493 - val_loss: 58.9667
Epoch 187/5000
1126/1126 [=====] - 0s 32us/step - loss: 63.6403 - val_loss: 58.8526
Epoch 188/5000
1126/1126 [=====] - 0s 32us/step - loss: 63.5235 - val_loss: 58.7571
Epoch 189/5000
1126/1126 [=====] - 0s 30us/step - loss: 63.4190 - val_loss: 58.6694
Epoch 190/5000
1126/1126 [=====] - 0s 32us/step - loss: 63.3021 - val_loss: 58.5530
Epoch 191/5000
1126/1126 [=====] - 0s 32us/step - loss: 63.1870 - val_loss: 58.4505
Epoch 192/5000
1126/1126 [=====] - 0s 31us/step - loss: 63.0888 - val_loss: 58.3606
Epoch 193/5000
1126/1126 [=====] - 0s 30us/step - loss: 62.9835 - val_loss: 58.2612
Epoch 194/5000
1126/1126 [=====] - 0s 31us/step - loss: 62.8722 - val_loss: 58.1675
Epoch 195/5000
1126/1126 [=====] - 0s 30us/step - loss: 62.7671 - val_loss: 58.0666
Epoch 196/5000
1126/1126 [=====] - 0s 32us/step - loss: 62.6668 - val_loss: 57.9554
Epoch 197/5000
1126/1126 [=====] - 0s 31us/step - loss: 62.5610 - val_loss: 57.8611
Epoch 198/5000
1126/1126 [=====] - 0s 32us/step - loss: 62.4649 - val_loss: 57.7709
Epoch 199/5000
1126/1126 [=====] - 0s 31us/step - loss: 62.3711 - val_loss: 57.6855
Epoch 200/5000
1126/1126 [=====] - 0s 31us/step - loss: 62.2832 - val_loss: 57.6092
Epoch 201/5000
1126/1126 [=====] - 0s 31us/step - loss: 62.1789 - val_loss: 57.5131
Epoch 202/5000
1126/1126 [=====] - 0s 33us/step - loss: 62.0788 - val_loss: 57.4397
Epoch 203/5000
1126/1126 [=====] - 0s 31us/step - loss: 61.9895 - val_loss: 57.3571
Epoch 204/5000
1126/1126 [=====] - 0s 34us/step - loss: 61.8987 - val_loss: 57.2766
Epoch 205/5000
1126/1126 [=====] - 0s 32us/step - loss: 61.8105 - val_loss: 57.2063
Epoch 206/5000
1126/1126 [=====] - 0s 31us/step - loss: 61.7278 - val_loss: 57.1215
Epoch 207/5000
1126/1126 [=====] - 0s 32us/step - loss: 61.6338 - val_loss: 57.0385
Epoch 208/5000
1126/1126 [=====] - 0s 32us/step - loss: 61.5528 - val_loss: 56.9673

Epoch 209/5000
1126/1126 [=====] - 0s 30us/step - loss: 61.4670 - val_loss: 56.8988
Epoch 210/5000
1126/1126 [=====] - 0s 32us/step - loss: 61.3755 - val_loss: 56.8165
Epoch 211/5000
1126/1126 [=====] - 0s 30us/step - loss: 61.2974 - val_loss: 56.7287
Epoch 212/5000
1126/1126 [=====] - 0s 31us/step - loss: 61.2076 - val_loss: 56.6543
Epoch 213/5000
1126/1126 [=====] - 0s 31us/step - loss: 61.1355 - val_loss: 56.5796
Epoch 214/5000
1126/1126 [=====] - 0s 30us/step - loss: 61.0468 - val_loss: 56.5198
Epoch 215/5000
1126/1126 [=====] - 0s 31us/step - loss: 60.9701 - val_loss: 56.4432
Epoch 216/5000
1126/1126 [=====] - 0s 30us/step - loss: 60.8923 - val_loss: 56.3747
Epoch 217/5000
1126/1126 [=====] - 0s 32us/step - loss: 60.8180 - val_loss: 56.3116
Epoch 218/5000
1126/1126 [=====] - 0s 31us/step - loss: 60.7386 - val_loss: 56.2308
Epoch 219/5000
1126/1126 [=====] - 0s 32us/step - loss: 60.6731 - val_loss: 56.1587
Epoch 220/5000
1126/1126 [=====] - 0s 32us/step - loss: 60.6016 - val_loss: 56.0987
Epoch 221/5000
1126/1126 [=====] - 0s 32us/step - loss: 60.5335 - val_loss: 56.0318
Epoch 222/5000
1126/1126 [=====] - 0s 32us/step - loss: 60.4601 - val_loss: 55.9749
Epoch 223/5000
1126/1126 [=====] - 0s 30us/step - loss: 60.3910 - val_loss: 55.9122
Epoch 224/5000
1126/1126 [=====] - 0s 31us/step - loss: 60.3245 - val_loss: 55.8457
Epoch 225/5000
1126/1126 [=====] - 0s 31us/step - loss: 60.2701 - val_loss: 55.7870
Epoch 226/5000
1126/1126 [=====] - 0s 31us/step - loss: 60.1999 - val_loss: 55.7280
Epoch 227/5000
1126/1126 [=====] - 0s 30us/step - loss: 60.1478 - val_loss: 55.6616
Epoch 228/5000
1126/1126 [=====] - 0s 30us/step - loss: 60.0818 - val_loss: 55.6006
Epoch 229/5000
1126/1126 [=====] - 0s 30us/step - loss: 60.0229 - val_loss: 55.5458
Epoch 230/5000
1126/1126 [=====] - 0s 32us/step - loss: 59.9547 - val_loss: 55.4862
Epoch 231/5000
1126/1126 [=====] - 0s 32us/step - loss: 59.8995 - val_loss: 55.4372
Epoch 232/5000
1126/1126 [=====] - 0s 32us/step - loss: 59.8441 - val_loss: 55.3717

Epoch 233/5000
1126/1126 [=====] - 0s 31us/step - loss: 59.8019 - val_loss: 55.3189
Epoch 234/5000
1126/1126 [=====] - 0s 32us/step - loss: 59.7398 - val_loss: 55.2791
Epoch 235/5000
1126/1126 [=====] - 0s 31us/step - loss: 59.6904 - val_loss: 55.2305
Epoch 236/5000
1126/1126 [=====] - 0s 31us/step - loss: 59.6370 - val_loss: 55.1689
Epoch 237/5000
1126/1126 [=====] - 0s 33us/step - loss: 59.5918 - val_loss: 55.1292
Epoch 238/5000
1126/1126 [=====] - 0s 33us/step - loss: 59.5362 - val_loss: 55.0621
Epoch 239/5000
1126/1126 [=====] - 0s 31us/step - loss: 59.4787 - val_loss: 55.0184
Epoch 240/5000
1126/1126 [=====] - 0s 31us/step - loss: 59.4368 - val_loss: 54.9703
Epoch 241/5000
1126/1126 [=====] - 0s 31us/step - loss: 59.3847 - val_loss: 54.9323
Epoch 242/5000
1126/1126 [=====] - 0s 31us/step - loss: 59.3397 - val_loss: 54.8968
Epoch 243/5000
1126/1126 [=====] - 0s 32us/step - loss: 59.3000 - val_loss: 54.8502
Epoch 244/5000
1126/1126 [=====] - 0s 32us/step - loss: 59.2464 - val_loss: 54.8143
Epoch 245/5000
1126/1126 [=====] - 0s 30us/step - loss: 59.2081 - val_loss: 54.7690
Epoch 246/5000
1126/1126 [=====] - 0s 30us/step - loss: 59.1565 - val_loss: 54.7251
Epoch 247/5000
1126/1126 [=====] - 0s 33us/step - loss: 59.1123 - val_loss: 54.6971
Epoch 248/5000
1126/1126 [=====] - 0s 31us/step - loss: 59.0599 - val_loss: 54.6594
Epoch 249/5000
1126/1126 [=====] - 0s 32us/step - loss: 59.0224 - val_loss: 54.6220
Epoch 250/5000
1126/1126 [=====] - 0s 31us/step - loss: 58.9724 - val_loss: 54.5747
Epoch 251/5000
1126/1126 [=====] - 0s 31us/step - loss: 58.9317 - val_loss: 54.5289
Epoch 252/5000
1126/1126 [=====] - 0s 34us/step - loss: 58.8895 - val_loss: 54.4796
Epoch 253/5000
1126/1126 [=====] - 0s 31us/step - loss: 58.8445 - val_loss: 54.4291
Epoch 254/5000
1126/1126 [=====] - 0s 32us/step - loss: 58.8024 - val_loss: 54.3981
Epoch 255/5000
1126/1126 [=====] - 0s 31us/step - loss: 58.7647 - val_loss: 54.3484
Epoch 256/5000
1126/1126 [=====] - 0s 32us/step - loss: 58.7116 - val_loss: 54.3008

Epoch 257/5000
1126/1126 [=====] - 0s 31us/step - loss: 58.6754 - val_loss: 54.2580
Epoch 258/5000
1126/1126 [=====] - 0s 31us/step - loss: 58.6253 - val_loss: 54.2121
Epoch 259/5000
1126/1126 [=====] - 0s 37us/step - loss: 58.5905 - val_loss: 54.1705
Epoch 260/5000
1126/1126 [=====] - 0s 33us/step - loss: 58.5549 - val_loss: 54.1389
Epoch 261/5000
1126/1126 [=====] - 0s 30us/step - loss: 58.5192 - val_loss: 54.0992
Epoch 262/5000
1126/1126 [=====] - 0s 30us/step - loss: 58.4847 - val_loss: 54.0547
Epoch 263/5000
1126/1126 [=====] - 0s 32us/step - loss: 58.4397 - val_loss: 54.0196
Epoch 264/5000
1126/1126 [=====] - 0s 34us/step - loss: 58.3973 - val_loss: 53.9750
Epoch 265/5000
1126/1126 [=====] - 0s 34us/step - loss: 58.3608 - val_loss: 53.9456
Epoch 266/5000
1126/1126 [=====] - 0s 33us/step - loss: 58.3314 - val_loss: 53.9127
Epoch 267/5000
1126/1126 [=====] - 0s 33us/step - loss: 58.2848 - val_loss: 53.8768
Epoch 268/5000
1126/1126 [=====] - 0s 34us/step - loss: 58.2466 - val_loss: 53.8406
Epoch 269/5000
1126/1126 [=====] - 0s 32us/step - loss: 58.2137 - val_loss: 53.8184
Epoch 270/5000
1126/1126 [=====] - 0s 31us/step - loss: 58.1854 - val_loss: 53.7782
Epoch 271/5000
1126/1126 [=====] - 0s 32us/step - loss: 58.1484 - val_loss: 53.7593
Epoch 272/5000
1126/1126 [=====] - 0s 32us/step - loss: 58.1140 - val_loss: 53.7381
Epoch 273/5000
1126/1126 [=====] - 0s 30us/step - loss: 58.0826 - val_loss: 53.7125
Epoch 274/5000
1126/1126 [=====] - 0s 30us/step - loss: 58.0429 - val_loss: 53.6751
Epoch 275/5000
1126/1126 [=====] - 0s 31us/step - loss: 58.0176 - val_loss: 53.6435
Epoch 276/5000
1126/1126 [=====] - 0s 30us/step - loss: 57.9814 - val_loss: 53.6092
Epoch 277/5000
1126/1126 [=====] - 0s 32us/step - loss: 57.9447 - val_loss: 53.5887
Epoch 278/5000
1126/1126 [=====] - 0s 31us/step - loss: 57.9115 - val_loss: 53.5390
Epoch 279/5000
1126/1126 [=====] - 0s 31us/step - loss: 57.8799 - val_loss: 53.4985
Epoch 280/5000
1126/1126 [=====] - 0s 31us/step - loss: 57.8453 - val_loss: 53.4660

Epoch 281/5000
1126/1126 [=====] - 0s 30us/step - loss: 57.8167 - val_loss: 53.4513
Epoch 282/5000
1126/1126 [=====] - 0s 31us/step - loss: 57.7814 - val_loss: 53.4199
Epoch 283/5000
1126/1126 [=====] - 0s 31us/step - loss: 57.7481 - val_loss: 53.3898
Epoch 284/5000
1126/1126 [=====] - 0s 33us/step - loss: 57.7214 - val_loss: 53.3581
Epoch 285/5000
1126/1126 [=====] - 0s 34us/step - loss: 57.6877 - val_loss: 53.3273
Epoch 286/5000
1126/1126 [=====] - 0s 36us/step - loss: 57.6691 - val_loss: 53.2967
Epoch 287/5000
1126/1126 [=====] - 0s 33us/step - loss: 57.6332 - val_loss: 53.2658
Epoch 288/5000
1126/1126 [=====] - 0s 33us/step - loss: 57.6099 - val_loss: 53.2347
Epoch 289/5000
1126/1126 [=====] - 0s 45us/step - loss: 57.5795 - val_loss: 53.2071
Epoch 290/5000
1126/1126 [=====] - 0s 33us/step - loss: 57.5536 - val_loss: 53.1905
Epoch 291/5000
1126/1126 [=====] - 0s 31us/step - loss: 57.5260 - val_loss: 53.1669
Epoch 292/5000
1126/1126 [=====] - 0s 30us/step - loss: 57.4944 - val_loss: 53.1563
Epoch 293/5000
1126/1126 [=====] - 0s 32us/step - loss: 57.4635 - val_loss: 53.1483
Epoch 294/5000
1126/1126 [=====] - 0s 30us/step - loss: 57.4384 - val_loss: 53.1186
Epoch 295/5000
1126/1126 [=====] - 0s 30us/step - loss: 57.4154 - val_loss: 53.0767
Epoch 296/5000
1126/1126 [=====] - 0s 35us/step - loss: 57.3867 - val_loss: 53.0516
Epoch 297/5000
1126/1126 [=====] - 0s 35us/step - loss: 57.3570 - val_loss: 53.0268
Epoch 298/5000
1126/1126 [=====] - 0s 35us/step - loss: 57.3265 - val_loss: 53.0191
Epoch 299/5000
1126/1126 [=====] - 0s 35us/step - loss: 57.3055 - val_loss: 52.9900
Epoch 300/5000
1126/1126 [=====] - 0s 35us/step - loss: 57.2761 - val_loss: 52.9712
Epoch 301/5000
1126/1126 [=====] - 0s 34us/step - loss: 57.2534 - val_loss: 52.9461
Epoch 302/5000
1126/1126 [=====] - 0s 34us/step - loss: 57.2379 - val_loss: 52.9179
Epoch 303/5000
1126/1126 [=====] - 0s 35us/step - loss: 57.2125 - val_loss: 52.9034
Epoch 304/5000
1126/1126 [=====] - 0s 34us/step - loss: 57.1852 - val_loss: 52.8758

Epoch 305/5000
1126/1126 [=====] - 0s 32us/step - loss: 57.1614 - val_loss: 52.8426
Epoch 306/5000
1126/1126 [=====] - 0s 31us/step - loss: 57.1322 - val_loss: 52.8171
Epoch 307/5000
1126/1126 [=====] - 0s 34us/step - loss: 57.1229 - val_loss: 52.7906
Epoch 308/5000
1126/1126 [=====] - 0s 36us/step - loss: 57.0899 - val_loss: 52.7725
Epoch 309/5000
1126/1126 [=====] - 0s 36us/step - loss: 57.0643 - val_loss: 52.7592
Epoch 310/5000
1126/1126 [=====] - 0s 33us/step - loss: 57.0473 - val_loss: 52.7229
Epoch 311/5000
1126/1126 [=====] - 0s 34us/step - loss: 57.0214 - val_loss: 52.7022
Epoch 312/5000
1126/1126 [=====] - 0s 34us/step - loss: 56.9918 - val_loss: 52.6809
Epoch 313/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.9687 - val_loss: 52.6550
Epoch 314/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.9490 - val_loss: 52.6293
Epoch 315/5000
1126/1126 [=====] - 0s 31us/step - loss: 56.9274 - val_loss: 52.6065
Epoch 316/5000
1126/1126 [=====] - 0s 29us/step - loss: 56.9062 - val_loss: 52.5986
Epoch 317/5000
1126/1126 [=====] - 0s 29us/step - loss: 56.8873 - val_loss: 52.5834
Epoch 318/5000
1126/1126 [=====] - 0s 30us/step - loss: 56.8559 - val_loss: 52.5577
Epoch 319/5000
1126/1126 [=====] - 0s 30us/step - loss: 56.8354 - val_loss: 52.5412
Epoch 320/5000
1126/1126 [=====] - 0s 29us/step - loss: 56.8155 - val_loss: 52.5269
Epoch 321/5000
1126/1126 [=====] - 0s 31us/step - loss: 56.7973 - val_loss: 52.5234
Epoch 322/5000
1126/1126 [=====] - 0s 33us/step - loss: 56.7706 - val_loss: 52.5064
Epoch 323/5000
1126/1126 [=====] - 0s 31us/step - loss: 56.7565 - val_loss: 52.4755
Epoch 324/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.7299 - val_loss: 52.4645
Epoch 325/5000
1126/1126 [=====] - 0s 34us/step - loss: 56.7039 - val_loss: 52.4450
Epoch 326/5000
1126/1126 [=====] - 0s 40us/step - loss: 56.6885 - val_loss: 52.4216
Epoch 327/5000
1126/1126 [=====] - 0s 39us/step - loss: 56.6708 - val_loss: 52.3914
Epoch 328/5000
1126/1126 [=====] - 0s 38us/step - loss: 56.6472 - val_loss: 52.3724

Epoch 329/5000
1126/1126 [=====] - 0s 44us/step - loss: 56.6264 - val_loss: 52.3505
Epoch 330/5000
1126/1126 [=====] - 0s 39us/step - loss: 56.6068 - val_loss: 52.3336
Epoch 331/5000
1126/1126 [=====] - 0s 34us/step - loss: 56.5864 - val_loss: 52.3092
Epoch 332/5000
1126/1126 [=====] - 0s 33us/step - loss: 56.5724 - val_loss: 52.2872
Epoch 333/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.5439 - val_loss: 52.2819
Epoch 334/5000
1126/1126 [=====] - 0s 33us/step - loss: 56.5267 - val_loss: 52.2737
Epoch 335/5000
1126/1126 [=====] - 0s 30us/step - loss: 56.5030 - val_loss: 52.2727
Epoch 336/5000
1126/1126 [=====] - 0s 31us/step - loss: 56.4923 - val_loss: 52.2649
Epoch 337/5000
1126/1126 [=====] - 0s 31us/step - loss: 56.4716 - val_loss: 52.2405
Epoch 338/5000
1126/1126 [=====] - 0s 31us/step - loss: 56.4533 - val_loss: 52.2158
Epoch 339/5000
1126/1126 [=====] - 0s 31us/step - loss: 56.4392 - val_loss: 52.1906
Epoch 340/5000
1126/1126 [=====] - 0s 30us/step - loss: 56.4149 - val_loss: 52.1747
Epoch 341/5000
1126/1126 [=====] - 0s 34us/step - loss: 56.3944 - val_loss: 52.1644
Epoch 342/5000
1126/1126 [=====] - 0s 33us/step - loss: 56.3786 - val_loss: 52.1546
Epoch 343/5000
1126/1126 [=====] - 0s 38us/step - loss: 56.3605 - val_loss: 52.1441
Epoch 344/5000
1126/1126 [=====] - 0s 33us/step - loss: 56.3444 - val_loss: 52.1256
Epoch 345/5000
1126/1126 [=====] - ETA: 0s - loss: 75.36 - 0s 37us/step - loss: 56.3
Epoch 346/5000
1126/1126 [=====] - 0s 33us/step - loss: 56.3081 - val_loss: 52.0751
Epoch 347/5000
1126/1126 [=====] - 0s 38us/step - loss: 56.2862 - val_loss: 52.0505
Epoch 348/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.2737 - val_loss: 52.0378
Epoch 349/5000
1126/1126 [=====] - 0s 31us/step - loss: 56.2529 - val_loss: 52.0201
Epoch 350/5000
1126/1126 [=====] - 0s 31us/step - loss: 56.2364 - val_loss: 51.9918
Epoch 351/5000
1126/1126 [=====] - 0s 30us/step - loss: 56.2214 - val_loss: 51.9684
Epoch 352/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.2028 - val_loss: 51.9503

Epoch 353/5000
1126/1126 [=====] - 0s 30us/step - loss: 56.1831 - val_loss: 51.9220
Epoch 354/5000
1126/1126 [=====] - 0s 30us/step - loss: 56.1626 - val_loss: 51.9046
Epoch 355/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.1533 - val_loss: 51.8861
Epoch 356/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.1313 - val_loss: 51.8662
Epoch 357/5000
1126/1126 [=====] - 0s 31us/step - loss: 56.1138 - val_loss: 51.8553
Epoch 358/5000
1126/1126 [=====] - 0s 30us/step - loss: 56.0982 - val_loss: 51.8482
Epoch 359/5000
1126/1126 [=====] - 0s 28us/step - loss: 56.0804 - val_loss: 51.8210
Epoch 360/5000
1126/1126 [=====] - 0s 29us/step - loss: 56.0657 - val_loss: 51.8033
Epoch 361/5000
1126/1126 [=====] - 0s 29us/step - loss: 56.0492 - val_loss: 51.7837
Epoch 362/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.0365 - val_loss: 51.7738
Epoch 363/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.0150 - val_loss: 51.7619
Epoch 364/5000
1126/1126 [=====] - 0s 36us/step - loss: 55.9984 - val_loss: 51.7481
Epoch 365/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.9777 - val_loss: 51.7307
Epoch 366/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.9674 - val_loss: 51.7181
Epoch 367/5000
1126/1126 [=====] - 0s 30us/step - loss: 55.9512 - val_loss: 51.7208
Epoch 368/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.9310 - val_loss: 51.7057
Epoch 369/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.9210 - val_loss: 51.6918
Epoch 370/5000
1126/1126 [=====] - 0s 35us/step - loss: 55.8986 - val_loss: 51.6752
Epoch 371/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.8897 - val_loss: 51.6558
Epoch 372/5000
1126/1126 [=====] - 0s 34us/step - loss: 55.8682 - val_loss: 51.6238
Epoch 373/5000
1126/1126 [=====] - 0s 34us/step - loss: 55.8520 - val_loss: 51.6038
Epoch 374/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.8439 - val_loss: 51.6023
Epoch 375/5000
1126/1126 [=====] - 0s 35us/step - loss: 55.8298 - val_loss: 51.6034
Epoch 376/5000
1126/1126 [=====] - 0s 35us/step - loss: 55.8098 - val_loss: 51.5916

Epoch 377/5000
1126/1126 [=====] - 0s 35us/step - loss: 55.7880 - val_loss: 51.5629
Epoch 378/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.7710 - val_loss: 51.5324
Epoch 379/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.7589 - val_loss: 51.5075
Epoch 380/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.7382 - val_loss: 51.4878
Epoch 381/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.7323 - val_loss: 51.4746
Epoch 382/5000
1126/1126 [=====] - 0s 34us/step - loss: 55.7106 - val_loss: 51.4613
Epoch 383/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.7033 - val_loss: 51.4495
Epoch 384/5000
1126/1126 [=====] - 0s 34us/step - loss: 55.6853 - val_loss: 51.4463
Epoch 385/5000
1126/1126 [=====] - 0s 36us/step - loss: 55.6687 - val_loss: 51.4368
Epoch 386/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.6526 - val_loss: 51.4329
Epoch 387/5000
1126/1126 [=====] - 0s 35us/step - loss: 55.6426 - val_loss: 51.4143
Epoch 388/5000
1126/1126 [=====] - 0s 34us/step - loss: 55.6243 - val_loss: 51.3963
Epoch 389/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.6137 - val_loss: 51.3721
Epoch 390/5000
1126/1126 [=====] - 0s 34us/step - loss: 55.5926 - val_loss: 51.3598
Epoch 391/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.5839 - val_loss: 51.3412
Epoch 392/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.5659 - val_loss: 51.3211
Epoch 393/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.5560 - val_loss: 51.3095
Epoch 394/5000
1126/1126 [=====] - 0s 41us/step - loss: 55.5368 - val_loss: 51.2984
Epoch 395/5000
1126/1126 [=====] - 0s 42us/step - loss: 55.5228 - val_loss: 51.2776
Epoch 396/5000
1126/1126 [=====] - 0s 36us/step - loss: 55.5032 - val_loss: 51.2618
Epoch 397/5000
1126/1126 [=====] - 0s 37us/step - loss: 55.4939 - val_loss: 51.2469
Epoch 398/5000
1126/1126 [=====] - 0s 34us/step - loss: 55.4840 - val_loss: 51.2343
Epoch 399/5000
1126/1126 [=====] - 0s 37us/step - loss: 55.4685 - val_loss: 51.2059
Epoch 400/5000
1126/1126 [=====] - 0s 36us/step - loss: 55.4512 - val_loss: 51.1908

Epoch 401/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.4408 - val_loss: 51.1918
Epoch 402/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.4279 - val_loss: 51.1746
Epoch 403/5000
1126/1126 [=====] - 0s 30us/step - loss: 55.4073 - val_loss: 51.1599
Epoch 404/5000
1126/1126 [=====] - 0s 30us/step - loss: 55.3897 - val_loss: 51.1479
Epoch 405/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.3797 - val_loss: 51.1314
Epoch 406/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.3650 - val_loss: 51.1311
Epoch 407/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.3523 - val_loss: 51.1225
Epoch 408/5000
1126/1126 [=====] - 0s 35us/step - loss: 55.3357 - val_loss: 51.1164
Epoch 409/5000
1126/1126 [=====] - 0s 38us/step - loss: 55.3196 - val_loss: 51.1054
Epoch 410/5000
1126/1126 [=====] - 0s 36us/step - loss: 55.3159 - val_loss: 51.0977
Epoch 411/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.2999 - val_loss: 51.0901
Epoch 412/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.2890 - val_loss: 51.0796
Epoch 413/5000
1126/1126 [=====] - 0s 34us/step - loss: 55.2686 - val_loss: 51.0589
Epoch 414/5000
1126/1126 [=====] - 0s 34us/step - loss: 55.2493 - val_loss: 51.0460
Epoch 415/5000
1126/1126 [=====] - 0s 35us/step - loss: 55.2436 - val_loss: 51.0291
Epoch 416/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.2238 - val_loss: 51.0304
Epoch 417/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.2116 - val_loss: 51.0094
Epoch 418/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.2009 - val_loss: 50.9977
Epoch 419/5000
1126/1126 [=====] - 0s 30us/step - loss: 55.1866 - val_loss: 50.9753
Epoch 420/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.1727 - val_loss: 50.9587
Epoch 421/5000
1126/1126 [=====] - 0s 38us/step - loss: 55.1584 - val_loss: 50.9514
Epoch 422/5000
1126/1126 [=====] - 0s 36us/step - loss: 55.1410 - val_loss: 50.9364
Epoch 423/5000
1126/1126 [=====] - 0s 36us/step - loss: 55.1271 - val_loss: 50.9272
Epoch 424/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.1175 - val_loss: 50.9159

Epoch 425/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.0990 - val_loss: 50.9001
Epoch 426/5000
1126/1126 [=====] - 0s 34us/step - loss: 55.0920 - val_loss: 50.8824
Epoch 427/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.0771 - val_loss: 50.8619
Epoch 428/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.0641 - val_loss: 50.8415
Epoch 429/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.0476 - val_loss: 50.8299
Epoch 430/5000
1126/1126 [=====] - 0s 34us/step - loss: 55.0340 - val_loss: 50.8188
Epoch 431/5000
1126/1126 [=====] - 0s 34us/step - loss: 55.0198 - val_loss: 50.8050
Epoch 432/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.0075 - val_loss: 50.7935
Epoch 433/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.9957 - val_loss: 50.7833
Epoch 434/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.9841 - val_loss: 50.7686
Epoch 435/5000
1126/1126 [=====] - 0s 34us/step - loss: 54.9654 - val_loss: 50.7590
Epoch 436/5000
1126/1126 [=====] - 0s 35us/step - loss: 54.9543 - val_loss: 50.7427
Epoch 437/5000
1126/1126 [=====] - 0s 37us/step - loss: 54.9429 - val_loss: 50.7174
Epoch 438/5000
1126/1126 [=====] - 0s 38us/step - loss: 54.9331 - val_loss: 50.7237
Epoch 439/5000
1126/1126 [=====] - 0s 38us/step - loss: 54.9209 - val_loss: 50.7057
Epoch 440/5000
1126/1126 [=====] - 0s 37us/step - loss: 54.9051 - val_loss: 50.6945
Epoch 441/5000
1126/1126 [=====] - 0s 40us/step - loss: 54.8904 - val_loss: 50.6804
Epoch 442/5000
1126/1126 [=====] - 0s 40us/step - loss: 54.8754 - val_loss: 50.6689
Epoch 443/5000
1126/1126 [=====] - 0s 44us/step - loss: 54.8647 - val_loss: 50.6665
Epoch 444/5000
1126/1126 [=====] - 0s 40us/step - loss: 54.8538 - val_loss: 50.6555
Epoch 445/5000
1126/1126 [=====] - 0s 42us/step - loss: 54.8371 - val_loss: 50.6394
Epoch 446/5000
1126/1126 [=====] - 0s 41us/step - loss: 54.8194 - val_loss: 50.6257
Epoch 447/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.8084 - val_loss: 50.6092
Epoch 448/5000
1126/1126 [=====] - 0s 35us/step - loss: 54.7959 - val_loss: 50.5908

Epoch 449/5000
1126/1126 [=====] - 0s 36us/step - loss: 54.7842 - val_loss: 50.5797
Epoch 450/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.7745 - val_loss: 50.5754
Epoch 451/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.7576 - val_loss: 50.5661
Epoch 452/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.7394 - val_loss: 50.5516
Epoch 453/5000
1126/1126 [=====] - 0s 29us/step - loss: 54.7277 - val_loss: 50.5507
Epoch 454/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.7161 - val_loss: 50.5306
Epoch 455/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.7033 - val_loss: 50.5293
Epoch 456/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.6864 - val_loss: 50.5140
Epoch 457/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.6738 - val_loss: 50.4931
Epoch 458/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.6625 - val_loss: 50.4923
Epoch 459/5000
1126/1126 [=====] - 0s 34us/step - loss: 54.6476 - val_loss: 50.4952
Epoch 460/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.6387 - val_loss: 50.4892
Epoch 461/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.6227 - val_loss: 50.4777
Epoch 462/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.6085 - val_loss: 50.4678
Epoch 463/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.5951 - val_loss: 50.4604
Epoch 464/5000
1126/1126 [=====] - 0s 37us/step - loss: 54.5765 - val_loss: 50.4522
Epoch 465/5000
1126/1126 [=====] - 0s 35us/step - loss: 54.5709 - val_loss: 50.4488
Epoch 466/5000
1126/1126 [=====] - 0s 37us/step - loss: 54.5565 - val_loss: 50.4334
Epoch 467/5000
1126/1126 [=====] - 0s 34us/step - loss: 54.5426 - val_loss: 50.4123
Epoch 468/5000
1126/1126 [=====] - 0s 35us/step - loss: 54.5331 - val_loss: 50.4081
Epoch 469/5000
1126/1126 [=====] - 0s 44us/step - loss: 54.5181 - val_loss: 50.3924
Epoch 470/5000
1126/1126 [=====] - 0s 35us/step - loss: 54.5069 - val_loss: 50.3737
Epoch 471/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.4904 - val_loss: 50.3676
Epoch 472/5000
1126/1126 [=====] - 0s 35us/step - loss: 54.4787 - val_loss: 50.3521

Epoch 473/5000
1126/1126 [=====] - 0s 39us/step - loss: 54.4630 - val_loss: 50.3469
Epoch 474/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.4560 - val_loss: 50.3319
Epoch 475/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.4396 - val_loss: 50.3211
Epoch 476/5000
1126/1126 [=====] - 0s 34us/step - loss: 54.4251 - val_loss: 50.3139
Epoch 477/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.4186 - val_loss: 50.3281
Epoch 478/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.4094 - val_loss: 50.3085
Epoch 479/5000
1126/1126 [=====] - 0s 30us/step - loss: 54.3910 - val_loss: 50.3020
Epoch 480/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.3798 - val_loss: 50.2867
Epoch 481/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.3639 - val_loss: 50.2798
Epoch 482/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.3500 - val_loss: 50.2646
Epoch 483/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.3412 - val_loss: 50.2516
Epoch 484/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.3300 - val_loss: 50.2378
Epoch 485/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.3180 - val_loss: 50.2339
Epoch 486/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.3049 - val_loss: 50.2232
Epoch 487/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.2977 - val_loss: 50.2068
Epoch 488/5000
1126/1126 [=====] - 0s 34us/step - loss: 54.2786 - val_loss: 50.1857
Epoch 489/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.2706 - val_loss: 50.1726
Epoch 490/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.2561 - val_loss: 50.1653
Epoch 491/5000
1126/1126 [=====] - 0s 35us/step - loss: 54.2454 - val_loss: 50.1491
Epoch 492/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.2344 - val_loss: 50.1345
Epoch 493/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.2254 - val_loss: 50.1224
Epoch 494/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.2079 - val_loss: 50.1114
Epoch 495/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.1988 - val_loss: 50.1155
Epoch 496/5000
1126/1126 [=====] - 0s 30us/step - loss: 54.1904 - val_loss: 50.1001

Epoch 497/5000
1126/1126 [=====] - 0s 30us/step - loss: 54.1779 - val_loss: 50.0904
Epoch 498/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.1692 - val_loss: 50.0759
Epoch 499/5000
1126/1126 [=====] - 0s 30us/step - loss: 54.1571 - val_loss: 50.0621
Epoch 500/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.1423 - val_loss: 50.0493
Epoch 501/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.1365 - val_loss: 50.0351
Epoch 502/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.1213 - val_loss: 50.0208
Epoch 503/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.1138 - val_loss: 50.0118
Epoch 504/5000
1126/1126 [=====] - 0s 34us/step - loss: 54.1018 - val_loss: 49.9979
Epoch 505/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.0916 - val_loss: 49.9794
Epoch 506/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.0802 - val_loss: 49.9793
Epoch 507/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.0732 - val_loss: 49.9671
Epoch 508/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.0614 - val_loss: 49.9553
Epoch 509/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.0527 - val_loss: 49.9405
Epoch 510/5000
1126/1126 [=====] - 0s 30us/step - loss: 54.0423 - val_loss: 49.9264
Epoch 511/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.0281 - val_loss: 49.9175
Epoch 512/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.0184 - val_loss: 49.9186
Epoch 513/5000
1126/1126 [=====] - 0s 42us/step - loss: 54.0088 - val_loss: 49.9226
Epoch 514/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.9975 - val_loss: 49.9036
Epoch 515/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.9897 - val_loss: 49.8900
Epoch 516/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.9768 - val_loss: 49.8793
Epoch 517/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.9720 - val_loss: 49.8737
Epoch 518/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.9556 - val_loss: 49.8696
Epoch 519/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.9484 - val_loss: 49.8552
Epoch 520/5000
1126/1126 [=====] - 0s 35us/step - loss: 53.9417 - val_loss: 49.8501

Epoch 521/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.9304 - val_loss: 49.8377
Epoch 522/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.9177 - val_loss: 49.8193
Epoch 523/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.9120 - val_loss: 49.8126
Epoch 524/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.9042 - val_loss: 49.8043
Epoch 525/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.9007 - val_loss: 49.7908
Epoch 526/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.8807 - val_loss: 49.7802
Epoch 527/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.8708 - val_loss: 49.7784
Epoch 528/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.8656 - val_loss: 49.7738
Epoch 529/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.8607 - val_loss: 49.7549
Epoch 530/5000
1126/1126 [=====] - 0s 35us/step - loss: 53.8493 - val_loss: 49.7445
Epoch 531/5000
1126/1126 [=====] - 0s 35us/step - loss: 53.8410 - val_loss: 49.7358
Epoch 532/5000
1126/1126 [=====] - 0s 39us/step - loss: 53.8305 - val_loss: 49.7297
Epoch 533/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.8205 - val_loss: 49.7241
Epoch 534/5000
1126/1126 [=====] - 0s 35us/step - loss: 53.8063 - val_loss: 49.7147
Epoch 535/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.8048 - val_loss: 49.7050
Epoch 536/5000
1126/1126 [=====] - ETA: 0s - loss: 76.12 - 0s 32us/step - loss: 53.7858
Epoch 537/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.7858 - val_loss: 49.7047
Epoch 538/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.7750 - val_loss: 49.7031
Epoch 539/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.7678 - val_loss: 49.6984
Epoch 540/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.7602 - val_loss: 49.6899
Epoch 541/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.7493 - val_loss: 49.6723
Epoch 542/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.7455 - val_loss: 49.6585
Epoch 543/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.7351 - val_loss: 49.6560
Epoch 544/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.7279 - val_loss: 49.6484

Epoch 545/5000
1126/1126 [=====] - 0s 35us/step - loss: 53.7146 - val_loss: 49.6443
Epoch 546/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.7110 - val_loss: 49.6343
Epoch 547/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.7010 - val_loss: 49.6279
Epoch 548/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.6939 - val_loss: 49.6129
Epoch 549/5000
1126/1126 [=====] - 0s 40us/step - loss: 53.6851 - val_loss: 49.6016
Epoch 550/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.6772 - val_loss: 49.5962
Epoch 551/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.6634 - val_loss: 49.5843
Epoch 552/5000
1126/1126 [=====] - 0s 35us/step - loss: 53.6634 - val_loss: 49.5698
Epoch 553/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.6554 - val_loss: 49.5606
Epoch 554/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.6426 - val_loss: 49.5606
Epoch 555/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.6376 - val_loss: 49.5585
Epoch 556/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.6288 - val_loss: 49.5520
Epoch 557/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.6212 - val_loss: 49.5452
Epoch 558/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.6153 - val_loss: 49.5440
Epoch 559/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.6044 - val_loss: 49.5395
Epoch 560/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.5964 - val_loss: 49.5399
Epoch 561/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.5896 - val_loss: 49.5310
Epoch 562/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.5800 - val_loss: 49.5375
Epoch 563/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.5745 - val_loss: 49.5239
Epoch 564/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.5644 - val_loss: 49.5194
Epoch 565/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.5626 - val_loss: 49.5150
Epoch 566/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.5533 - val_loss: 49.5027
Epoch 567/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.5452 - val_loss: 49.4938
Epoch 568/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.5328 - val_loss: 49.4954

Epoch 569/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.5269 - val_loss: 49.4822
Epoch 570/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.5200 - val_loss: 49.4648
Epoch 571/5000
1126/1126 [=====] - 0s 36us/step - loss: 53.5152 - val_loss: 49.4565
Epoch 572/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.5072 - val_loss: 49.4606
Epoch 573/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.4943 - val_loss: 49.4633
Epoch 574/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.4924 - val_loss: 49.4537
Epoch 575/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.4822 - val_loss: 49.4437
Epoch 576/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.4741 - val_loss: 49.4468
Epoch 577/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.4693 - val_loss: 49.4302
Epoch 578/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.4638 - val_loss: 49.4296
Epoch 579/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.4606 - val_loss: 49.4221
Epoch 580/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.4473 - val_loss: 49.4114
Epoch 581/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.4425 - val_loss: 49.4044
Epoch 582/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.4372 - val_loss: 49.4045
Epoch 583/5000
1126/1126 [=====] - 0s 39us/step - loss: 53.4236 - val_loss: 49.3717
Epoch 584/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.4209 - val_loss: 49.3789
Epoch 585/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.4123 - val_loss: 49.3693
Epoch 586/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.4021 - val_loss: 49.3597
Epoch 587/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.3937 - val_loss: 49.3528
Epoch 588/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.3938 - val_loss: 49.3436
Epoch 589/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.3834 - val_loss: 49.3332
Epoch 590/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.3747 - val_loss: 49.3231
Epoch 591/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.3671 - val_loss: 49.3128
Epoch 592/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.3608 - val_loss: 49.2969

Epoch 593/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.3577 - val_loss: 49.2919
Epoch 594/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.3480 - val_loss: 49.2898
Epoch 595/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.3419 - val_loss: 49.2831
Epoch 596/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.3343 - val_loss: 49.2732
Epoch 597/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.3218 - val_loss: 49.2659
Epoch 598/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.3157 - val_loss: 49.2599
Epoch 599/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.3098 - val_loss: 49.2546
Epoch 600/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.3018 - val_loss: 49.2421
Epoch 601/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.2922 - val_loss: 49.2420
Epoch 602/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.2902 - val_loss: 49.2374
Epoch 603/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.2806 - val_loss: 49.2282
Epoch 604/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.2783 - val_loss: 49.2229
Epoch 605/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.2683 - val_loss: 49.2269
Epoch 606/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.2611 - val_loss: 49.2165
Epoch 607/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.2488 - val_loss: 49.2127
Epoch 608/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.2425 - val_loss: 49.2060
Epoch 609/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.2449 - val_loss: 49.1954
Epoch 610/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.2333 - val_loss: 49.1807
Epoch 611/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.2272 - val_loss: 49.1793
Epoch 612/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.2172 - val_loss: 49.1696
Epoch 613/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.2099 - val_loss: 49.1692
Epoch 614/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.2064 - val_loss: 49.1709
Epoch 615/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.2084 - val_loss: 49.1622
Epoch 616/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.1966 - val_loss: 49.1662

Epoch 617/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.1845 - val_loss: 49.1694
Epoch 618/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.1729 - val_loss: 49.1714
Epoch 619/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.1673 - val_loss: 49.1647
Epoch 620/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.1643 - val_loss: 49.1666
Epoch 621/5000
1126/1126 [=====] - 0s 28us/step - loss: 53.1595 - val_loss: 49.1639
Epoch 622/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.1480 - val_loss: 49.1516
Epoch 623/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.1388 - val_loss: 49.1436
Epoch 624/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.1352 - val_loss: 49.1399
Epoch 625/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.1271 - val_loss: 49.1274
Epoch 626/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.1222 - val_loss: 49.1154
Epoch 627/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.1148 - val_loss: 49.0988
Epoch 628/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.1089 - val_loss: 49.0974
Epoch 629/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.0992 - val_loss: 49.0845
Epoch 630/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.0941 - val_loss: 49.0822
Epoch 631/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.0875 - val_loss: 49.0682
Epoch 632/5000
1126/1126 [=====] - 0s 28us/step - loss: 53.0797 - val_loss: 49.0525
Epoch 633/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.0740 - val_loss: 49.0518
Epoch 634/5000
1126/1126 [=====] - 0s 29us/step - loss: 53.0661 - val_loss: 49.0466
Epoch 635/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.0611 - val_loss: 49.0422
Epoch 636/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.0527 - val_loss: 49.0417
Epoch 637/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.0506 - val_loss: 49.0367
Epoch 638/5000
1126/1126 [=====] - 0s 35us/step - loss: 53.0373 - val_loss: 49.0267
Epoch 639/5000
1126/1126 [=====] - 0s 35us/step - loss: 53.0361 - val_loss: 49.0179
Epoch 640/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.0305 - val_loss: 49.0113

Epoch 641/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.0202 - val_loss: 49.0145
Epoch 642/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.0146 - val_loss: 48.9950
Epoch 643/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.0061 - val_loss: 48.9866
Epoch 644/5000
1126/1126 [=====] - 0s 30us/step - loss: 53.0026 - val_loss: 48.9823
Epoch 645/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.9930 - val_loss: 48.9756
Epoch 646/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.9860 - val_loss: 48.9792
Epoch 647/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.9800 - val_loss: 48.9778
Epoch 648/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.9721 - val_loss: 48.9630
Epoch 649/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.9654 - val_loss: 48.9568
Epoch 650/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.9594 - val_loss: 48.9473
Epoch 651/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.9542 - val_loss: 48.9483
Epoch 652/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.9451 - val_loss: 48.9498
Epoch 653/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.9417 - val_loss: 48.9463
Epoch 654/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.9360 - val_loss: 48.9415
Epoch 655/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.9284 - val_loss: 48.9329
Epoch 656/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.9202 - val_loss: 48.9279
Epoch 657/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.9186 - val_loss: 48.9222
Epoch 658/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.9064 - val_loss: 48.9167
Epoch 659/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.9046 - val_loss: 48.9232
Epoch 660/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.8991 - val_loss: 48.9201
Epoch 661/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.8881 - val_loss: 48.9169
Epoch 662/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.8893 - val_loss: 48.9135
Epoch 663/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.8778 - val_loss: 48.9195
Epoch 664/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.8671 - val_loss: 48.9095

Epoch 665/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.8590 - val_loss: 48.8986
Epoch 666/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.8626 - val_loss: 48.8922
Epoch 667/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.8516 - val_loss: 48.8883
Epoch 668/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.8459 - val_loss: 48.8883
Epoch 669/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.8396 - val_loss: 48.8795
Epoch 670/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.8340 - val_loss: 48.8772
Epoch 671/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.8266 - val_loss: 48.8687
Epoch 672/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.8189 - val_loss: 48.8624
Epoch 673/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.8112 - val_loss: 48.8572
Epoch 674/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.8077 - val_loss: 48.8508
Epoch 675/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.8044 - val_loss: 48.8446
Epoch 676/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.7964 - val_loss: 48.8390
Epoch 677/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.7879 - val_loss: 48.8338
Epoch 678/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.7828 - val_loss: 48.8356
Epoch 679/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.7759 - val_loss: 48.8282
Epoch 680/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.7746 - val_loss: 48.8242
Epoch 681/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.7624 - val_loss: 48.8085
Epoch 682/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.7585 - val_loss: 48.8049
Epoch 683/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.7529 - val_loss: 48.7964
Epoch 684/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.7464 - val_loss: 48.7988
Epoch 685/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.7428 - val_loss: 48.7926
Epoch 686/5000
1126/1126 [=====] - 0s 28us/step - loss: 52.7348 - val_loss: 48.7841
Epoch 687/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.7298 - val_loss: 48.7757
Epoch 688/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.7206 - val_loss: 48.7722

Epoch 689/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.7160 - val_loss: 48.7693
Epoch 690/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.7109 - val_loss: 48.7760
Epoch 691/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.7071 - val_loss: 48.7700
Epoch 692/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.6972 - val_loss: 48.7572
Epoch 693/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.6947 - val_loss: 48.7613
Epoch 694/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.6857 - val_loss: 48.7605
Epoch 695/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.6798 - val_loss: 48.7573
Epoch 696/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.6721 - val_loss: 48.7586
Epoch 697/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.6661 - val_loss: 48.7441
Epoch 698/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.6607 - val_loss: 48.7305
Epoch 699/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.6555 - val_loss: 48.7310
Epoch 700/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.6488 - val_loss: 48.7360
Epoch 701/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.6417 - val_loss: 48.7288
Epoch 702/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.6365 - val_loss: 48.7226
Epoch 703/5000
1126/1126 [=====] - 0s 28us/step - loss: 52.6308 - val_loss: 48.7113
Epoch 704/5000
1126/1126 [=====] - 0s 28us/step - loss: 52.6231 - val_loss: 48.6998
Epoch 705/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.6143 - val_loss: 48.6941
Epoch 706/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.6111 - val_loss: 48.6828
Epoch 707/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.6065 - val_loss: 48.6740
Epoch 708/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.6046 - val_loss: 48.6724
Epoch 709/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.5932 - val_loss: 48.6647
Epoch 710/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.5880 - val_loss: 48.6603
Epoch 711/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.5878 - val_loss: 48.6571
Epoch 712/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.5797 - val_loss: 48.6514

Epoch 713/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.5750 - val_loss: 48.6359
Epoch 714/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.5667 - val_loss: 48.6298
Epoch 715/5000
1126/1126 [=====] - 0s 28us/step - loss: 52.5648 - val_loss: 48.6273
Epoch 716/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.5626 - val_loss: 48.6152
Epoch 717/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.5548 - val_loss: 48.6075
Epoch 718/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.5505 - val_loss: 48.6057
Epoch 719/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.5423 - val_loss: 48.6021
Epoch 720/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.5375 - val_loss: 48.6017
Epoch 721/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.5294 - val_loss: 48.6001
Epoch 722/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.5216 - val_loss: 48.5915
Epoch 723/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.5192 - val_loss: 48.5846
Epoch 724/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.5160 - val_loss: 48.5780
Epoch 725/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.5074 - val_loss: 48.5724
Epoch 726/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.5030 - val_loss: 48.5669
Epoch 727/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.4957 - val_loss: 48.5581
Epoch 728/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.4921 - val_loss: 48.5573
Epoch 729/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.4841 - val_loss: 48.5515
Epoch 730/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.4807 - val_loss: 48.5467
Epoch 731/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.4747 - val_loss: 48.5477
Epoch 732/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.4759 - val_loss: 48.5378
Epoch 733/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.4630 - val_loss: 48.5315
Epoch 734/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.4596 - val_loss: 48.5194
Epoch 735/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.4538 - val_loss: 48.5148
Epoch 736/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.4488 - val_loss: 48.5085

Epoch 737/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.4423 - val_loss: 48.5045
Epoch 738/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.4343 - val_loss: 48.5013
Epoch 739/5000
1126/1126 [=====] - 0s 33us/step - loss: 52.4312 - val_loss: 48.4925
Epoch 740/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.4230 - val_loss: 48.4844
Epoch 741/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.4190 - val_loss: 48.4905
Epoch 742/5000
1126/1126 [=====] - 0s 38us/step - loss: 52.4174 - val_loss: 48.4921
Epoch 743/5000
1126/1126 [=====] - 0s 34us/step - loss: 52.4106 - val_loss: 48.4952
Epoch 744/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.4053 - val_loss: 48.4853
Epoch 745/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.3976 - val_loss: 48.4836
Epoch 746/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.3901 - val_loss: 48.4834
Epoch 747/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.3872 - val_loss: 48.4808
Epoch 748/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.3824 - val_loss: 48.4762
Epoch 749/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.3797 - val_loss: 48.4738
Epoch 750/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.3717 - val_loss: 48.4812
Epoch 751/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.3666 - val_loss: 48.4894
Epoch 752/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.3624 - val_loss: 48.4744
Epoch 753/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.3553 - val_loss: 48.4645
Epoch 754/5000
1126/1126 [=====] - 0s 28us/step - loss: 52.3514 - val_loss: 48.4566
Epoch 755/5000
1126/1126 [=====] - 0s 28us/step - loss: 52.3470 - val_loss: 48.4519
Epoch 756/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.3387 - val_loss: 48.4481
Epoch 757/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.3342 - val_loss: 48.4538
Epoch 758/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.3331 - val_loss: 48.4444
Epoch 759/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.3245 - val_loss: 48.4365
Epoch 760/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.3162 - val_loss: 48.4307

Epoch 761/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.3180 - val_loss: 48.4210
Epoch 762/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.3098 - val_loss: 48.4129
Epoch 763/5000
1126/1126 [=====] - 0s 28us/step - loss: 52.3054 - val_loss: 48.4037
Epoch 764/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.2978 - val_loss: 48.3985
Epoch 765/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.2957 - val_loss: 48.3959
Epoch 766/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.2889 - val_loss: 48.3963
Epoch 767/5000
1126/1126 [=====] - 0s 28us/step - loss: 52.2796 - val_loss: 48.3938
Epoch 768/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.2784 - val_loss: 48.3866
Epoch 769/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.2717 - val_loss: 48.3813
Epoch 770/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.2681 - val_loss: 48.3770
Epoch 771/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.2642 - val_loss: 48.3712
Epoch 772/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.2563 - val_loss: 48.3664
Epoch 773/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.2502 - val_loss: 48.3591
Epoch 774/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.2443 - val_loss: 48.3521
Epoch 775/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.2402 - val_loss: 48.3446
Epoch 776/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.2370 - val_loss: 48.3363
Epoch 777/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.2345 - val_loss: 48.3317
Epoch 778/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.2239 - val_loss: 48.3312
Epoch 779/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.2190 - val_loss: 48.3222
Epoch 780/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.2167 - val_loss: 48.3179
Epoch 781/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.2088 - val_loss: 48.3169
Epoch 782/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.2031 - val_loss: 48.3139
Epoch 783/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.2033 - val_loss: 48.3053
Epoch 784/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.1919 - val_loss: 48.3039

Epoch 785/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.1880 - val_loss: 48.3014
Epoch 786/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.1873 - val_loss: 48.2951
Epoch 787/5000
1126/1126 [=====] - 0s 37us/step - loss: 52.1818 - val_loss: 48.2904
Epoch 788/5000
1126/1126 [=====] - 0s 35us/step - loss: 52.1741 - val_loss: 48.2834
Epoch 789/5000
1126/1126 [=====] - 0s 35us/step - loss: 52.1699 - val_loss: 48.2770
Epoch 790/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.1655 - val_loss: 48.2763
Epoch 791/5000
1126/1126 [=====] - 0s 33us/step - loss: 52.1602 - val_loss: 48.2757
Epoch 792/5000
1126/1126 [=====] - 0s 33us/step - loss: 52.1558 - val_loss: 48.2748
Epoch 793/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.1474 - val_loss: 48.2701
Epoch 794/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.1430 - val_loss: 48.2595
Epoch 795/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.1346 - val_loss: 48.2616
Epoch 796/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.1309 - val_loss: 48.2581
Epoch 797/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.1312 - val_loss: 48.2524
Epoch 798/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.1257 - val_loss: 48.2520
Epoch 799/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.1187 - val_loss: 48.2410
Epoch 800/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.1132 - val_loss: 48.2398
Epoch 801/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.1109 - val_loss: 48.2387
Epoch 802/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.1041 - val_loss: 48.2434
Epoch 803/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.0973 - val_loss: 48.2366
Epoch 804/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.0909 - val_loss: 48.2292
Epoch 805/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.0859 - val_loss: 48.2348
Epoch 806/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.0798 - val_loss: 48.2313
Epoch 807/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.0775 - val_loss: 48.2243
Epoch 808/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.0757 - val_loss: 48.2260

Epoch 809/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.0661 - val_loss: 48.2279
Epoch 810/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.0613 - val_loss: 48.2222
Epoch 811/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.0600 - val_loss: 48.2169
Epoch 812/5000
1126/1126 [=====] - 0s 28us/step - loss: 52.0553 - val_loss: 48.2022
Epoch 813/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.0491 - val_loss: 48.2036
Epoch 814/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.0405 - val_loss: 48.1964
Epoch 815/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.0390 - val_loss: 48.1881
Epoch 816/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.0298 - val_loss: 48.1822
Epoch 817/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.0289 - val_loss: 48.1848
Epoch 818/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.0247 - val_loss: 48.1754
Epoch 819/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.0200 - val_loss: 48.1696
Epoch 820/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.0116 - val_loss: 48.1688
Epoch 821/5000
1126/1126 [=====] - 0s 29us/step - loss: 52.0080 - val_loss: 48.1603
Epoch 822/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.0069 - val_loss: 48.1549
Epoch 823/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.0002 - val_loss: 48.1419
Epoch 824/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.9947 - val_loss: 48.1323
Epoch 825/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.9879 - val_loss: 48.1295
Epoch 826/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.9834 - val_loss: 48.1202
Epoch 827/5000
1126/1126 [=====] - 0s 33us/step - loss: 51.9799 - val_loss: 48.1130
Epoch 828/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.9750 - val_loss: 48.1101
Epoch 829/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.9719 - val_loss: 48.1067
Epoch 830/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.9647 - val_loss: 48.1117
Epoch 831/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.9599 - val_loss: 48.1029
Epoch 832/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.9584 - val_loss: 48.0976

Epoch 833/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.9520 - val_loss: 48.0892
Epoch 834/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.9433 - val_loss: 48.0768
Epoch 835/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.9386 - val_loss: 48.0739
Epoch 836/5000
1126/1126 [=====] - 0s 28us/step - loss: 51.9336 - val_loss: 48.0706
Epoch 837/5000
1126/1126 [=====] - 0s 28us/step - loss: 51.9321 - val_loss: 48.0764
Epoch 838/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.9293 - val_loss: 48.0733
Epoch 839/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.9214 - val_loss: 48.0645
Epoch 840/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.9152 - val_loss: 48.0657
Epoch 841/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.9142 - val_loss: 48.0590
Epoch 842/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.9101 - val_loss: 48.0570
Epoch 843/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.9044 - val_loss: 48.0492
Epoch 844/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.9013 - val_loss: 48.0429
Epoch 845/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.8969 - val_loss: 48.0324
Epoch 846/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.8955 - val_loss: 48.0301
Epoch 847/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.8879 - val_loss: 48.0225
Epoch 848/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.8836 - val_loss: 48.0136
Epoch 849/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.8810 - val_loss: 48.0209
Epoch 850/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.8754 - val_loss: 48.0153
Epoch 851/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.8716 - val_loss: 48.0170
Epoch 852/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.8619 - val_loss: 48.0263
Epoch 853/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.8586 - val_loss: 48.0207
Epoch 854/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.8573 - val_loss: 48.0124
Epoch 855/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.8493 - val_loss: 48.0076
Epoch 856/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.8470 - val_loss: 48.0052

Epoch 857/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.8443 - val_loss: 47.9954
Epoch 858/5000
1126/1126 [=====] - 0s 28us/step - loss: 51.8432 - val_loss: 47.9938
Epoch 859/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.8327 - val_loss: 47.9930
Epoch 860/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.8311 - val_loss: 47.9929
Epoch 861/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.8244 - val_loss: 47.9928
Epoch 862/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.8234 - val_loss: 47.9885
Epoch 863/5000
1126/1126 [=====] - 0s 28us/step - loss: 51.8155 - val_loss: 47.9823
Epoch 864/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.8119 - val_loss: 47.9802
Epoch 865/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.8029 - val_loss: 47.9773
Epoch 866/5000
1126/1126 [=====] - 0s 28us/step - loss: 51.8054 - val_loss: 47.9746
Epoch 867/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.7915 - val_loss: 47.9685
Epoch 868/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.7908 - val_loss: 47.9666
Epoch 869/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.7876 - val_loss: 47.9587
Epoch 870/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.7840 - val_loss: 47.9524
Epoch 871/5000
1126/1126 [=====] - 0s 38us/step - loss: 51.7817 - val_loss: 47.9402
Epoch 872/5000
1126/1126 [=====] - 0s 33us/step - loss: 51.7771 - val_loss: 47.9378
Epoch 873/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.7697 - val_loss: 47.9348
Epoch 874/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.7679 - val_loss: 47.9304
Epoch 875/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.7601 - val_loss: 47.9333
Epoch 876/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.7579 - val_loss: 47.9312
Epoch 877/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.7515 - val_loss: 47.9330
Epoch 878/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.7487 - val_loss: 47.9353
Epoch 879/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.7467 - val_loss: 47.9254
Epoch 880/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.7410 - val_loss: 47.9232

Epoch 881/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.7363 - val_loss: 47.9244
Epoch 882/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.7323 - val_loss: 47.9250
Epoch 883/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.7271 - val_loss: 47.9210
Epoch 884/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.7247 - val_loss: 47.9142
Epoch 885/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.7202 - val_loss: 47.9043
Epoch 886/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.7154 - val_loss: 47.8969
Epoch 887/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.7112 - val_loss: 47.9014
Epoch 888/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.7058 - val_loss: 47.8968
Epoch 889/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.7001 - val_loss: 47.8989
Epoch 890/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.6948 - val_loss: 47.8930
Epoch 891/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.6904 - val_loss: 47.8903
Epoch 892/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.6868 - val_loss: 47.8872
Epoch 893/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.6846 - val_loss: 47.8811
Epoch 894/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.6781 - val_loss: 47.8737
Epoch 895/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.6742 - val_loss: 47.8743
Epoch 896/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.6715 - val_loss: 47.8692
Epoch 897/5000
1126/1126 [=====] - 0s 28us/step - loss: 51.6705 - val_loss: 47.8693
Epoch 898/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.6605 - val_loss: 47.8686
Epoch 899/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.6550 - val_loss: 47.8626
Epoch 900/5000
1126/1126 [=====] - 0s 28us/step - loss: 51.6527 - val_loss: 47.8557
Epoch 901/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.6512 - val_loss: 47.8488
Epoch 902/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.6457 - val_loss: 47.8438
Epoch 903/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.6404 - val_loss: 47.8470
Epoch 904/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.6373 - val_loss: 47.8454

Epoch 905/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.6278 - val_loss: 47.8374
Epoch 906/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.6280 - val_loss: 47.8480
Epoch 907/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.6253 - val_loss: 47.8407
Epoch 908/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.6167 - val_loss: 47.8423
Epoch 909/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.6139 - val_loss: 47.8378
Epoch 910/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.6088 - val_loss: 47.8405
Epoch 911/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.6049 - val_loss: 47.8372
Epoch 912/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.6040 - val_loss: 47.8300
Epoch 913/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.5965 - val_loss: 47.8176
Epoch 914/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.5924 - val_loss: 47.8120
Epoch 915/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.5875 - val_loss: 47.8090
Epoch 916/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.5870 - val_loss: 47.8025
Epoch 917/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.5821 - val_loss: 47.7923
Epoch 918/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.5750 - val_loss: 47.7893
Epoch 919/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.5711 - val_loss: 47.7858
Epoch 920/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.5659 - val_loss: 47.7804
Epoch 921/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.5638 - val_loss: 47.7789
Epoch 922/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.5618 - val_loss: 47.7789
Epoch 923/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.5538 - val_loss: 47.7743
Epoch 924/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.5485 - val_loss: 47.7724
Epoch 925/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.5466 - val_loss: 47.7681
Epoch 926/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.5411 - val_loss: 47.7657
Epoch 927/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.5376 - val_loss: 47.7649
Epoch 928/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.5343 - val_loss: 47.7553

Epoch 929/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.5282 - val_loss: 47.7526
Epoch 930/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.5237 - val_loss: 47.7550
Epoch 931/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.5227 - val_loss: 47.7601
Epoch 932/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.5164 - val_loss: 47.7621
Epoch 933/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.5126 - val_loss: 47.7573
Epoch 934/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.5076 - val_loss: 47.7603
Epoch 935/5000
1126/1126 [=====] - 0s 33us/step - loss: 51.5037 - val_loss: 47.7521
Epoch 936/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.4977 - val_loss: 47.7571
Epoch 937/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.4939 - val_loss: 47.7518
Epoch 938/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.4905 - val_loss: 47.7444
Epoch 939/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.4870 - val_loss: 47.7426
Epoch 940/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.4807 - val_loss: 47.7356
Epoch 941/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.4772 - val_loss: 47.7320
Epoch 942/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.4737 - val_loss: 47.7368
Epoch 943/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.4673 - val_loss: 47.7351
Epoch 944/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.4661 - val_loss: 47.7272
Epoch 945/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.4609 - val_loss: 47.7275
Epoch 946/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.4530 - val_loss: 47.7280
Epoch 947/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.4505 - val_loss: 47.7227
Epoch 948/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.4484 - val_loss: 47.7119
Epoch 949/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.4435 - val_loss: 47.7078
Epoch 950/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.4396 - val_loss: 47.7018
Epoch 951/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.4322 - val_loss: 47.6996
Epoch 952/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.4299 - val_loss: 47.6996

Epoch 953/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.4251 - val_loss: 47.7005
Epoch 954/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.4205 - val_loss: 47.6924
Epoch 955/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.4172 - val_loss: 47.6890
Epoch 956/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.4133 - val_loss: 47.6858
Epoch 957/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.4128 - val_loss: 47.6823
Epoch 958/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.4057 - val_loss: 47.6823
Epoch 959/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.4006 - val_loss: 47.6774
Epoch 960/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.3995 - val_loss: 47.6825
Epoch 961/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.3910 - val_loss: 47.6836
Epoch 962/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.3904 - val_loss: 47.6804
Epoch 963/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.3850 - val_loss: 47.6796
Epoch 964/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.3785 - val_loss: 47.6786
Epoch 965/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.3791 - val_loss: 47.6774
Epoch 966/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.3722 - val_loss: 47.6718
Epoch 967/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.3704 - val_loss: 47.6670
Epoch 968/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.3642 - val_loss: 47.6601
Epoch 969/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.3590 - val_loss: 47.6525
Epoch 970/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.3585 - val_loss: 47.6525
Epoch 971/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.3494 - val_loss: 47.6437
Epoch 972/5000
1126/1126 [=====] - 0s 33us/step - loss: 51.3484 - val_loss: 47.6412
Epoch 973/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.3446 - val_loss: 47.6385
Epoch 974/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.3450 - val_loss: 47.6354
Epoch 975/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.3372 - val_loss: 47.6361
Epoch 976/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.3306 - val_loss: 47.6371

Epoch 977/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.3287 - val_loss: 47.6352
Epoch 978/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.3198 - val_loss: 47.6326
Epoch 979/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.3170 - val_loss: 47.6266
Epoch 980/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.3116 - val_loss: 47.6214
Epoch 981/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.3113 - val_loss: 47.6201
Epoch 982/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.3029 - val_loss: 47.6193
Epoch 983/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.3024 - val_loss: 47.6170
Epoch 984/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.2964 - val_loss: 47.6157
Epoch 985/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.2914 - val_loss: 47.6032
Epoch 986/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.2901 - val_loss: 47.6019
Epoch 987/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.2847 - val_loss: 47.5947
Epoch 988/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.2810 - val_loss: 47.6043
Epoch 989/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.2768 - val_loss: 47.6023
Epoch 990/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.2714 - val_loss: 47.6017
Epoch 991/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.2668 - val_loss: 47.5957
Epoch 992/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.2650 - val_loss: 47.5876
Epoch 993/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.2624 - val_loss: 47.5827
Epoch 994/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.2560 - val_loss: 47.5784
Epoch 995/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.2534 - val_loss: 47.5815
Epoch 996/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.2465 - val_loss: 47.5834
Epoch 997/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.2442 - val_loss: 47.5802
Epoch 998/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.2384 - val_loss: 47.5800
Epoch 999/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.2372 - val_loss: 47.5735
Epoch 1000/5000
1126/1126 [=====] - 0s 33us/step - loss: 51.2309 - val_loss: 47.5673

Epoch 1001/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.2277 - val_loss: 47.5618
Epoch 1002/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.2229 - val_loss: 47.5605
Epoch 1003/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.2213 - val_loss: 47.5494
Epoch 1004/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.2138 - val_loss: 47.5446
Epoch 1005/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.2115 - val_loss: 47.5469
Epoch 1006/5000
1126/1126 [=====] - 0s 37us/step - loss: 51.2083 - val_loss: 47.5381
Epoch 1007/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.2027 - val_loss: 47.5293
Epoch 1008/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.1984 - val_loss: 47.5222
Epoch 1009/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.1959 - val_loss: 47.5246
Epoch 1010/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.1949 - val_loss: 47.5198
Epoch 1011/5000
1126/1126 [=====] - 0s 33us/step - loss: 51.1883 - val_loss: 47.5172
Epoch 1012/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.1827 - val_loss: 47.5132
Epoch 1013/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.1841 - val_loss: 47.5062
Epoch 1014/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.1740 - val_loss: 47.5026
Epoch 1015/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.1706 - val_loss: 47.5002
Epoch 1016/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.1727 - val_loss: 47.4970
Epoch 1017/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.1624 - val_loss: 47.4940
Epoch 1018/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.1590 - val_loss: 47.4888
Epoch 1019/5000
1126/1126 [=====] - 0s 35us/step - loss: 51.1544 - val_loss: 47.4883
Epoch 1020/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.1547 - val_loss: 47.4916
Epoch 1021/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.1460 - val_loss: 47.4870
Epoch 1022/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.1427 - val_loss: 47.4925
Epoch 1023/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.1399 - val_loss: 47.4979
Epoch 1024/5000
1126/1126 [=====] - 0s 28us/step - loss: 51.1357 - val_loss: 47.4931

Epoch 1025/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.1322 - val_loss: 47.4821
Epoch 1026/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.1299 - val_loss: 47.4755
Epoch 1027/5000
1126/1126 [=====] - 0s 44us/step - loss: 51.1224 - val_loss: 47.4729
Epoch 1028/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.1177 - val_loss: 47.4705
Epoch 1029/5000
1126/1126 [=====] - 0s 29us/step - loss: 51.1126 - val_loss: 47.4728
Epoch 1030/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.1100 - val_loss: 47.4631
Epoch 1031/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.1089 - val_loss: 47.4607
Epoch 1032/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.1057 - val_loss: 47.4595
Epoch 1033/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.1045 - val_loss: 47.4521
Epoch 1034/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.0957 - val_loss: 47.4506
Epoch 1035/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.0917 - val_loss: 47.4424
Epoch 1036/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.0899 - val_loss: 47.4414
Epoch 1037/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.0814 - val_loss: 47.4397
Epoch 1038/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.0774 - val_loss: 47.4374
Epoch 1039/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.0745 - val_loss: 47.4329
Epoch 1040/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.0703 - val_loss: 47.4368
Epoch 1041/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.0690 - val_loss: 47.4365
Epoch 1042/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.0639 - val_loss: 47.4282
Epoch 1043/5000
1126/1126 [=====] - 0s 36us/step - loss: 51.0577 - val_loss: 47.4294
Epoch 1044/5000
1126/1126 [=====] - 0s 36us/step - loss: 51.0538 - val_loss: 47.4273
Epoch 1045/5000
1126/1126 [=====] - 0s 38us/step - loss: 51.0519 - val_loss: 47.4210
Epoch 1046/5000
1126/1126 [=====] - 0s 36us/step - loss: 51.0460 - val_loss: 47.4210
Epoch 1047/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.0404 - val_loss: 47.4270
Epoch 1048/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.0411 - val_loss: 47.4196

Epoch 1049/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.0334 - val_loss: 47.4126
Epoch 1050/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.0335 - val_loss: 47.4082
Epoch 1051/5000
1126/1126 [=====] - 0s 35us/step - loss: 51.0271 - val_loss: 47.4102
Epoch 1052/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.0202 - val_loss: 47.4040
Epoch 1053/5000
1126/1126 [=====] - 0s 48us/step - loss: 51.0197 - val_loss: 47.3976
Epoch 1054/5000
1126/1126 [=====] - 0s 36us/step - loss: 51.0162 - val_loss: 47.3952
Epoch 1055/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.0106 - val_loss: 47.3924
Epoch 1056/5000
1126/1126 [=====] - 0s 30us/step - loss: 51.0085 - val_loss: 47.3909
Epoch 1057/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.0009 - val_loss: 47.3873
Epoch 1058/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.9981 - val_loss: 47.3828
Epoch 1059/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.9955 - val_loss: 47.3825
Epoch 1060/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.9883 - val_loss: 47.3820
Epoch 1061/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.9861 - val_loss: 47.3783
Epoch 1062/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.9839 - val_loss: 47.3821
Epoch 1063/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.9807 - val_loss: 47.3701
Epoch 1064/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.9746 - val_loss: 47.3694
Epoch 1065/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.9734 - val_loss: 47.3748
Epoch 1066/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.9685 - val_loss: 47.3776
Epoch 1067/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.9628 - val_loss: 47.3792
Epoch 1068/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.9595 - val_loss: 47.3737
Epoch 1069/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.9603 - val_loss: 47.3628
Epoch 1070/5000
1126/1126 [=====] - 0s 35us/step - loss: 50.9511 - val_loss: 47.3631
Epoch 1071/5000
1126/1126 [=====] - 0s 36us/step - loss: 50.9499 - val_loss: 47.3646
Epoch 1072/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.9457 - val_loss: 47.3570

Epoch 1073/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.9427 - val_loss: 47.3523
Epoch 1074/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.9367 - val_loss: 47.3472
Epoch 1075/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.9334 - val_loss: 47.3430
Epoch 1076/5000
1126/1126 [=====] - 0s 37us/step - loss: 50.9289 - val_loss: 47.3380
Epoch 1077/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.9258 - val_loss: 47.3384
Epoch 1078/5000
1126/1126 [=====] - 0s 43us/step - loss: 50.9235 - val_loss: 47.3308
Epoch 1079/5000
1126/1126 [=====] - 0s 44us/step - loss: 50.9186 - val_loss: 47.3270
Epoch 1080/5000
1126/1126 [=====] - 0s 37us/step - loss: 50.9159 - val_loss: 47.3143
Epoch 1081/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.9147 - val_loss: 47.3138
Epoch 1082/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.9124 - val_loss: 47.3086
Epoch 1083/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.9022 - val_loss: 47.3065
Epoch 1084/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.9012 - val_loss: 47.3022
Epoch 1085/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.8949 - val_loss: 47.3002
Epoch 1086/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.8909 - val_loss: 47.2961
Epoch 1087/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.8852 - val_loss: 47.2961
Epoch 1088/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.8850 - val_loss: 47.2928
Epoch 1089/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.8799 - val_loss: 47.2884
Epoch 1090/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.8757 - val_loss: 47.2875
Epoch 1091/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.8732 - val_loss: 47.2827
Epoch 1092/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.8685 - val_loss: 47.2760
Epoch 1093/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.8664 - val_loss: 47.2737
Epoch 1094/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.8594 - val_loss: 47.2779
Epoch 1095/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.8586 - val_loss: 47.2661
Epoch 1096/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.8560 - val_loss: 47.2630

Epoch 1097/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.8510 - val_loss: 47.2592
Epoch 1098/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.8435 - val_loss: 47.2567
Epoch 1099/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.8424 - val_loss: 47.2487
Epoch 1100/5000
1126/1126 [=====] - 0s 36us/step - loss: 50.8370 - val_loss: 47.2531
Epoch 1101/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.8360 - val_loss: 47.2492
Epoch 1102/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.8328 - val_loss: 47.2499
Epoch 1103/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.8289 - val_loss: 47.2457
Epoch 1104/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.8216 - val_loss: 47.2440
Epoch 1105/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.8210 - val_loss: 47.2449
Epoch 1106/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.8186 - val_loss: 47.2342
Epoch 1107/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.8152 - val_loss: 47.2365
Epoch 1108/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.8089 - val_loss: 47.2353
Epoch 1109/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.8066 - val_loss: 47.2298
Epoch 1110/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.8031 - val_loss: 47.2243
Epoch 1111/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.8005 - val_loss: 47.2207
Epoch 1112/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.7947 - val_loss: 47.2169
Epoch 1113/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.7917 - val_loss: 47.2169
Epoch 1114/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.7889 - val_loss: 47.2155
Epoch 1115/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.7852 - val_loss: 47.2169
Epoch 1116/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.7822 - val_loss: 47.2104
Epoch 1117/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.7749 - val_loss: 47.2070
Epoch 1118/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.7732 - val_loss: 47.2004
Epoch 1119/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.7691 - val_loss: 47.1922
Epoch 1120/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.7673 - val_loss: 47.1915

Epoch 1121/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.7604 - val_loss: 47.1807
Epoch 1122/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.7575 - val_loss: 47.1793
Epoch 1123/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.7549 - val_loss: 47.1868
Epoch 1124/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.7510 - val_loss: 47.1837
Epoch 1125/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.7459 - val_loss: 47.1907
Epoch 1126/5000
1126/1126 [=====] - 0s 36us/step - loss: 50.7417 - val_loss: 47.1908
Epoch 1127/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.7400 - val_loss: 47.1806
Epoch 1128/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.7349 - val_loss: 47.1820
Epoch 1129/5000
1126/1126 [=====] - 0s 35us/step - loss: 50.7335 - val_loss: 47.1843
Epoch 1130/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.7303 - val_loss: 47.1800
Epoch 1131/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.7270 - val_loss: 47.1761
Epoch 1132/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.7205 - val_loss: 47.1732
Epoch 1133/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.7175 - val_loss: 47.1691
Epoch 1134/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.7149 - val_loss: 47.1552
Epoch 1135/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.7152 - val_loss: 47.1520
Epoch 1136/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.7105 - val_loss: 47.1474
Epoch 1137/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.7047 - val_loss: 47.1448
Epoch 1138/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.6997 - val_loss: 47.1489
Epoch 1139/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.6949 - val_loss: 47.1452
Epoch 1140/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.6950 - val_loss: 47.1434
Epoch 1141/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.6887 - val_loss: 47.1429
Epoch 1142/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.6856 - val_loss: 47.1336
Epoch 1143/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.6837 - val_loss: 47.1380
Epoch 1144/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.6773 - val_loss: 47.1328

Epoch 1145/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.6757 - val_loss: 47.1303
Epoch 1146/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.6730 - val_loss: 47.1222
Epoch 1147/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.6694 - val_loss: 47.1139
Epoch 1148/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.6683 - val_loss: 47.1071
Epoch 1149/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.6615 - val_loss: 47.1021
Epoch 1150/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.6588 - val_loss: 47.1018
Epoch 1151/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.6562 - val_loss: 47.0992
Epoch 1152/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.6549 - val_loss: 47.0916
Epoch 1153/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.6503 - val_loss: 47.0846
Epoch 1154/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.6403 - val_loss: 47.0843
Epoch 1155/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.6395 - val_loss: 47.0830
Epoch 1156/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.6366 - val_loss: 47.0776
Epoch 1157/5000
1126/1126 [=====] - 0s 29us/step - loss: 50.6380 - val_loss: 47.0727
Epoch 1158/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.6300 - val_loss: 47.0645
Epoch 1159/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.6290 - val_loss: 47.0600
Epoch 1160/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.6240 - val_loss: 47.0527
Epoch 1161/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.6215 - val_loss: 47.0545
Epoch 1162/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.6224 - val_loss: 47.0499
Epoch 1163/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.6171 - val_loss: 47.0498
Epoch 1164/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.6135 - val_loss: 47.0501
Epoch 1165/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.6103 - val_loss: 47.0532
Epoch 1166/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.6073 - val_loss: 47.0523
Epoch 1167/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.6041 - val_loss: 47.0457
Epoch 1168/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.6041 - val_loss: 47.0483

Epoch 1169/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.5939 - val_loss: 47.0505
Epoch 1170/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.5926 - val_loss: 47.0507
Epoch 1171/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.5875 - val_loss: 47.0456
Epoch 1172/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.5855 - val_loss: 47.0403
Epoch 1173/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.5843 - val_loss: 47.0304
Epoch 1174/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.5782 - val_loss: 47.0248
Epoch 1175/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.5745 - val_loss: 47.0218
Epoch 1176/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.5727 - val_loss: 47.0251
Epoch 1177/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.5695 - val_loss: 47.0187
Epoch 1178/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.5654 - val_loss: 47.0130
Epoch 1179/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.5634 - val_loss: 47.0082
Epoch 1180/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.5598 - val_loss: 47.0037
Epoch 1181/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.5582 - val_loss: 47.0053
Epoch 1182/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.5514 - val_loss: 47.0051
Epoch 1183/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.5498 - val_loss: 46.9986
Epoch 1184/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.5469 - val_loss: 47.0016
Epoch 1185/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.5434 - val_loss: 46.9951
Epoch 1186/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.5416 - val_loss: 46.9970
Epoch 1187/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.5386 - val_loss: 46.9945
Epoch 1188/5000
1126/1126 [=====] - 0s 36us/step - loss: 50.5354 - val_loss: 46.9956
Epoch 1189/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.5323 - val_loss: 46.9903
Epoch 1190/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.5294 - val_loss: 46.9921
Epoch 1191/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.5260 - val_loss: 46.9912
Epoch 1192/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.5206 - val_loss: 46.9885

Epoch 1193/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.5198 - val_loss: 46.9884
Epoch 1194/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.5158 - val_loss: 46.9845
Epoch 1195/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.5131 - val_loss: 46.9751
Epoch 1196/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.5131 - val_loss: 46.9726
Epoch 1197/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.5061 - val_loss: 46.9753
Epoch 1198/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.5023 - val_loss: 46.9739
Epoch 1199/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.4998 - val_loss: 46.9718
Epoch 1200/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.4973 - val_loss: 46.9759
Epoch 1201/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.4962 - val_loss: 46.9734
Epoch 1202/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.4912 - val_loss: 46.9697
Epoch 1203/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.4878 - val_loss: 46.9686
Epoch 1204/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.4843 - val_loss: 46.9631
Epoch 1205/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.4815 - val_loss: 46.9637
Epoch 1206/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.4804 - val_loss: 46.9576
Epoch 1207/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.4761 - val_loss: 46.9617
Epoch 1208/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.4729 - val_loss: 46.9602
Epoch 1209/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.4718 - val_loss: 46.9591
Epoch 1210/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.4687 - val_loss: 46.9565
Epoch 1211/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.4622 - val_loss: 46.9582
Epoch 1212/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.4619 - val_loss: 46.9539
Epoch 1213/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.4561 - val_loss: 46.9484
Epoch 1214/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.4556 - val_loss: 46.9481
Epoch 1215/5000
1126/1126 [=====] - 0s 37us/step - loss: 50.4530 - val_loss: 46.9452
Epoch 1216/5000
1126/1126 [=====] - 0s 38us/step - loss: 50.4449 - val_loss: 46.9396

Epoch 1217/5000
1126/1126 [=====] - 0s 35us/step - loss: 50.4424 - val_loss: 46.9368
Epoch 1218/5000
1126/1126 [=====] - 0s 36us/step - loss: 50.4434 - val_loss: 46.9327
Epoch 1219/5000
1126/1126 [=====] - 0s 35us/step - loss: 50.4369 - val_loss: 46.9397
Epoch 1220/5000
1126/1126 [=====] - 0s 36us/step - loss: 50.4343 - val_loss: 46.9358
Epoch 1221/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.4308 - val_loss: 46.9346
Epoch 1222/5000
1126/1126 [=====] - 0s 36us/step - loss: 50.4264 - val_loss: 46.9335
Epoch 1223/5000
1126/1126 [=====] - 0s 36us/step - loss: 50.4253 - val_loss: 46.9273
Epoch 1224/5000
1126/1126 [=====] - 0s 35us/step - loss: 50.4256 - val_loss: 46.9241
Epoch 1225/5000
1126/1126 [=====] - 0s 36us/step - loss: 50.4195 - val_loss: 46.9229
Epoch 1226/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.4134 - val_loss: 46.9237
Epoch 1227/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.4149 - val_loss: 46.9193
Epoch 1228/5000
1126/1126 [=====] - 0s 35us/step - loss: 50.4103 - val_loss: 46.9205
Epoch 1229/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.4052 - val_loss: 46.9156
Epoch 1230/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.4052 - val_loss: 46.9175
Epoch 1231/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.3998 - val_loss: 46.9073
Epoch 1232/5000
1126/1126 [=====] - 0s 29us/step - loss: 50.3985 - val_loss: 46.9030
Epoch 1233/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.3929 - val_loss: 46.9048
Epoch 1234/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.3914 - val_loss: 46.8950
Epoch 1235/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.3882 - val_loss: 46.8913
Epoch 1236/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.3836 - val_loss: 46.8898
Epoch 1237/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.3808 - val_loss: 46.8850
Epoch 1238/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.3786 - val_loss: 46.8817
Epoch 1239/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.3732 - val_loss: 46.8790
Epoch 1240/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.3711 - val_loss: 46.8757

Epoch 1241/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.3685 - val_loss: 46.8726
Epoch 1242/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.3660 - val_loss: 46.8696
Epoch 1243/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.3624 - val_loss: 46.8658
Epoch 1244/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.3608 - val_loss: 46.8600
Epoch 1245/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.3591 - val_loss: 46.8590
Epoch 1246/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.3550 - val_loss: 46.8531
Epoch 1247/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.3487 - val_loss: 46.8481
Epoch 1248/5000
1126/1126 [=====] - 0s 41us/step - loss: 50.3455 - val_loss: 46.8484
Epoch 1249/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.3452 - val_loss: 46.8499
Epoch 1250/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.3442 - val_loss: 46.8475
Epoch 1251/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.3397 - val_loss: 46.8479
Epoch 1252/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.3354 - val_loss: 46.8461
Epoch 1253/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.3355 - val_loss: 46.8471
Epoch 1254/5000
1126/1126 [=====] - 0s 35us/step - loss: 50.3272 - val_loss: 46.8436
Epoch 1255/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.3267 - val_loss: 46.8383
Epoch 1256/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.3242 - val_loss: 46.8362
Epoch 1257/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.3192 - val_loss: 46.8343
Epoch 1258/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.3176 - val_loss: 46.8314
Epoch 1259/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.3158 - val_loss: 46.8305
Epoch 1260/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.3127 - val_loss: 46.8249
Epoch 1261/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.3104 - val_loss: 46.8224
Epoch 1262/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.3078 - val_loss: 46.8212
Epoch 1263/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.3020 - val_loss: 46.8183
Epoch 1264/5000
1126/1126 [=====] - 0s 35us/step - loss: 50.2993 - val_loss: 46.8212

Epoch 1265/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.2962 - val_loss: 46.8242
Epoch 1266/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.2967 - val_loss: 46.8206
Epoch 1267/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.2947 - val_loss: 46.8151
Epoch 1268/5000
1126/1126 [=====] - 0s 35us/step - loss: 50.2912 - val_loss: 46.8135
Epoch 1269/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.2860 - val_loss: 46.8151
Epoch 1270/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.2831 - val_loss: 46.8130
Epoch 1271/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.2806 - val_loss: 46.8025
Epoch 1272/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.2771 - val_loss: 46.8037
Epoch 1273/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.2753 - val_loss: 46.7952
Epoch 1274/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.2748 - val_loss: 46.7937
Epoch 1275/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.2741 - val_loss: 46.7881
Epoch 1276/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.2667 - val_loss: 46.7827
Epoch 1277/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.2620 - val_loss: 46.7711
Epoch 1278/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.2627 - val_loss: 46.7700
Epoch 1279/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.2577 - val_loss: 46.7717
Epoch 1280/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.2569 - val_loss: 46.7713
Epoch 1281/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.2536 - val_loss: 46.7738
Epoch 1282/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.2495 - val_loss: 46.7743
Epoch 1283/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.2453 - val_loss: 46.7753
Epoch 1284/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.2428 - val_loss: 46.7708
Epoch 1285/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.2396 - val_loss: 46.7705
Epoch 1286/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.2399 - val_loss: 46.7721
Epoch 1287/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.2333 - val_loss: 46.7720
Epoch 1288/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.2308 - val_loss: 46.7692

Epoch 1289/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.2304 - val_loss: 46.7641
Epoch 1290/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.2255 - val_loss: 46.7601
Epoch 1291/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.2231 - val_loss: 46.7571
Epoch 1292/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.2213 - val_loss: 46.7514
Epoch 1293/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.2161 - val_loss: 46.7506
Epoch 1294/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.2153 - val_loss: 46.7466
Epoch 1295/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.2104 - val_loss: 46.7426
Epoch 1296/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.2097 - val_loss: 46.7409
Epoch 1297/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.2059 - val_loss: 46.7451
Epoch 1298/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.2012 - val_loss: 46.7420
Epoch 1299/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.1993 - val_loss: 46.7452
Epoch 1300/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.1968 - val_loss: 46.7386
Epoch 1301/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.1928 - val_loss: 46.7353
Epoch 1302/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.1914 - val_loss: 46.7320
Epoch 1303/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.1860 - val_loss: 46.7271
Epoch 1304/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.1843 - val_loss: 46.7207
Epoch 1305/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.1839 - val_loss: 46.7203
Epoch 1306/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.1786 - val_loss: 46.7144
Epoch 1307/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.1776 - val_loss: 46.7098
Epoch 1308/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.1736 - val_loss: 46.7058
Epoch 1309/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.1710 - val_loss: 46.7049
Epoch 1310/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.1689 - val_loss: 46.6974
Epoch 1311/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.1650 - val_loss: 46.6888
Epoch 1312/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.1612 - val_loss: 46.6846

Epoch 1313/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.1575 - val_loss: 46.6816
Epoch 1314/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.1548 - val_loss: 46.6817
Epoch 1315/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.1531 - val_loss: 46.6797
Epoch 1316/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.1508 - val_loss: 46.6823
Epoch 1317/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.1471 - val_loss: 46.6772
Epoch 1318/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.1445 - val_loss: 46.6740
Epoch 1319/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.1433 - val_loss: 46.6744
Epoch 1320/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.1426 - val_loss: 46.6862
Epoch 1321/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.1360 - val_loss: 46.6814
Epoch 1322/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.1334 - val_loss: 46.6767
Epoch 1323/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.1284 - val_loss: 46.6737
Epoch 1324/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.1305 - val_loss: 46.6707
Epoch 1325/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.1232 - val_loss: 46.6724
Epoch 1326/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.1220 - val_loss: 46.6668
Epoch 1327/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.1192 - val_loss: 46.6632
Epoch 1328/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.1141 - val_loss: 46.6583
Epoch 1329/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.1126 - val_loss: 46.6494
Epoch 1330/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.1090 - val_loss: 46.6476
Epoch 1331/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.1055 - val_loss: 46.6449
Epoch 1332/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.1080 - val_loss: 46.6419
Epoch 1333/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.1021 - val_loss: 46.6391
Epoch 1334/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.0973 - val_loss: 46.6411
Epoch 1335/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.0943 - val_loss: 46.6357
Epoch 1336/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.0942 - val_loss: 46.6328

Epoch 1337/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.0903 - val_loss: 46.6284
Epoch 1338/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.0873 - val_loss: 46.6326
Epoch 1339/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.0874 - val_loss: 46.6248
Epoch 1340/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.0831 - val_loss: 46.6217
Epoch 1341/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.0820 - val_loss: 46.6228
Epoch 1342/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.0748 - val_loss: 46.6217
Epoch 1343/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.0753 - val_loss: 46.6199
Epoch 1344/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.0684 - val_loss: 46.6192
Epoch 1345/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.0657 - val_loss: 46.6183
Epoch 1346/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.0631 - val_loss: 46.6144
Epoch 1347/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.0609 - val_loss: 46.6160
Epoch 1348/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.0652 - val_loss: 46.6119
Epoch 1349/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.0542 - val_loss: 46.6105
Epoch 1350/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.0536 - val_loss: 46.6129
Epoch 1351/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.0482 - val_loss: 46.6115
Epoch 1352/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.0447 - val_loss: 46.6092
Epoch 1353/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.0469 - val_loss: 46.6017
Epoch 1354/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.0439 - val_loss: 46.5954
Epoch 1355/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.0415 - val_loss: 46.5957
Epoch 1356/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.0395 - val_loss: 46.5920
Epoch 1357/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.0330 - val_loss: 46.5996
Epoch 1358/5000
1126/1126 [=====] - 0s 30us/step - loss: 50.0294 - val_loss: 46.5999
Epoch 1359/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.0303 - val_loss: 46.5963
Epoch 1360/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.0244 - val_loss: 46.5975

Epoch 1361/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.0227 - val_loss: 46.6013
Epoch 1362/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.0239 - val_loss: 46.6010
Epoch 1363/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.0183 - val_loss: 46.5958
Epoch 1364/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.0156 - val_loss: 46.5900
Epoch 1365/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.0088 - val_loss: 46.5845
Epoch 1366/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.0083 - val_loss: 46.5840
Epoch 1367/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.0060 - val_loss: 46.5814
Epoch 1368/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.0012 - val_loss: 46.5757
Epoch 1369/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.9998 - val_loss: 46.5743
Epoch 1370/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9985 - val_loss: 46.5730
Epoch 1371/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.9937 - val_loss: 46.5731
Epoch 1372/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.9974 - val_loss: 46.5724
Epoch 1373/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.9902 - val_loss: 46.5773
Epoch 1374/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9864 - val_loss: 46.5723
Epoch 1375/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9849 - val_loss: 46.5700
Epoch 1376/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.9799 - val_loss: 46.5637
Epoch 1377/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.9785 - val_loss: 46.5582
Epoch 1378/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.9734 - val_loss: 46.5525
Epoch 1379/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9740 - val_loss: 46.5483
Epoch 1380/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.9686 - val_loss: 46.5450
Epoch 1381/5000
1126/1126 [=====] - 0s 37us/step - loss: 49.9648 - val_loss: 46.5443
Epoch 1382/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.9630 - val_loss: 46.5399
Epoch 1383/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.9623 - val_loss: 46.5364
Epoch 1384/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9605 - val_loss: 46.5411

Epoch 1385/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.9540 - val_loss: 46.5365
Epoch 1386/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9547 - val_loss: 46.5302
Epoch 1387/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.9494 - val_loss: 46.5267
Epoch 1388/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.9505 - val_loss: 46.5214
Epoch 1389/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9465 - val_loss: 46.5180
Epoch 1390/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.9390 - val_loss: 46.5148
Epoch 1391/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9387 - val_loss: 46.5160
Epoch 1392/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.9365 - val_loss: 46.5133
Epoch 1393/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9322 - val_loss: 46.5114
Epoch 1394/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9316 - val_loss: 46.5127
Epoch 1395/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9277 - val_loss: 46.5153
Epoch 1396/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9291 - val_loss: 46.5119
Epoch 1397/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.9216 - val_loss: 46.5122
Epoch 1398/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9190 - val_loss: 46.5125
Epoch 1399/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.9164 - val_loss: 46.5123
Epoch 1400/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.9148 - val_loss: 46.5092
Epoch 1401/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.9103 - val_loss: 46.5108
Epoch 1402/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.9089 - val_loss: 46.5014
Epoch 1403/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9060 - val_loss: 46.5011
Epoch 1404/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.9041 - val_loss: 46.5070
Epoch 1405/5000
1126/1126 [=====] - 0s 38us/step - loss: 49.8994 - val_loss: 46.5135
Epoch 1406/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8981 - val_loss: 46.5091
Epoch 1407/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.8919 - val_loss: 46.5094
Epoch 1408/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.8908 - val_loss: 46.5123

Epoch 1409/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.8900 - val_loss: 46.5071
Epoch 1410/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.8844 - val_loss: 46.5015
Epoch 1411/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.8845 - val_loss: 46.5007
Epoch 1412/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8834 - val_loss: 46.4956
Epoch 1413/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8814 - val_loss: 46.4913
Epoch 1414/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.8771 - val_loss: 46.4856
Epoch 1415/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8739 - val_loss: 46.4909
Epoch 1416/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.8712 - val_loss: 46.4840
Epoch 1417/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.8680 - val_loss: 46.4846
Epoch 1418/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8670 - val_loss: 46.4760
Epoch 1419/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.8634 - val_loss: 46.4700
Epoch 1420/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8603 - val_loss: 46.4609
Epoch 1421/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8590 - val_loss: 46.4579
Epoch 1422/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8568 - val_loss: 46.4595
Epoch 1423/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.8560 - val_loss: 46.4612
Epoch 1424/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8495 - val_loss: 46.4543
Epoch 1425/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8466 - val_loss: 46.4594
Epoch 1426/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8438 - val_loss: 46.4546
Epoch 1427/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8426 - val_loss: 46.4488
Epoch 1428/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8407 - val_loss: 46.4488
Epoch 1429/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.8395 - val_loss: 46.4438
Epoch 1430/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8379 - val_loss: 46.4362
Epoch 1431/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.8329 - val_loss: 46.4375
Epoch 1432/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.8281 - val_loss: 46.4333

Epoch 1433/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8309 - val_loss: 46.4332
Epoch 1434/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8262 - val_loss: 46.4289
Epoch 1435/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.8226 - val_loss: 46.4241
Epoch 1436/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8204 - val_loss: 46.4246
Epoch 1437/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8175 - val_loss: 46.4205
Epoch 1438/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.8205 - val_loss: 46.4217
Epoch 1439/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.8148 - val_loss: 46.4210
Epoch 1440/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.8093 - val_loss: 46.4208
Epoch 1441/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.8063 - val_loss: 46.4200
Epoch 1442/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8057 - val_loss: 46.4199
Epoch 1443/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8054 - val_loss: 46.4190
Epoch 1444/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.8011 - val_loss: 46.4161
Epoch 1445/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.7956 - val_loss: 46.4180
Epoch 1446/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.7960 - val_loss: 46.4143
Epoch 1447/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.7986 - val_loss: 46.4147
Epoch 1448/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.7911 - val_loss: 46.4195
Epoch 1449/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.7891 - val_loss: 46.4234
Epoch 1450/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.7823 - val_loss: 46.4164
Epoch 1451/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.7815 - val_loss: 46.4173
Epoch 1452/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.7757 - val_loss: 46.4208
Epoch 1453/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.7778 - val_loss: 46.4152
Epoch 1454/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.7757 - val_loss: 46.4117
Epoch 1455/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.7730 - val_loss: 46.4094
Epoch 1456/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.7720 - val_loss: 46.4071

Epoch 1457/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.7676 - val_loss: 46.4039
Epoch 1458/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.7623 - val_loss: 46.3992
Epoch 1459/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.7629 - val_loss: 46.3975
Epoch 1460/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.7583 - val_loss: 46.3961
Epoch 1461/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.7550 - val_loss: 46.4013
Epoch 1462/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.7548 - val_loss: 46.3965
Epoch 1463/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.7512 - val_loss: 46.3940
Epoch 1464/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.7502 - val_loss: 46.3906
Epoch 1465/5000
1126/1126 [=====] - 0s 39us/step - loss: 49.7469 - val_loss: 46.3887
Epoch 1466/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.7455 - val_loss: 46.3848
Epoch 1467/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.7409 - val_loss: 46.3848
Epoch 1468/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.7396 - val_loss: 46.3832
Epoch 1469/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.7393 - val_loss: 46.3736
Epoch 1470/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.7334 - val_loss: 46.3713
Epoch 1471/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.7323 - val_loss: 46.3752
Epoch 1472/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.7288 - val_loss: 46.3744
Epoch 1473/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.7251 - val_loss: 46.3710
Epoch 1474/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.7233 - val_loss: 46.3665
Epoch 1475/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.7211 - val_loss: 46.3649
Epoch 1476/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.7189 - val_loss: 46.3586
Epoch 1477/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.7143 - val_loss: 46.3559
Epoch 1478/5000
1126/1126 [=====] - 0s 36us/step - loss: 49.7152 - val_loss: 46.3618
Epoch 1479/5000
1126/1126 [=====] - 0s 40us/step - loss: 49.7097 - val_loss: 46.3606
Epoch 1480/5000
1126/1126 [=====] - 0s 39us/step - loss: 49.7076 - val_loss: 46.3541

Epoch 1481/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.7039 - val_loss: 46.3500
Epoch 1482/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.7062 - val_loss: 46.3445
Epoch 1483/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.7021 - val_loss: 46.3472
Epoch 1484/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.6999 - val_loss: 46.3446
Epoch 1485/5000
1126/1126 [=====] - 0s 38us/step - loss: 49.6957 - val_loss: 46.3465
Epoch 1486/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.6915 - val_loss: 46.3434
Epoch 1487/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6923 - val_loss: 46.3375
Epoch 1488/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6884 - val_loss: 46.3411
Epoch 1489/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.6816 - val_loss: 46.3389
Epoch 1490/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6820 - val_loss: 46.3310
Epoch 1491/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.6806 - val_loss: 46.3226
Epoch 1492/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.6773 - val_loss: 46.3190
Epoch 1493/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.6753 - val_loss: 46.3128
Epoch 1494/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.6732 - val_loss: 46.3120
Epoch 1495/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6708 - val_loss: 46.3099
Epoch 1496/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6672 - val_loss: 46.3064
Epoch 1497/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6671 - val_loss: 46.3030
Epoch 1498/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6610 - val_loss: 46.3029
Epoch 1499/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.6613 - val_loss: 46.3014
Epoch 1500/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.6615 - val_loss: 46.3030
Epoch 1501/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6560 - val_loss: 46.2966
Epoch 1502/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6522 - val_loss: 46.2906
Epoch 1503/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.6474 - val_loss: 46.2897
Epoch 1504/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.6468 - val_loss: 46.2865

Epoch 1505/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6455 - val_loss: 46.2807
Epoch 1506/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.6445 - val_loss: 46.2814
Epoch 1507/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.6413 - val_loss: 46.2785
Epoch 1508/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.6415 - val_loss: 46.2848
Epoch 1509/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6397 - val_loss: 46.2824
Epoch 1510/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.6323 - val_loss: 46.2826
Epoch 1511/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6311 - val_loss: 46.2804
Epoch 1512/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6244 - val_loss: 46.2726
Epoch 1513/5000
1126/1126 [=====] - 0s 36us/step - loss: 49.6236 - val_loss: 46.2660
Epoch 1514/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.6230 - val_loss: 46.2647
Epoch 1515/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.6204 - val_loss: 46.2679
Epoch 1516/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.6176 - val_loss: 46.2638
Epoch 1517/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.6173 - val_loss: 46.2599
Epoch 1518/5000
1126/1126 [=====] - 0s 36us/step - loss: 49.6120 - val_loss: 46.2547
Epoch 1519/5000
1126/1126 [=====] - 0s 37us/step - loss: 49.6093 - val_loss: 46.2562
Epoch 1520/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.6119 - val_loss: 46.2544
Epoch 1521/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6028 - val_loss: 46.2543
Epoch 1522/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6010 - val_loss: 46.2589
Epoch 1523/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6025 - val_loss: 46.2577
Epoch 1524/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.5970 - val_loss: 46.2516
Epoch 1525/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.5930 - val_loss: 46.2474
Epoch 1526/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.5915 - val_loss: 46.2402
Epoch 1527/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.5891 - val_loss: 46.2357
Epoch 1528/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.5844 - val_loss: 46.2408

Epoch 1529/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.5817 - val_loss: 46.2368
Epoch 1530/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.5831 - val_loss: 46.2365
Epoch 1531/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.5782 - val_loss: 46.2318
Epoch 1532/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.5782 - val_loss: 46.2216
Epoch 1533/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.5740 - val_loss: 46.2208
Epoch 1534/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.5727 - val_loss: 46.2195
Epoch 1535/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.5702 - val_loss: 46.2151
Epoch 1536/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.5678 - val_loss: 46.2130
Epoch 1537/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.5656 - val_loss: 46.2121
Epoch 1538/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.5619 - val_loss: 46.2094
Epoch 1539/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.5606 - val_loss: 46.2079
Epoch 1540/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.5569 - val_loss: 46.2119
Epoch 1541/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.5567 - val_loss: 46.2090
Epoch 1542/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.5526 - val_loss: 46.2063
Epoch 1543/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.5508 - val_loss: 46.2167
Epoch 1544/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.5474 - val_loss: 46.2101
Epoch 1545/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.5446 - val_loss: 46.2048
Epoch 1546/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.5399 - val_loss: 46.2020
Epoch 1547/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.5410 - val_loss: 46.1989
Epoch 1548/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.5375 - val_loss: 46.2022
Epoch 1549/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.5355 - val_loss: 46.1954
Epoch 1550/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.5338 - val_loss: 46.1957
Epoch 1551/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.5287 - val_loss: 46.2006
Epoch 1552/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.5306 - val_loss: 46.1912

Epoch 1553/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.5263 - val_loss: 46.1868
Epoch 1554/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.5232 - val_loss: 46.1832
Epoch 1555/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.5236 - val_loss: 46.1768
Epoch 1556/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.5210 - val_loss: 46.1740
Epoch 1557/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.5155 - val_loss: 46.1763
Epoch 1558/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.5117 - val_loss: 46.1725
Epoch 1559/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.5106 - val_loss: 46.1710
Epoch 1560/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.5063 - val_loss: 46.1755
Epoch 1561/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.5064 - val_loss: 46.1717
Epoch 1562/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.5021 - val_loss: 46.1718
Epoch 1563/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.5007 - val_loss: 46.1681
Epoch 1564/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.4986 - val_loss: 46.1745
Epoch 1565/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.4953 - val_loss: 46.1734
Epoch 1566/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.4921 - val_loss: 46.1656
Epoch 1567/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.4902 - val_loss: 46.1607
Epoch 1568/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.4866 - val_loss: 46.1507
Epoch 1569/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.4876 - val_loss: 46.1464
Epoch 1570/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.4832 - val_loss: 46.1484
Epoch 1571/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.4802 - val_loss: 46.1440
Epoch 1572/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.4781 - val_loss: 46.1460
Epoch 1573/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.4761 - val_loss: 46.1408
Epoch 1574/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.4716 - val_loss: 46.1402
Epoch 1575/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.4746 - val_loss: 46.1414
Epoch 1576/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.4682 - val_loss: 46.1433

Epoch 1577/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.4642 - val_loss: 46.1424
Epoch 1578/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.4621 - val_loss: 46.1417
Epoch 1579/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.4602 - val_loss: 46.1365
Epoch 1580/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.4595 - val_loss: 46.1346
Epoch 1581/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.4578 - val_loss: 46.1313
Epoch 1582/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.4548 - val_loss: 46.1307
Epoch 1583/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.4526 - val_loss: 46.1255
Epoch 1584/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.4496 - val_loss: 46.1263
Epoch 1585/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.4472 - val_loss: 46.1313
Epoch 1586/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.4431 - val_loss: 46.1295
Epoch 1587/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.4409 - val_loss: 46.1225
Epoch 1588/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.4421 - val_loss: 46.1204
Epoch 1589/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.4376 - val_loss: 46.1224
Epoch 1590/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.4349 - val_loss: 46.1174
Epoch 1591/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.4347 - val_loss: 46.1082
Epoch 1592/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.4295 - val_loss: 46.1059
Epoch 1593/5000
1126/1126 [=====] - 0s 38us/step - loss: 49.4279 - val_loss: 46.1040
Epoch 1594/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.4273 - val_loss: 46.1051
Epoch 1595/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.4247 - val_loss: 46.0987
Epoch 1596/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.4205 - val_loss: 46.0959
Epoch 1597/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.4210 - val_loss: 46.0928
Epoch 1598/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.4186 - val_loss: 46.0920
Epoch 1599/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.4143 - val_loss: 46.0891
Epoch 1600/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.4097 - val_loss: 46.0895

Epoch 1601/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.4085 - val_loss: 46.0889
Epoch 1602/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.4060 - val_loss: 46.0847
Epoch 1603/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.4050 - val_loss: 46.0830
Epoch 1604/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.4007 - val_loss: 46.0807
Epoch 1605/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.3981 - val_loss: 46.0791
Epoch 1606/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.3968 - val_loss: 46.0777
Epoch 1607/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.3955 - val_loss: 46.0722
Epoch 1608/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.3912 - val_loss: 46.0687
Epoch 1609/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.3920 - val_loss: 46.0655
Epoch 1610/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.3877 - val_loss: 46.0614
Epoch 1611/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.3848 - val_loss: 46.0607
Epoch 1612/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.3842 - val_loss: 46.0633
Epoch 1613/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.3793 - val_loss: 46.0611
Epoch 1614/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.3772 - val_loss: 46.0616
Epoch 1615/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.3781 - val_loss: 46.0590
Epoch 1616/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.3723 - val_loss: 46.0603
Epoch 1617/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.3690 - val_loss: 46.0577
Epoch 1618/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.3678 - val_loss: 46.0558
Epoch 1619/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.3644 - val_loss: 46.0572
Epoch 1620/5000
1126/1126 [=====] - 0s 37us/step - loss: 49.3627 - val_loss: 46.0556
Epoch 1621/5000
1126/1126 [=====] - 0s 37us/step - loss: 49.3591 - val_loss: 46.0535
Epoch 1622/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.3563 - val_loss: 46.0494
Epoch 1623/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.3563 - val_loss: 46.0460
Epoch 1624/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.3530 - val_loss: 46.0441

Epoch 1625/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.3509 - val_loss: 46.0438
Epoch 1626/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.3499 - val_loss: 46.0401
Epoch 1627/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.3450 - val_loss: 46.0357
Epoch 1628/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.3435 - val_loss: 46.0342
Epoch 1629/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.3428 - val_loss: 46.0295
Epoch 1630/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.3389 - val_loss: 46.0266
Epoch 1631/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.3365 - val_loss: 46.0281
Epoch 1632/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.3338 - val_loss: 46.0290
Epoch 1633/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.3316 - val_loss: 46.0274
Epoch 1634/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.3288 - val_loss: 46.0239
Epoch 1635/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.3285 - val_loss: 46.0250
Epoch 1636/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.3245 - val_loss: 46.0229
Epoch 1637/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.3225 - val_loss: 46.0231
Epoch 1638/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.3183 - val_loss: 46.0192
Epoch 1639/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.3162 - val_loss: 46.0210
Epoch 1640/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.3162 - val_loss: 46.0160
Epoch 1641/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.3120 - val_loss: 46.0139
Epoch 1642/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.3102 - val_loss: 46.0118
Epoch 1643/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.3071 - val_loss: 46.0139
Epoch 1644/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.3051 - val_loss: 46.0131
Epoch 1645/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.3049 - val_loss: 46.0183
Epoch 1646/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.3013 - val_loss: 46.0220
Epoch 1647/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.3011 - val_loss: 46.0197
Epoch 1648/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.2955 - val_loss: 46.0166

Epoch 1649/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.2936 - val_loss: 46.0149
Epoch 1650/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.2896 - val_loss: 46.0174
Epoch 1651/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.2886 - val_loss: 46.0114
Epoch 1652/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.2879 - val_loss: 46.0091
Epoch 1653/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.2848 - val_loss: 46.0059
Epoch 1654/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2827 - val_loss: 46.0003
Epoch 1655/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2823 - val_loss: 45.9970
Epoch 1656/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.2776 - val_loss: 45.9929
Epoch 1657/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.2750 - val_loss: 45.9848
Epoch 1658/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.2715 - val_loss: 45.9809
Epoch 1659/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.2695 - val_loss: 45.9756
Epoch 1660/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2673 - val_loss: 45.9753
Epoch 1661/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.2655 - val_loss: 45.9704
Epoch 1662/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.2619 - val_loss: 45.9745
Epoch 1663/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2619 - val_loss: 45.9677
Epoch 1664/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2576 - val_loss: 45.9686
Epoch 1665/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.2545 - val_loss: 45.9696
Epoch 1666/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.2533 - val_loss: 45.9685
Epoch 1667/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.2522 - val_loss: 45.9663
Epoch 1668/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.2490 - val_loss: 45.9681
Epoch 1669/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2470 - val_loss: 45.9637
Epoch 1670/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.2439 - val_loss: 45.9618
Epoch 1671/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2471 - val_loss: 45.9555
Epoch 1672/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2393 - val_loss: 45.9534

Epoch 1673/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.2355 - val_loss: 45.9548
Epoch 1674/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.2378 - val_loss: 45.9536
Epoch 1675/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.2328 - val_loss: 45.9515
Epoch 1676/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.2290 - val_loss: 45.9473
Epoch 1677/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2280 - val_loss: 45.9422
Epoch 1678/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.2246 - val_loss: 45.9401
Epoch 1679/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.2264 - val_loss: 45.9408
Epoch 1680/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.2212 - val_loss: 45.9433
Epoch 1681/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.2207 - val_loss: 45.9429
Epoch 1682/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.2149 - val_loss: 45.9397
Epoch 1683/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2143 - val_loss: 45.9415
Epoch 1684/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2102 - val_loss: 45.9384
Epoch 1685/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2093 - val_loss: 45.9352
Epoch 1686/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.2086 - val_loss: 45.9308
Epoch 1687/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2033 - val_loss: 45.9351
Epoch 1688/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2025 - val_loss: 45.9310
Epoch 1689/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.2006 - val_loss: 45.9371
Epoch 1690/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.1963 - val_loss: 45.9358
Epoch 1691/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.1980 - val_loss: 45.9323
Epoch 1692/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1917 - val_loss: 45.9322
Epoch 1693/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.1910 - val_loss: 45.9281
Epoch 1694/5000
1126/1126 [=====] - 0s 42us/step - loss: 49.1877 - val_loss: 45.9275
Epoch 1695/5000
1126/1126 [=====] - 0s 39us/step - loss: 49.1846 - val_loss: 45.9237
Epoch 1696/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.1859 - val_loss: 45.9227

Epoch 1697/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1825 - val_loss: 45.9226
Epoch 1698/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1803 - val_loss: 45.9213
Epoch 1699/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1771 - val_loss: 45.9216
Epoch 1700/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.1737 - val_loss: 45.9117
Epoch 1701/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.1715 - val_loss: 45.9113
Epoch 1702/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.1751 - val_loss: 45.9138
Epoch 1703/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.1690 - val_loss: 45.9142
Epoch 1704/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.1687 - val_loss: 45.9096
Epoch 1705/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.1636 - val_loss: 45.9087
Epoch 1706/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.1635 - val_loss: 45.9101
Epoch 1707/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.1618 - val_loss: 45.9074
Epoch 1708/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.1587 - val_loss: 45.9036
Epoch 1709/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.1544 - val_loss: 45.9089
Epoch 1710/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.1525 - val_loss: 45.9075
Epoch 1711/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1495 - val_loss: 45.9054
Epoch 1712/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1517 - val_loss: 45.9011
Epoch 1713/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1467 - val_loss: 45.9026
Epoch 1714/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.1431 - val_loss: 45.9071
Epoch 1715/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1423 - val_loss: 45.9103
Epoch 1716/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1399 - val_loss: 45.9039
Epoch 1717/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1368 - val_loss: 45.9034
Epoch 1718/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1344 - val_loss: 45.9037
Epoch 1719/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.1318 - val_loss: 45.8982
Epoch 1720/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.1311 - val_loss: 45.8951

Epoch 1721/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1289 - val_loss: 45.8905
Epoch 1722/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1250 - val_loss: 45.8895
Epoch 1723/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1206 - val_loss: 45.8878
Epoch 1724/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1211 - val_loss: 45.8849
Epoch 1725/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.1186 - val_loss: 45.8864
Epoch 1726/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.1222 - val_loss: 45.8832
Epoch 1727/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1142 - val_loss: 45.8811
Epoch 1728/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.1122 - val_loss: 45.8796
Epoch 1729/5000
1126/1126 [=====] - 0s 38us/step - loss: 49.1128 - val_loss: 45.8794
Epoch 1730/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.1076 - val_loss: 45.8752
Epoch 1731/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.1041 - val_loss: 45.8706
Epoch 1732/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.1047 - val_loss: 45.8653
Epoch 1733/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.1026 - val_loss: 45.8686
Epoch 1734/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.1014 - val_loss: 45.8656
Epoch 1735/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0964 - val_loss: 45.8636
Epoch 1736/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.0947 - val_loss: 45.8624
Epoch 1737/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.0925 - val_loss: 45.8615
Epoch 1738/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.0874 - val_loss: 45.8592
Epoch 1739/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0871 - val_loss: 45.8523
Epoch 1740/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0847 - val_loss: 45.8483
Epoch 1741/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0846 - val_loss: 45.8486
Epoch 1742/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0814 - val_loss: 45.8467
Epoch 1743/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0810 - val_loss: 45.8429
Epoch 1744/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.0746 - val_loss: 45.8465

Epoch 1745/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.0734 - val_loss: 45.8533
Epoch 1746/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0727 - val_loss: 45.8497
Epoch 1747/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0699 - val_loss: 45.8475
Epoch 1748/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0674 - val_loss: 45.8438
Epoch 1749/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0672 - val_loss: 45.8398
Epoch 1750/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0649 - val_loss: 45.8356
Epoch 1751/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.0617 - val_loss: 45.8302
Epoch 1752/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.0588 - val_loss: 45.8283
Epoch 1753/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.0590 - val_loss: 45.8253
Epoch 1754/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.0533 - val_loss: 45.8256
Epoch 1755/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0528 - val_loss: 45.8251
Epoch 1756/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.0497 - val_loss: 45.8224
Epoch 1757/5000
1126/1126 [=====] - 0s 38us/step - loss: 49.0475 - val_loss: 45.8208
Epoch 1758/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.0444 - val_loss: 45.8132
Epoch 1759/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.0446 - val_loss: 45.8131
Epoch 1760/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.0401 - val_loss: 45.8090
Epoch 1761/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.0389 - val_loss: 45.8070
Epoch 1762/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.0354 - val_loss: 45.8086
Epoch 1763/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0341 - val_loss: 45.8082
Epoch 1764/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.0314 - val_loss: 45.8069
Epoch 1765/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.0289 - val_loss: 45.8134
Epoch 1766/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0282 - val_loss: 45.8138
Epoch 1767/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.0249 - val_loss: 45.8093
Epoch 1768/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.0234 - val_loss: 45.8050

Epoch 1769/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.0185 - val_loss: 45.8010
Epoch 1770/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0174 - val_loss: 45.7973
Epoch 1771/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0167 - val_loss: 45.7957
Epoch 1772/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0178 - val_loss: 45.7997
Epoch 1773/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.0118 - val_loss: 45.8009
Epoch 1774/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.0096 - val_loss: 45.7969
Epoch 1775/5000
1126/1126 [=====] - 0s 29us/step - loss: 49.0102 - val_loss: 45.7985
Epoch 1776/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0050 - val_loss: 45.7953
Epoch 1777/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0018 - val_loss: 45.7937
Epoch 1778/5000
1126/1126 [=====] - 0s 30us/step - loss: 49.0023 - val_loss: 45.7973
Epoch 1779/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9995 - val_loss: 45.7918
Epoch 1780/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9954 - val_loss: 45.7869
Epoch 1781/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.9948 - val_loss: 45.7827
Epoch 1782/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9919 - val_loss: 45.7861
Epoch 1783/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.9936 - val_loss: 45.7857
Epoch 1784/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.9870 - val_loss: 45.7860
Epoch 1785/5000
1126/1126 [=====] - 0s 37us/step - loss: 48.9864 - val_loss: 45.7804
Epoch 1786/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.9835 - val_loss: 45.7789
Epoch 1787/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9828 - val_loss: 45.7761
Epoch 1788/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.9794 - val_loss: 45.7729
Epoch 1789/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9766 - val_loss: 45.7752
Epoch 1790/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9746 - val_loss: 45.7735
Epoch 1791/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9723 - val_loss: 45.7657
Epoch 1792/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9729 - val_loss: 45.7634

Epoch 1793/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.9682 - val_loss: 45.7666
Epoch 1794/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.9660 - val_loss: 45.7664
Epoch 1795/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.9666 - val_loss: 45.7644
Epoch 1796/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.9632 - val_loss: 45.7640
Epoch 1797/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.9569 - val_loss: 45.7589
Epoch 1798/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.9570 - val_loss: 45.7493
Epoch 1799/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9557 - val_loss: 45.7467
Epoch 1800/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9536 - val_loss: 45.7520
Epoch 1801/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.9528 - val_loss: 45.7494
Epoch 1802/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.9510 - val_loss: 45.7496
Epoch 1803/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.9465 - val_loss: 45.7500
Epoch 1804/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9457 - val_loss: 45.7476
Epoch 1805/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.9425 - val_loss: 45.7442
Epoch 1806/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.9414 - val_loss: 45.7467
Epoch 1807/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9383 - val_loss: 45.7420
Epoch 1808/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.9322 - val_loss: 45.7456
Epoch 1809/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.9321 - val_loss: 45.7458
Epoch 1810/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.9330 - val_loss: 45.7433
Epoch 1811/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.9287 - val_loss: 45.7387
Epoch 1812/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.9301 - val_loss: 45.7381
Epoch 1813/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.9255 - val_loss: 45.7340
Epoch 1814/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.9222 - val_loss: 45.7295
Epoch 1815/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.9195 - val_loss: 45.7284
Epoch 1816/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.9219 - val_loss: 45.7302

Epoch 1817/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9152 - val_loss: 45.7276
Epoch 1818/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.9120 - val_loss: 45.7244
Epoch 1819/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.9123 - val_loss: 45.7207
Epoch 1820/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.9125 - val_loss: 45.7164
Epoch 1821/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9078 - val_loss: 45.7152
Epoch 1822/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.9027 - val_loss: 45.7169
Epoch 1823/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9023 - val_loss: 45.7168
Epoch 1824/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.9000 - val_loss: 45.7143
Epoch 1825/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8978 - val_loss: 45.7083
Epoch 1826/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8963 - val_loss: 45.7028
Epoch 1827/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8924 - val_loss: 45.7042
Epoch 1828/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8970 - val_loss: 45.7059
Epoch 1829/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8880 - val_loss: 45.7039
Epoch 1830/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8854 - val_loss: 45.7055
Epoch 1831/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.8863 - val_loss: 45.7030
Epoch 1832/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8846 - val_loss: 45.6979
Epoch 1833/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8852 - val_loss: 45.6942
Epoch 1834/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8810 - val_loss: 45.6925
Epoch 1835/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8743 - val_loss: 45.6964
Epoch 1836/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8750 - val_loss: 45.6958
Epoch 1837/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8716 - val_loss: 45.6933
Epoch 1838/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8687 - val_loss: 45.6898
Epoch 1839/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8673 - val_loss: 45.6945
Epoch 1840/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8681 - val_loss: 45.6917

Epoch 1841/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8652 - val_loss: 45.6886
Epoch 1842/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.8603 - val_loss: 45.6849
Epoch 1843/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.8598 - val_loss: 45.6840
Epoch 1844/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.8578 - val_loss: 45.6836
Epoch 1845/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8534 - val_loss: 45.6792
Epoch 1846/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.8503 - val_loss: 45.6733
Epoch 1847/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.8486 - val_loss: 45.6692
Epoch 1848/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.8456 - val_loss: 45.6674
Epoch 1849/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8459 - val_loss: 45.6667
Epoch 1850/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.8444 - val_loss: 45.6653
Epoch 1851/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8414 - val_loss: 45.6679
Epoch 1852/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8386 - val_loss: 45.6654
Epoch 1853/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8358 - val_loss: 45.6631
Epoch 1854/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8366 - val_loss: 45.6728
Epoch 1855/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8307 - val_loss: 45.6724
Epoch 1856/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8311 - val_loss: 45.6674
Epoch 1857/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8278 - val_loss: 45.6660
Epoch 1858/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8254 - val_loss: 45.6660
Epoch 1859/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8254 - val_loss: 45.6639
Epoch 1860/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8230 - val_loss: 45.6568
Epoch 1861/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8180 - val_loss: 45.6553
Epoch 1862/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8145 - val_loss: 45.6534
Epoch 1863/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.8129 - val_loss: 45.6504
Epoch 1864/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8125 - val_loss: 45.6449

Epoch 1865/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8103 - val_loss: 45.6420
Epoch 1866/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8082 - val_loss: 45.6390
Epoch 1867/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.8055 - val_loss: 45.6364
Epoch 1868/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8059 - val_loss: 45.6344
Epoch 1869/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.8016 - val_loss: 45.6328
Epoch 1870/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.7990 - val_loss: 45.6352
Epoch 1871/5000
1126/1126 [=====] - 0s 35us/step - loss: 48.7950 - val_loss: 45.6322
Epoch 1872/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.7948 - val_loss: 45.6351
Epoch 1873/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.7926 - val_loss: 45.6336
Epoch 1874/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.7929 - val_loss: 45.6316
Epoch 1875/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.7883 - val_loss: 45.6319
Epoch 1876/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.7873 - val_loss: 45.6326
Epoch 1877/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.7861 - val_loss: 45.6288
Epoch 1878/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.7844 - val_loss: 45.6262
Epoch 1879/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.7807 - val_loss: 45.6264
Epoch 1880/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.7797 - val_loss: 45.6186
Epoch 1881/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7774 - val_loss: 45.6203
Epoch 1882/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.7742 - val_loss: 45.6224
Epoch 1883/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.7736 - val_loss: 45.6174
Epoch 1884/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7688 - val_loss: 45.6145
Epoch 1885/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7696 - val_loss: 45.6187
Epoch 1886/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.7694 - val_loss: 45.6162
Epoch 1887/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.7658 - val_loss: 45.6160
Epoch 1888/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.7617 - val_loss: 45.6132

Epoch 1889/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7595 - val_loss: 45.6139
Epoch 1890/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.7569 - val_loss: 45.6133
Epoch 1891/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7555 - val_loss: 45.6084
Epoch 1892/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7564 - val_loss: 45.6040
Epoch 1893/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7503 - val_loss: 45.5946
Epoch 1894/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.7526 - val_loss: 45.5905
Epoch 1895/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7479 - val_loss: 45.5861
Epoch 1896/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.7444 - val_loss: 45.5842
Epoch 1897/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7439 - val_loss: 45.5795
Epoch 1898/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.7409 - val_loss: 45.5754
Epoch 1899/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.7349 - val_loss: 45.5749
Epoch 1900/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7351 - val_loss: 45.5725
Epoch 1901/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7334 - val_loss: 45.5673
Epoch 1902/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7321 - val_loss: 45.5645
Epoch 1903/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.7303 - val_loss: 45.5631
Epoch 1904/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7270 - val_loss: 45.5585
Epoch 1905/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7256 - val_loss: 45.5558
Epoch 1906/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7236 - val_loss: 45.5523
Epoch 1907/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.7216 - val_loss: 45.5491
Epoch 1908/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.7197 - val_loss: 45.5471
Epoch 1909/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.7152 - val_loss: 45.5453
Epoch 1910/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7142 - val_loss: 45.5424
Epoch 1911/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7120 - val_loss: 45.5394
Epoch 1912/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.7099 - val_loss: 45.5347

Epoch 1913/5000
1126/1126 [=====] - 0s 36us/step - loss: 48.7088 - val_loss: 45.5352
Epoch 1914/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.7063 - val_loss: 45.5343
Epoch 1915/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.7045 - val_loss: 45.5312
Epoch 1916/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7039 - val_loss: 45.5340
Epoch 1917/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.7018 - val_loss: 45.5321
Epoch 1918/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.6999 - val_loss: 45.5328
Epoch 1919/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.6937 - val_loss: 45.5341
Epoch 1920/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.6940 - val_loss: 45.5291
Epoch 1921/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.6900 - val_loss: 45.5252
Epoch 1922/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.6887 - val_loss: 45.5225
Epoch 1923/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.6891 - val_loss: 45.5265
Epoch 1924/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.6846 - val_loss: 45.5181
Epoch 1925/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.6825 - val_loss: 45.5183
Epoch 1926/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.6815 - val_loss: 45.5201
Epoch 1927/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.6803 - val_loss: 45.5215
Epoch 1928/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.6784 - val_loss: 45.5234
Epoch 1929/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.6763 - val_loss: 45.5208
Epoch 1930/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.6717 - val_loss: 45.5186
Epoch 1931/5000
1126/1126 [=====] - 0s 42us/step - loss: 48.6707 - val_loss: 45.5144
Epoch 1932/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.6683 - val_loss: 45.5119
Epoch 1933/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.6658 - val_loss: 45.5112
Epoch 1934/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.6676 - val_loss: 45.5088
Epoch 1935/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.6624 - val_loss: 45.5121
Epoch 1936/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.6596 - val_loss: 45.5119

Epoch 1937/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.6580 - val_loss: 45.5120
Epoch 1938/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.6557 - val_loss: 45.5057
Epoch 1939/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.6555 - val_loss: 45.5044
Epoch 1940/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.6514 - val_loss: 45.5043
Epoch 1941/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.6500 - val_loss: 45.5044
Epoch 1942/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.6482 - val_loss: 45.5096
Epoch 1943/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.6475 - val_loss: 45.5120
Epoch 1944/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.6461 - val_loss: 45.5098
Epoch 1945/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.6443 - val_loss: 45.5070
Epoch 1946/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.6428 - val_loss: 45.5021
Epoch 1947/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.6375 - val_loss: 45.5034
Epoch 1948/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.6365 - val_loss: 45.5037
Epoch 1949/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.6347 - val_loss: 45.5002
Epoch 1950/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.6296 - val_loss: 45.4965
Epoch 1951/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.6303 - val_loss: 45.4940
Epoch 1952/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.6281 - val_loss: 45.4914
Epoch 1953/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.6269 - val_loss: 45.4883
Epoch 1954/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.6250 - val_loss: 45.4887
Epoch 1955/5000
1126/1126 [=====] - 0s 37us/step - loss: 48.6216 - val_loss: 45.4851
Epoch 1956/5000
1126/1126 [=====] - 0s 36us/step - loss: 48.6183 - val_loss: 45.4828
Epoch 1957/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.6193 - val_loss: 45.4812
Epoch 1958/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.6179 - val_loss: 45.4806
Epoch 1959/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.6135 - val_loss: 45.4820
Epoch 1960/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.6140 - val_loss: 45.4822

Epoch 1961/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.6084 - val_loss: 45.4781
Epoch 1962/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.6083 - val_loss: 45.4732
Epoch 1963/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.6051 - val_loss: 45.4676
Epoch 1964/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.6072 - val_loss: 45.4680
Epoch 1965/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.6030 - val_loss: 45.4654
Epoch 1966/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.6005 - val_loss: 45.4607
Epoch 1967/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.5970 - val_loss: 45.4588
Epoch 1968/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5953 - val_loss: 45.4577
Epoch 1969/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.5946 - val_loss: 45.4570
Epoch 1970/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.5897 - val_loss: 45.4570
Epoch 1971/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5907 - val_loss: 45.4555
Epoch 1972/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5896 - val_loss: 45.4505
Epoch 1973/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5858 - val_loss: 45.4553
Epoch 1974/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5844 - val_loss: 45.4545
Epoch 1975/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.5824 - val_loss: 45.4511
Epoch 1976/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5781 - val_loss: 45.4472
Epoch 1977/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.5794 - val_loss: 45.4442
Epoch 1978/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.5753 - val_loss: 45.4412
Epoch 1979/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.5729 - val_loss: 45.4391
Epoch 1980/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.5718 - val_loss: 45.4380
Epoch 1981/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.5692 - val_loss: 45.4398
Epoch 1982/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5698 - val_loss: 45.4410
Epoch 1983/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.5651 - val_loss: 45.4386
Epoch 1984/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.5658 - val_loss: 45.4372

Epoch 1985/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5617 - val_loss: 45.4386
Epoch 1986/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5616 - val_loss: 45.4394
Epoch 1987/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.5621 - val_loss: 45.4456
Epoch 1988/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.5591 - val_loss: 45.4418
Epoch 1989/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.5555 - val_loss: 45.4412
Epoch 1990/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5537 - val_loss: 45.4364
Epoch 1991/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.5520 - val_loss: 45.4341
Epoch 1992/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.5484 - val_loss: 45.4340
Epoch 1993/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5463 - val_loss: 45.4336
Epoch 1994/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.5430 - val_loss: 45.4389
Epoch 1995/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5413 - val_loss: 45.4389
Epoch 1996/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5415 - val_loss: 45.4380
Epoch 1997/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5389 - val_loss: 45.4338
Epoch 1998/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.5374 - val_loss: 45.4395
Epoch 1999/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5401 - val_loss: 45.4349
Epoch 2000/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.5353 - val_loss: 45.4358
Epoch 2001/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.5322 - val_loss: 45.4268
Epoch 2002/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.5292 - val_loss: 45.4231
Epoch 2003/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.5267 - val_loss: 45.4187
Epoch 2004/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.5235 - val_loss: 45.4124
Epoch 2005/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5236 - val_loss: 45.4113
Epoch 2006/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5210 - val_loss: 45.4034
Epoch 2007/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5193 - val_loss: 45.4129
Epoch 2008/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.5171 - val_loss: 45.4122

Epoch 2009/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.5158 - val_loss: 45.4074
Epoch 2010/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5110 - val_loss: 45.4027
Epoch 2011/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.5123 - val_loss: 45.3932
Epoch 2012/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.5085 - val_loss: 45.3916
Epoch 2013/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5042 - val_loss: 45.3927
Epoch 2014/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.5041 - val_loss: 45.3929
Epoch 2015/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5014 - val_loss: 45.3914
Epoch 2016/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.5001 - val_loss: 45.3900
Epoch 2017/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.5001 - val_loss: 45.3906
Epoch 2018/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.4977 - val_loss: 45.3874
Epoch 2019/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.4948 - val_loss: 45.3870
Epoch 2020/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.4916 - val_loss: 45.3838
Epoch 2021/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.4936 - val_loss: 45.3854
Epoch 2022/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4882 - val_loss: 45.3832
Epoch 2023/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4855 - val_loss: 45.3788
Epoch 2024/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.4832 - val_loss: 45.3772
Epoch 2025/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4837 - val_loss: 45.3750
Epoch 2026/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4791 - val_loss: 45.3788
Epoch 2027/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4776 - val_loss: 45.3807
Epoch 2028/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4751 - val_loss: 45.3783
Epoch 2029/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4761 - val_loss: 45.3763
Epoch 2030/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.4733 - val_loss: 45.3705
Epoch 2031/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4707 - val_loss: 45.3705
Epoch 2032/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.4670 - val_loss: 45.3702

Epoch 2033/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4669 - val_loss: 45.3701
Epoch 2034/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.4668 - val_loss: 45.3727
Epoch 2035/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4643 - val_loss: 45.3715
Epoch 2036/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4610 - val_loss: 45.3645
Epoch 2037/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4619 - val_loss: 45.3633
Epoch 2038/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.4580 - val_loss: 45.3625
Epoch 2039/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4540 - val_loss: 45.3598
Epoch 2040/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4540 - val_loss: 45.3527
Epoch 2041/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.4492 - val_loss: 45.3466
Epoch 2042/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.4483 - val_loss: 45.3489
Epoch 2043/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4466 - val_loss: 45.3485
Epoch 2044/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.4452 - val_loss: 45.3445
Epoch 2045/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4417 - val_loss: 45.3436
Epoch 2046/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4419 - val_loss: 45.3394
Epoch 2047/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4403 - val_loss: 45.3343
Epoch 2048/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4370 - val_loss: 45.3330
Epoch 2049/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.4358 - val_loss: 45.3296
Epoch 2050/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.4316 - val_loss: 45.3289
Epoch 2051/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4315 - val_loss: 45.3272
Epoch 2052/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4286 - val_loss: 45.3292
Epoch 2053/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4270 - val_loss: 45.3354
Epoch 2054/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4237 - val_loss: 45.3291
Epoch 2055/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.4246 - val_loss: 45.3311
Epoch 2056/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4198 - val_loss: 45.3366

Epoch 2057/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.4222 - val_loss: 45.3330
Epoch 2058/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.4172 - val_loss: 45.3306
Epoch 2059/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.4136 - val_loss: 45.3282
Epoch 2060/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4153 - val_loss: 45.3298
Epoch 2061/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4122 - val_loss: 45.3234
Epoch 2062/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.4078 - val_loss: 45.3192
Epoch 2063/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.4085 - val_loss: 45.3151
Epoch 2064/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.4062 - val_loss: 45.3143
Epoch 2065/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.4025 - val_loss: 45.3108
Epoch 2066/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.4034 - val_loss: 45.3102
Epoch 2067/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.3987 - val_loss: 45.3145
Epoch 2068/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.3990 - val_loss: 45.3098
Epoch 2069/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.3931 - val_loss: 45.3072
Epoch 2070/5000
1126/1126 [=====] - 0s 36us/step - loss: 48.3953 - val_loss: 45.3037
Epoch 2071/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.3922 - val_loss: 45.3080
Epoch 2072/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.3912 - val_loss: 45.3041
Epoch 2073/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.3885 - val_loss: 45.3067
Epoch 2074/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.3887 - val_loss: 45.3090
Epoch 2075/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.3831 - val_loss: 45.3081
Epoch 2076/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.3840 - val_loss: 45.3064
Epoch 2077/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.3818 - val_loss: 45.3042
Epoch 2078/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.3786 - val_loss: 45.3034
Epoch 2079/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.3754 - val_loss: 45.2969
Epoch 2080/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.3752 - val_loss: 45.2924

Epoch 2081/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.3755 - val_loss: 45.2890
Epoch 2082/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.3689 - val_loss: 45.2888
Epoch 2083/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.3696 - val_loss: 45.2853
Epoch 2084/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.3668 - val_loss: 45.2849
Epoch 2085/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.3659 - val_loss: 45.2812
Epoch 2086/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.3654 - val_loss: 45.2822
Epoch 2087/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.3624 - val_loss: 45.2793
Epoch 2088/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.3625 - val_loss: 45.2762
Epoch 2089/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.3572 - val_loss: 45.2722
Epoch 2090/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.3546 - val_loss: 45.2717
Epoch 2091/5000
1126/1126 [=====] - 0s 41us/step - loss: 48.3518 - val_loss: 45.2690
Epoch 2092/5000
1126/1126 [=====] - 0s 42us/step - loss: 48.3496 - val_loss: 45.2581
Epoch 2093/5000
1126/1126 [=====] - 0s 35us/step - loss: 48.3489 - val_loss: 45.2542
Epoch 2094/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.3446 - val_loss: 45.2516
Epoch 2095/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.3458 - val_loss: 45.2501
Epoch 2096/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.3430 - val_loss: 45.2460
Epoch 2097/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.3402 - val_loss: 45.2450
Epoch 2098/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.3381 - val_loss: 45.2471
Epoch 2099/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.3384 - val_loss: 45.2537
Epoch 2100/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.3372 - val_loss: 45.2538
Epoch 2101/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.3328 - val_loss: 45.2510
Epoch 2102/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.3301 - val_loss: 45.2512
Epoch 2103/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.3287 - val_loss: 45.2484
Epoch 2104/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.3252 - val_loss: 45.2485

Epoch 2105/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.3247 - val_loss: 45.2449
Epoch 2106/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.3272 - val_loss: 45.2399
Epoch 2107/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.3217 - val_loss: 45.2428
Epoch 2108/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.3231 - val_loss: 45.2372
Epoch 2109/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.3172 - val_loss: 45.2386
Epoch 2110/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.3156 - val_loss: 45.2364
Epoch 2111/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.3128 - val_loss: 45.2337
Epoch 2112/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.3130 - val_loss: 45.2384
Epoch 2113/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.3084 - val_loss: 45.2359
Epoch 2114/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.3106 - val_loss: 45.2365
Epoch 2115/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.3091 - val_loss: 45.2356
Epoch 2116/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.3042 - val_loss: 45.2372
Epoch 2117/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.3032 - val_loss: 45.2341
Epoch 2118/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2987 - val_loss: 45.2283
Epoch 2119/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.3005 - val_loss: 45.2281
Epoch 2120/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2978 - val_loss: 45.2245
Epoch 2121/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.2975 - val_loss: 45.2186
Epoch 2122/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2925 - val_loss: 45.2168
Epoch 2123/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2925 - val_loss: 45.2145
Epoch 2124/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.2894 - val_loss: 45.2149
Epoch 2125/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.2873 - val_loss: 45.2207
Epoch 2126/5000
1126/1126 [=====] - 0s 36us/step - loss: 48.2856 - val_loss: 45.2209
Epoch 2127/5000
1126/1126 [=====] - 0s 38us/step - loss: 48.2833 - val_loss: 45.2171
Epoch 2128/5000
1126/1126 [=====] - 0s 35us/step - loss: 48.2801 - val_loss: 45.2129

Epoch 2129/5000
1126/1126 [=====] - 0s 35us/step - loss: 48.2782 - val_loss: 45.2110
Epoch 2130/5000
1126/1126 [=====] - 0s 36us/step - loss: 48.2770 - val_loss: 45.2072
Epoch 2131/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.2744 - val_loss: 45.2019
Epoch 2132/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.2768 - val_loss: 45.2032
Epoch 2133/5000
1126/1126 [=====] - 0s 36us/step - loss: 48.2728 - val_loss: 45.2023
Epoch 2134/5000
1126/1126 [=====] - 0s 35us/step - loss: 48.2673 - val_loss: 45.1997
Epoch 2135/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.2688 - val_loss: 45.1979
Epoch 2136/5000
1126/1126 [=====] - 0s 35us/step - loss: 48.2668 - val_loss: 45.1996
Epoch 2137/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.2637 - val_loss: 45.1978
Epoch 2138/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.2618 - val_loss: 45.1964
Epoch 2139/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.2616 - val_loss: 45.1935
Epoch 2140/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.2572 - val_loss: 45.1912
Epoch 2141/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.2569 - val_loss: 45.1842
Epoch 2142/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2548 - val_loss: 45.1807
Epoch 2143/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2520 - val_loss: 45.1780
Epoch 2144/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2501 - val_loss: 45.1798
Epoch 2145/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2476 - val_loss: 45.1780
Epoch 2146/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2466 - val_loss: 45.1820
Epoch 2147/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.2461 - val_loss: 45.1807
Epoch 2148/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.2446 - val_loss: 45.1773
Epoch 2149/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.2409 - val_loss: 45.1761
Epoch 2150/5000
1126/1126 [=====] - 0s 35us/step - loss: 48.2389 - val_loss: 45.1721
Epoch 2151/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.2366 - val_loss: 45.1718
Epoch 2152/5000
1126/1126 [=====] - 0s 35us/step - loss: 48.2356 - val_loss: 45.1662

Epoch 2153/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.2348 - val_loss: 45.1653
Epoch 2154/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.2296 - val_loss: 45.1664
Epoch 2155/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.2295 - val_loss: 45.1644
Epoch 2156/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2277 - val_loss: 45.1637
Epoch 2157/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2289 - val_loss: 45.1652
Epoch 2158/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.2226 - val_loss: 45.1610
Epoch 2159/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2215 - val_loss: 45.1646
Epoch 2160/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2223 - val_loss: 45.1578
Epoch 2161/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.2196 - val_loss: 45.1564
Epoch 2162/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.2197 - val_loss: 45.1547
Epoch 2163/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2152 - val_loss: 45.1512
Epoch 2164/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.2129 - val_loss: 45.1481
Epoch 2165/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.2098 - val_loss: 45.1461
Epoch 2166/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2076 - val_loss: 45.1482
Epoch 2167/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.2059 - val_loss: 45.1479
Epoch 2168/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.2053 - val_loss: 45.1450
Epoch 2169/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2021 - val_loss: 45.1425
Epoch 2170/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.2001 - val_loss: 45.1455
Epoch 2171/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.1970 - val_loss: 45.1432
Epoch 2172/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.1979 - val_loss: 45.1448
Epoch 2173/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.1958 - val_loss: 45.1429
Epoch 2174/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1909 - val_loss: 45.1444
Epoch 2175/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1935 - val_loss: 45.1376
Epoch 2176/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.1891 - val_loss: 45.1353

Epoch 2177/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.1878 - val_loss: 45.1312
Epoch 2178/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1836 - val_loss: 45.1304
Epoch 2179/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1814 - val_loss: 45.1275
Epoch 2180/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.1808 - val_loss: 45.1260
Epoch 2181/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.1784 - val_loss: 45.1232
Epoch 2182/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.1761 - val_loss: 45.1242
Epoch 2183/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1739 - val_loss: 45.1287
Epoch 2184/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1755 - val_loss: 45.1287
Epoch 2185/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1713 - val_loss: 45.1237
Epoch 2186/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1686 - val_loss: 45.1273
Epoch 2187/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.1712 - val_loss: 45.1255
Epoch 2188/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1686 - val_loss: 45.1175
Epoch 2189/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1650 - val_loss: 45.1148
Epoch 2190/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1615 - val_loss: 45.1107
Epoch 2191/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1612 - val_loss: 45.1055
Epoch 2192/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.1595 - val_loss: 45.0977
Epoch 2193/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1584 - val_loss: 45.1002
Epoch 2194/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.1572 - val_loss: 45.0990
Epoch 2195/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.1523 - val_loss: 45.0948
Epoch 2196/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1490 - val_loss: 45.0920
Epoch 2197/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1473 - val_loss: 45.0924
Epoch 2198/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1469 - val_loss: 45.0881
Epoch 2199/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.1454 - val_loss: 45.0927
Epoch 2200/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.1426 - val_loss: 45.0899

Epoch 2201/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1395 - val_loss: 45.0917
Epoch 2202/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.1391 - val_loss: 45.0906
Epoch 2203/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.1351 - val_loss: 45.0900
Epoch 2204/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.1366 - val_loss: 45.0885
Epoch 2205/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.1329 - val_loss: 45.0865
Epoch 2206/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.1284 - val_loss: 45.0867
Epoch 2207/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1292 - val_loss: 45.0876
Epoch 2208/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.1268 - val_loss: 45.0930
Epoch 2209/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.1239 - val_loss: 45.0920
Epoch 2210/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.1210 - val_loss: 45.0848
Epoch 2211/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1179 - val_loss: 45.0797
Epoch 2212/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.1155 - val_loss: 45.0728
Epoch 2213/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.1153 - val_loss: 45.0721
Epoch 2214/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1141 - val_loss: 45.0699
Epoch 2215/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1096 - val_loss: 45.0665
Epoch 2216/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.1056 - val_loss: 45.0683
Epoch 2217/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.1073 - val_loss: 45.0695
Epoch 2218/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1026 - val_loss: 45.0656
Epoch 2219/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.1021 - val_loss: 45.0668
Epoch 2220/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.1013 - val_loss: 45.0633
Epoch 2221/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0983 - val_loss: 45.0590
Epoch 2222/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0997 - val_loss: 45.0556
Epoch 2223/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0967 - val_loss: 45.0491
Epoch 2224/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0950 - val_loss: 45.0466

Epoch 2225/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0921 - val_loss: 45.0457
Epoch 2226/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0873 - val_loss: 45.0447
Epoch 2227/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0874 - val_loss: 45.0401
Epoch 2228/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0839 - val_loss: 45.0384
Epoch 2229/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0835 - val_loss: 45.0362
Epoch 2230/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0830 - val_loss: 45.0364
Epoch 2231/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0796 - val_loss: 45.0391
Epoch 2232/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0768 - val_loss: 45.0345
Epoch 2233/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0731 - val_loss: 45.0319
Epoch 2234/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0708 - val_loss: 45.0285
Epoch 2235/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0705 - val_loss: 45.0243
Epoch 2236/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0674 - val_loss: 45.0215
Epoch 2237/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0667 - val_loss: 45.0224
Epoch 2238/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0658 - val_loss: 45.0265
Epoch 2239/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0625 - val_loss: 45.0189
Epoch 2240/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0611 - val_loss: 45.0154
Epoch 2241/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0599 - val_loss: 45.0133
Epoch 2242/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0569 - val_loss: 45.0161
Epoch 2243/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0574 - val_loss: 45.0126
Epoch 2244/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0532 - val_loss: 45.0117
Epoch 2245/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0502 - val_loss: 45.0106
Epoch 2246/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0490 - val_loss: 45.0113
Epoch 2247/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0472 - val_loss: 45.0074
Epoch 2248/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0454 - val_loss: 45.0069

Epoch 2249/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0419 - val_loss: 45.0061
Epoch 2250/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0400 - val_loss: 45.0030
Epoch 2251/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0391 - val_loss: 45.0025
Epoch 2252/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0369 - val_loss: 45.0018
Epoch 2253/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.0356 - val_loss: 45.0006
Epoch 2254/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0327 - val_loss: 44.9982
Epoch 2255/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0317 - val_loss: 44.9970
Epoch 2256/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0291 - val_loss: 44.9942
Epoch 2257/5000
1126/1126 [=====] - 0s 28us/step - loss: 48.0275 - val_loss: 44.9926
Epoch 2258/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0259 - val_loss: 44.9930
Epoch 2259/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0235 - val_loss: 44.9936
Epoch 2260/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0190 - val_loss: 44.9889
Epoch 2261/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0185 - val_loss: 44.9869
Epoch 2262/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0150 - val_loss: 44.9818
Epoch 2263/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.0169 - val_loss: 44.9825
Epoch 2264/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0122 - val_loss: 44.9791
Epoch 2265/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0130 - val_loss: 44.9798
Epoch 2266/5000
1126/1126 [=====] - 0s 29us/step - loss: 48.0093 - val_loss: 44.9673
Epoch 2267/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.0074 - val_loss: 44.9689
Epoch 2268/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0018 - val_loss: 44.9677
Epoch 2269/5000
1126/1126 [=====] - 0s 30us/step - loss: 48.0028 - val_loss: 44.9679
Epoch 2270/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9993 - val_loss: 44.9678
Epoch 2271/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.9982 - val_loss: 44.9667
Epoch 2272/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9970 - val_loss: 44.9644

Epoch 2273/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9927 - val_loss: 44.9647
Epoch 2274/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9944 - val_loss: 44.9637
Epoch 2275/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9907 - val_loss: 44.9614
Epoch 2276/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9881 - val_loss: 44.9650
Epoch 2277/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9879 - val_loss: 44.9616
Epoch 2278/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.9836 - val_loss: 44.9621
Epoch 2279/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9824 - val_loss: 44.9631
Epoch 2280/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9784 - val_loss: 44.9567
Epoch 2281/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.9776 - val_loss: 44.9558
Epoch 2282/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9762 - val_loss: 44.9581
Epoch 2283/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9730 - val_loss: 44.9582
Epoch 2284/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9739 - val_loss: 44.9585
Epoch 2285/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9712 - val_loss: 44.9556
Epoch 2286/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9685 - val_loss: 44.9572
Epoch 2287/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9659 - val_loss: 44.9589
Epoch 2288/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9649 - val_loss: 44.9560
Epoch 2289/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9632 - val_loss: 44.9574
Epoch 2290/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.9609 - val_loss: 44.9576
Epoch 2291/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9583 - val_loss: 44.9544
Epoch 2292/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9558 - val_loss: 44.9580
Epoch 2293/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9554 - val_loss: 44.9587
Epoch 2294/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9518 - val_loss: 44.9558
Epoch 2295/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9545 - val_loss: 44.9575
Epoch 2296/5000
1126/1126 [=====] - 0s 36us/step - loss: 47.9489 - val_loss: 44.9539

Epoch 2297/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.9482 - val_loss: 44.9525
Epoch 2298/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.9452 - val_loss: 44.9500
Epoch 2299/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.9436 - val_loss: 44.9517
Epoch 2300/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9416 - val_loss: 44.9453
Epoch 2301/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9377 - val_loss: 44.9446
Epoch 2302/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9375 - val_loss: 44.9394
Epoch 2303/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9347 - val_loss: 44.9348
Epoch 2304/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9317 - val_loss: 44.9307
Epoch 2305/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9284 - val_loss: 44.9286
Epoch 2306/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.9286 - val_loss: 44.9246
Epoch 2307/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9252 - val_loss: 44.9234
Epoch 2308/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9258 - val_loss: 44.9198
Epoch 2309/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9221 - val_loss: 44.9184
Epoch 2310/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9210 - val_loss: 44.9163
Epoch 2311/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9175 - val_loss: 44.9140
Epoch 2312/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9151 - val_loss: 44.9115
Epoch 2313/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9125 - val_loss: 44.9072
Epoch 2314/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9112 - val_loss: 44.9008
Epoch 2315/5000
1126/1126 [=====] - 0s 28us/step - loss: 47.9101 - val_loss: 44.9031
Epoch 2316/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9086 - val_loss: 44.9003
Epoch 2317/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.9046 - val_loss: 44.8980
Epoch 2318/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9033 - val_loss: 44.8969
Epoch 2319/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9039 - val_loss: 44.8920
Epoch 2320/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.9009 - val_loss: 44.8836

Epoch 2321/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.8972 - val_loss: 44.8820
Epoch 2322/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.8975 - val_loss: 44.8816
Epoch 2323/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.8933 - val_loss: 44.8795
Epoch 2324/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.8942 - val_loss: 44.8833
Epoch 2325/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.8893 - val_loss: 44.8900
Epoch 2326/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.8868 - val_loss: 44.8876
Epoch 2327/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.8840 - val_loss: 44.8841
Epoch 2328/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.8825 - val_loss: 44.8817
Epoch 2329/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.8819 - val_loss: 44.8808
Epoch 2330/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.8807 - val_loss: 44.8796
Epoch 2331/5000
1126/1126 [=====] - 0s 35us/step - loss: 47.8767 - val_loss: 44.8786
Epoch 2332/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.8754 - val_loss: 44.8764
Epoch 2333/5000
1126/1126 [=====] - 0s 37us/step - loss: 47.8746 - val_loss: 44.8738
Epoch 2334/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.8726 - val_loss: 44.8714
Epoch 2335/5000
1126/1126 [=====] - 0s 35us/step - loss: 47.8711 - val_loss: 44.8689
Epoch 2336/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.8695 - val_loss: 44.8705
Epoch 2337/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.8647 - val_loss: 44.8681
Epoch 2338/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.8622 - val_loss: 44.8669
Epoch 2339/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.8612 - val_loss: 44.8701
Epoch 2340/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.8576 - val_loss: 44.8660
Epoch 2341/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.8557 - val_loss: 44.8641
Epoch 2342/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.8543 - val_loss: 44.8617
Epoch 2343/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.8511 - val_loss: 44.8605
Epoch 2344/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.8515 - val_loss: 44.8606

Epoch 2345/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.8492 - val_loss: 44.8596
Epoch 2346/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.8487 - val_loss: 44.8617
Epoch 2347/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.8451 - val_loss: 44.8582
Epoch 2348/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.8449 - val_loss: 44.8585
Epoch 2349/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.8432 - val_loss: 44.8551
Epoch 2350/5000
1126/1126 [=====] - 0s 35us/step - loss: 47.8396 - val_loss: 44.8552
Epoch 2351/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.8368 - val_loss: 44.8544
Epoch 2352/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.8338 - val_loss: 44.8559
Epoch 2353/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.8346 - val_loss: 44.8507
Epoch 2354/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.8338 - val_loss: 44.8452
Epoch 2355/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.8275 - val_loss: 44.8462
Epoch 2356/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.8268 - val_loss: 44.8475
Epoch 2357/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.8252 - val_loss: 44.8446
Epoch 2358/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.8225 - val_loss: 44.8467
Epoch 2359/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.8238 - val_loss: 44.8440
Epoch 2360/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.8171 - val_loss: 44.8445
Epoch 2361/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.8185 - val_loss: 44.8415
Epoch 2362/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.8163 - val_loss: 44.8378
Epoch 2363/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.8147 - val_loss: 44.8343
Epoch 2364/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.8134 - val_loss: 44.8289
Epoch 2365/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.8098 - val_loss: 44.8278
Epoch 2366/5000
1126/1126 [=====] - 0s 38us/step - loss: 47.8045 - val_loss: 44.8243
Epoch 2367/5000
1126/1126 [=====] - 0s 38us/step - loss: 47.8054 - val_loss: 44.8272
Epoch 2368/5000
1126/1126 [=====] - 0s 35us/step - loss: 47.8037 - val_loss: 44.8273

Epoch 2369/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.8019 - val_loss: 44.8280
Epoch 2370/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.7992 - val_loss: 44.8237
Epoch 2371/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.7974 - val_loss: 44.8248
Epoch 2372/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.7960 - val_loss: 44.8244
Epoch 2373/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.7922 - val_loss: 44.8226
Epoch 2374/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.7951 - val_loss: 44.8221
Epoch 2375/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.7892 - val_loss: 44.8185
Epoch 2376/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.7864 - val_loss: 44.8151
Epoch 2377/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.7891 - val_loss: 44.8118
Epoch 2378/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.7805 - val_loss: 44.8079
Epoch 2379/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.7792 - val_loss: 44.8068
Epoch 2380/5000
1126/1126 [=====] - 0s 37us/step - loss: 47.7801 - val_loss: 44.8023
Epoch 2381/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.7758 - val_loss: 44.8019
Epoch 2382/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.7757 - val_loss: 44.8015
Epoch 2383/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.7728 - val_loss: 44.7996
Epoch 2384/5000
1126/1126 [=====] - 0s 38us/step - loss: 47.7703 - val_loss: 44.7973
Epoch 2385/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.7683 - val_loss: 44.7973
Epoch 2386/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.7654 - val_loss: 44.7930
Epoch 2387/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.7655 - val_loss: 44.7934
Epoch 2388/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.7638 - val_loss: 44.7925
Epoch 2389/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.7619 - val_loss: 44.7910
Epoch 2390/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.7593 - val_loss: 44.7882
Epoch 2391/5000
1126/1126 [=====] - 0s 29us/step - loss: 47.7583 - val_loss: 44.7852
Epoch 2392/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.7570 - val_loss: 44.7847

Epoch 2393/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.7534 - val_loss: 44.7823
Epoch 2394/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.7490 - val_loss: 44.7836
Epoch 2395/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.7511 - val_loss: 44.7864
Epoch 2396/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.7454 - val_loss: 44.7816
Epoch 2397/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.7443 - val_loss: 44.7778
Epoch 2398/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.7435 - val_loss: 44.7773
Epoch 2399/5000
1126/1126 [=====] - 0s 42us/step - loss: 47.7415 - val_loss: 44.7774
Epoch 2400/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.7398 - val_loss: 44.7754
Epoch 2401/5000
1126/1126 [=====] - 0s 35us/step - loss: 47.7354 - val_loss: 44.7726
Epoch 2402/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.7347 - val_loss: 44.7712
Epoch 2403/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.7321 - val_loss: 44.7748
Epoch 2404/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.7326 - val_loss: 44.7725
Epoch 2405/5000
1126/1126 [=====] - 0s 40us/step - loss: 47.7295 - val_loss: 44.7714
Epoch 2406/5000
1126/1126 [=====] - 0s 42us/step - loss: 47.7274 - val_loss: 44.7688
Epoch 2407/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.7251 - val_loss: 44.7643
Epoch 2408/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.7210 - val_loss: 44.7586
Epoch 2409/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.7228 - val_loss: 44.7540
Epoch 2410/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.7163 - val_loss: 44.7522
Epoch 2411/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.7169 - val_loss: 44.7509
Epoch 2412/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.7130 - val_loss: 44.7489
Epoch 2413/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.7108 - val_loss: 44.7467
Epoch 2414/5000
1126/1126 [=====] - 0s 36us/step - loss: 47.7093 - val_loss: 44.7483
Epoch 2415/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.7089 - val_loss: 44.7480
Epoch 2416/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.7073 - val_loss: 44.7415

Epoch 2417/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.7041 - val_loss: 44.7378
Epoch 2418/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6997 - val_loss: 44.7354
Epoch 2419/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.6994 - val_loss: 44.7294
Epoch 2420/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.6953 - val_loss: 44.7227
Epoch 2421/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.6924 - val_loss: 44.7214
Epoch 2422/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6915 - val_loss: 44.7200
Epoch 2423/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.6881 - val_loss: 44.7194
Epoch 2424/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6878 - val_loss: 44.7123
Epoch 2425/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6858 - val_loss: 44.7146
Epoch 2426/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.6830 - val_loss: 44.7159
Epoch 2427/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.6812 - val_loss: 44.7192
Epoch 2428/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6787 - val_loss: 44.7160
Epoch 2429/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6754 - val_loss: 44.7131
Epoch 2430/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6742 - val_loss: 44.7111
Epoch 2431/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6706 - val_loss: 44.7116
Epoch 2432/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6687 - val_loss: 44.7108
Epoch 2433/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6646 - val_loss: 44.7039
Epoch 2434/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.6645 - val_loss: 44.7004
Epoch 2435/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.6622 - val_loss: 44.7010
Epoch 2436/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6592 - val_loss: 44.6948
Epoch 2437/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.6585 - val_loss: 44.6926
Epoch 2438/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.6553 - val_loss: 44.6919
Epoch 2439/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.6537 - val_loss: 44.6896
Epoch 2440/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6526 - val_loss: 44.6889

```

Epoch 2441/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.6513 - val_loss: 44.6899
Epoch 2442/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.6473 - val_loss: 44.6872
Epoch 2443/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6440 - val_loss: 44.6822
Epoch 2444/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6409 - val_loss: 44.6769
Epoch 2445/5000
1126/1126 [=====] - 0s 30us/step - loss: 47.6402 - val_loss: 44.6730
Epoch 2446/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.6390 - val_loss: 44.6694
Epoch 2447/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.6372 - val_loss: 44.6745
Epoch 2448/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.6344 - val_loss: 44.6768
Epoch 2449/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6337 - val_loss: 44.6756
Epoch 2450/5000
1126/1126 [=====] - 0s 38us/step - loss: 47.6278 - val_loss: 44.6714
Epoch 2451/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.6282 - val_loss: 44.6711
Epoch 2452/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.6247 - val_loss: 44.6763
Epoch 2453/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.6219 - val_loss: 44.6752
Epoch 2454/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.6205 - val_loss: 44.6723
Epoch 2455/5000
1126/1126 [=====] - 0s 35us/step - loss: 47.6178 - val_loss: 44.6724
Epoch 2456/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.6154 - val_loss: 44.6711
Epoch 02456: early stopping

```

```

In [9]: y_pred = model.predict(X_test)
        plt.title('Coût et coût de validation')
        line1=plt.plot(history.history['loss'], label="Loss", linestyle='--', color='r')
        line2=plt.plot(history.history['val_loss'], label="Val loss", linestyle='--', color='b')
        first_legend = plt.legend(handles=[line1, line2], loc=1)

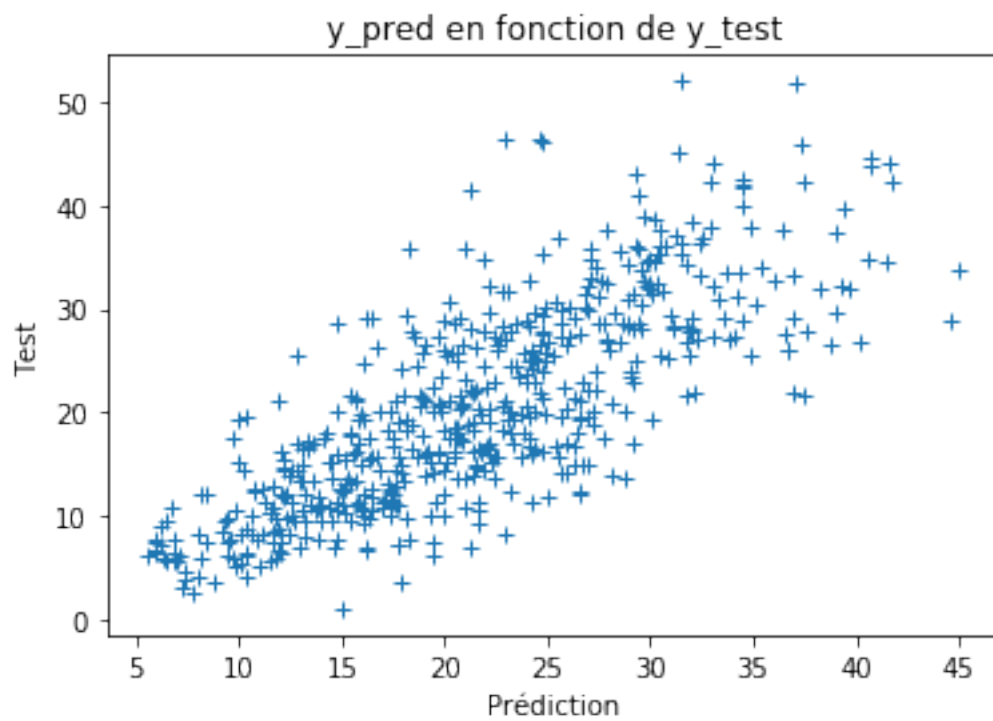
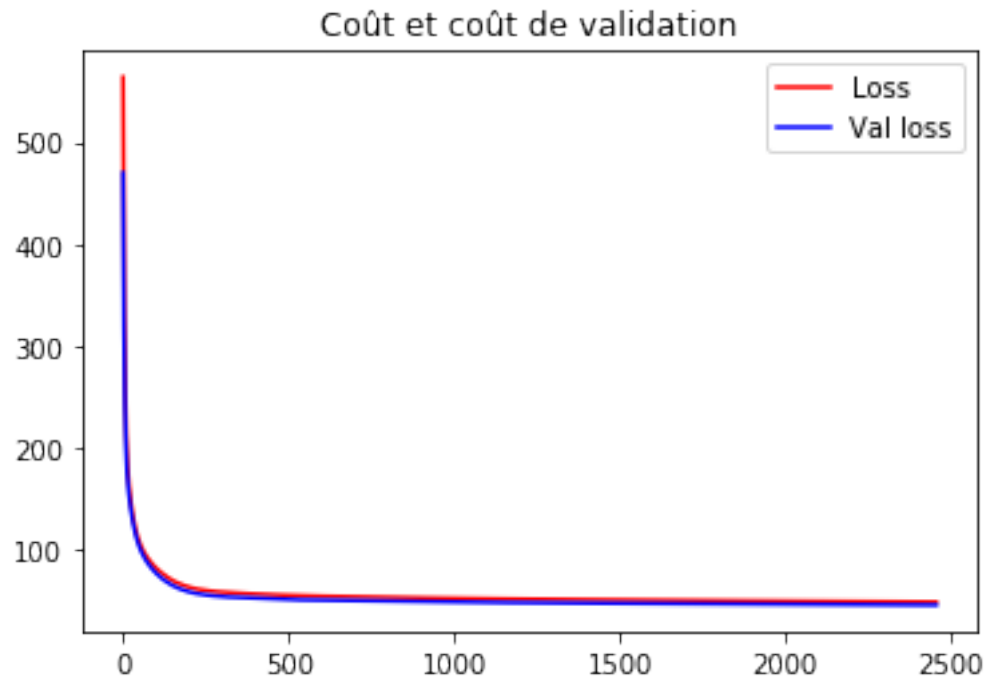
        plt.show()

        plt.title('y_pred en fonction de y_test')

        plt.plot(y_pred[:, y_test[:, '+'])
        plt.ylabel('Test')
        plt.xlabel('Prédiction')

```

```
plt.show()
```



1.1 Deux couches

```
In [10]: from keras.layers import SimpleRNN
```

```
def double_dense_model(dense_size, input_dim, loss='mean_squared_error', optimizer='adagrad'):
    model = Sequential()
    model.add(Dense(dense_size, input_dim=input_dim, kernel_initializer='normal', activation='tanh'))
    model.add(Dense(dense_size//2, input_dim=input_dim, kernel_initializer='normal', activation='tanh'))
    model.add(Dense(1, kernel_initializer='normal'))
    model.compile(loss=loss, optimizer=optimizer)
    model.summary()
    return model
```

```
model = double_dense_model(32, X_train.shape[1], 'mean_squared_error', 'adagrad')
```

```
-----
Layer (type)                 Output Shape          Param #
-----
dense_3 (Dense)              (None, 32)            384
-----
dense_4 (Dense)              (None, 16)            528
-----
dense_5 (Dense)              (None, 1)             17
-----
Total params: 929
Trainable params: 929
Non-trainable params: 0
-----
```

```
In [11]: early_stopping = EarlyStopping(monitor='val_loss', verbose=1, mode='auto', patience=10)
history = model.fit(X_train, y_train, batch_size=32, epochs=5000, validation_data=(X_val, y_val))
```

Train on 1126 samples, validate on 563 samples

Epoch 1/5000

1126/1126 [=====] - 0s 207us/step - loss: 513.6292 - val_loss: 341.9345

Epoch 2/5000

1126/1126 [=====] - 0s 34us/step - loss: 295.2430 - val_loss: 211.5844

Epoch 3/5000

1126/1126 [=====] - 0s 38us/step - loss: 206.2777 - val_loss: 176.1061

Epoch 4/5000

1126/1126 [=====] - 0s 38us/step - loss: 176.3227 - val_loss: 158.6451

Epoch 5/5000

1126/1126 [=====] - 0s 33us/step - loss: 158.2905 - val_loss: 144.5900

Epoch 6/5000

1126/1126 [=====] - 0s 35us/step - loss: 143.8037 - val_loss: 132.4241

Epoch 7/5000

1126/1126 [=====] - 0s 34us/step - loss: 132.1777 - val_loss: 122.8751

Epoch 8/5000
1126/1126 [=====] - 0s 33us/step - loss: 122.9299 - val_loss: 115.1070
Epoch 9/5000
1126/1126 [=====] - 0s 34us/step - loss: 115.2442 - val_loss: 108.3211
Epoch 10/5000
1126/1126 [=====] - 0s 34us/step - loss: 108.9292 - val_loss: 102.4311
Epoch 11/5000
1126/1126 [=====] - 0s 34us/step - loss: 103.4622 - val_loss: 97.9095
Epoch 12/5000
1126/1126 [=====] - 0s 33us/step - loss: 99.2027 - val_loss: 93.3950
Epoch 13/5000
1126/1126 [=====] - 0s 33us/step - loss: 95.2626 - val_loss: 89.5985
Epoch 14/5000
1126/1126 [=====] - 0s 33us/step - loss: 91.8403 - val_loss: 86.6827
Epoch 15/5000
1126/1126 [=====] - 0s 35us/step - loss: 88.9924 - val_loss: 84.0087
Epoch 16/5000
1126/1126 [=====] - 0s 34us/step - loss: 86.3843 - val_loss: 81.5524
Epoch 17/5000
1126/1126 [=====] - 0s 32us/step - loss: 84.2725 - val_loss: 79.4491
Epoch 18/5000
1126/1126 [=====] - 0s 33us/step - loss: 82.3225 - val_loss: 77.7460
Epoch 19/5000
1126/1126 [=====] - 0s 33us/step - loss: 80.7736 - val_loss: 75.9792
Epoch 20/5000
1126/1126 [=====] - 0s 33us/step - loss: 79.3615 - val_loss: 74.5155
Epoch 21/5000
1126/1126 [=====] - 0s 34us/step - loss: 78.0212 - val_loss: 73.5308
Epoch 22/5000
1126/1126 [=====] - 0s 34us/step - loss: 76.8713 - val_loss: 72.4260
Epoch 23/5000
1126/1126 [=====] - 0s 33us/step - loss: 75.9522 - val_loss: 71.1830
Epoch 24/5000
1126/1126 [=====] - 0s 35us/step - loss: 75.0874 - val_loss: 70.5131
Epoch 25/5000
1126/1126 [=====] - 0s 32us/step - loss: 74.3156 - val_loss: 69.7969
Epoch 26/5000
1126/1126 [=====] - 0s 33us/step - loss: 73.5485 - val_loss: 69.1781
Epoch 27/5000
1126/1126 [=====] - 0s 35us/step - loss: 72.9048 - val_loss: 68.2636
Epoch 28/5000
1126/1126 [=====] - 0s 36us/step - loss: 72.3016 - val_loss: 67.7679
Epoch 29/5000
1126/1126 [=====] - 0s 36us/step - loss: 71.6940 - val_loss: 67.1850
Epoch 30/5000
1126/1126 [=====] - 0s 36us/step - loss: 71.2022 - val_loss: 66.9348
Epoch 31/5000
1126/1126 [=====] - 0s 36us/step - loss: 70.8398 - val_loss: 66.4530

Epoch 32/5000
1126/1126 [=====] - 0s 42us/step - loss: 70.3871 - val_loss: 66.3953
Epoch 33/5000
1126/1126 [=====] - 0s 35us/step - loss: 70.1317 - val_loss: 65.8681
Epoch 34/5000
1126/1126 [=====] - 0s 36us/step - loss: 69.7682 - val_loss: 65.4470
Epoch 35/5000
1126/1126 [=====] - 0s 35us/step - loss: 69.4314 - val_loss: 65.1624
Epoch 36/5000
1126/1126 [=====] - 0s 34us/step - loss: 69.2105 - val_loss: 64.8755
Epoch 37/5000
1126/1126 [=====] - 0s 33us/step - loss: 68.9924 - val_loss: 64.5753
Epoch 38/5000
1126/1126 [=====] - 0s 33us/step - loss: 68.7579 - val_loss: 64.3138
Epoch 39/5000
1126/1126 [=====] - 0s 35us/step - loss: 68.5607 - val_loss: 64.1449
Epoch 40/5000
1126/1126 [=====] - 0s 35us/step - loss: 68.3742 - val_loss: 63.8724
Epoch 41/5000
1126/1126 [=====] - 0s 32us/step - loss: 68.1677 - val_loss: 63.7140
Epoch 42/5000
1126/1126 [=====] - 0s 33us/step - loss: 67.9699 - val_loss: 63.7477
Epoch 43/5000
1126/1126 [=====] - 0s 33us/step - loss: 67.8572 - val_loss: 63.5677
Epoch 44/5000
1126/1126 [=====] - 0s 31us/step - loss: 67.6486 - val_loss: 63.2473
Epoch 45/5000
1126/1126 [=====] - 0s 31us/step - loss: 67.4846 - val_loss: 63.2160
Epoch 46/5000
1126/1126 [=====] - 0s 33us/step - loss: 67.3486 - val_loss: 62.9265
Epoch 47/5000
1126/1126 [=====] - 0s 33us/step - loss: 67.2113 - val_loss: 62.6617
Epoch 48/5000
1126/1126 [=====] - 0s 33us/step - loss: 67.0354 - val_loss: 62.5539
Epoch 49/5000
1126/1126 [=====] - 0s 34us/step - loss: 66.9097 - val_loss: 62.4211
Epoch 50/5000
1126/1126 [=====] - 0s 35us/step - loss: 66.7959 - val_loss: 62.3419
Epoch 51/5000
1126/1126 [=====] - 0s 32us/step - loss: 66.7051 - val_loss: 62.1596
Epoch 52/5000
1126/1126 [=====] - 0s 32us/step - loss: 66.5698 - val_loss: 62.0656
Epoch 53/5000
1126/1126 [=====] - 0s 31us/step - loss: 66.5015 - val_loss: 61.9208
Epoch 54/5000
1126/1126 [=====] - 0s 33us/step - loss: 66.3365 - val_loss: 61.9290
Epoch 55/5000
1126/1126 [=====] - 0s 31us/step - loss: 66.2370 - val_loss: 61.6270

Epoch 56/5000
1126/1126 [=====] - 0s 33us/step - loss: 66.1755 - val_loss: 61.6620
Epoch 57/5000
1126/1126 [=====] - 0s 33us/step - loss: 66.0642 - val_loss: 61.5513
Epoch 58/5000
1126/1126 [=====] - 0s 34us/step - loss: 65.9701 - val_loss: 61.4860
Epoch 59/5000
1126/1126 [=====] - 0s 31us/step - loss: 65.8849 - val_loss: 61.4351
Epoch 60/5000
1126/1126 [=====] - 0s 32us/step - loss: 65.7897 - val_loss: 61.3559
Epoch 61/5000
1126/1126 [=====] - 0s 35us/step - loss: 65.7080 - val_loss: 61.3129
Epoch 62/5000
1126/1126 [=====] - 0s 32us/step - loss: 65.6273 - val_loss: 61.1132
Epoch 63/5000
1126/1126 [=====] - 0s 32us/step - loss: 65.5419 - val_loss: 61.0583
Epoch 64/5000
1126/1126 [=====] - 0s 32us/step - loss: 65.4619 - val_loss: 61.0487
Epoch 65/5000
1126/1126 [=====] - 0s 32us/step - loss: 65.3871 - val_loss: 60.9608
Epoch 66/5000
1126/1126 [=====] - 0s 35us/step - loss: 65.3809 - val_loss: 60.8011
Epoch 67/5000
1126/1126 [=====] - 0s 33us/step - loss: 65.2809 - val_loss: 60.7476
Epoch 68/5000
1126/1126 [=====] - 0s 33us/step - loss: 65.1746 - val_loss: 60.7093
Epoch 69/5000
1126/1126 [=====] - 0s 31us/step - loss: 65.1023 - val_loss: 60.7429
Epoch 70/5000
1126/1126 [=====] - 0s 33us/step - loss: 65.0400 - val_loss: 60.6124
Epoch 71/5000
1126/1126 [=====] - 0s 30us/step - loss: 64.9857 - val_loss: 60.4764
Epoch 72/5000
1126/1126 [=====] - 0s 31us/step - loss: 64.9039 - val_loss: 60.4559
Epoch 73/5000
1126/1126 [=====] - 0s 35us/step - loss: 64.8322 - val_loss: 60.2707
Epoch 74/5000
1126/1126 [=====] - 0s 32us/step - loss: 64.7566 - val_loss: 60.2608
Epoch 75/5000
1126/1126 [=====] - 0s 32us/step - loss: 64.6930 - val_loss: 60.1807
Epoch 76/5000
1126/1126 [=====] - 0s 31us/step - loss: 64.6312 - val_loss: 60.1173
Epoch 77/5000
1126/1126 [=====] - 0s 32us/step - loss: 64.5703 - val_loss: 60.0490
Epoch 78/5000
1126/1126 [=====] - 0s 32us/step - loss: 64.5081 - val_loss: 59.9945
Epoch 79/5000
1126/1126 [=====] - 0s 32us/step - loss: 64.4182 - val_loss: 59.8583

Epoch 80/5000
1126/1126 [=====] - 0s 31us/step - loss: 64.3868 - val_loss: 59.8559
Epoch 81/5000
1126/1126 [=====] - 0s 31us/step - loss: 64.3078 - val_loss: 59.9187
Epoch 82/5000
1126/1126 [=====] - 0s 31us/step - loss: 64.2551 - val_loss: 60.0155
Epoch 83/5000
1126/1126 [=====] - 0s 32us/step - loss: 64.2304 - val_loss: 59.8261
Epoch 84/5000
1126/1126 [=====] - 0s 34us/step - loss: 64.1259 - val_loss: 59.6807
Epoch 85/5000
1126/1126 [=====] - 0s 31us/step - loss: 64.0799 - val_loss: 59.6218
Epoch 86/5000
1126/1126 [=====] - 0s 31us/step - loss: 64.0083 - val_loss: 59.5912
Epoch 87/5000
1126/1126 [=====] - 0s 32us/step - loss: 63.9453 - val_loss: 59.4288
Epoch 88/5000
1126/1126 [=====] - 0s 32us/step - loss: 63.8881 - val_loss: 59.3784
Epoch 89/5000
1126/1126 [=====] - 0s 33us/step - loss: 63.8619 - val_loss: 59.3665
Epoch 90/5000
1126/1126 [=====] - 0s 32us/step - loss: 63.7871 - val_loss: 59.3374
Epoch 91/5000
1126/1126 [=====] - 0s 31us/step - loss: 63.7428 - val_loss: 59.2892
Epoch 92/5000
1126/1126 [=====] - 0s 31us/step - loss: 63.6868 - val_loss: 59.2336
Epoch 93/5000
1126/1126 [=====] - 0s 33us/step - loss: 63.6542 - val_loss: 59.1430
Epoch 94/5000
1126/1126 [=====] - 0s 32us/step - loss: 63.5930 - val_loss: 59.1045
Epoch 95/5000
1126/1126 [=====] - 0s 33us/step - loss: 63.5391 - val_loss: 59.0364
Epoch 96/5000
1126/1126 [=====] - 0s 33us/step - loss: 63.4836 - val_loss: 59.0380
Epoch 97/5000
1126/1126 [=====] - 0s 32us/step - loss: 63.4247 - val_loss: 58.9328
Epoch 98/5000
1126/1126 [=====] - 0s 32us/step - loss: 63.3899 - val_loss: 58.9345
Epoch 99/5000
1126/1126 [=====] - 0s 33us/step - loss: 63.3266 - val_loss: 58.9352
Epoch 100/5000
1126/1126 [=====] - 0s 33us/step - loss: 63.2902 - val_loss: 58.8842
Epoch 101/5000
1126/1126 [=====] - 0s 33us/step - loss: 63.2267 - val_loss: 58.8110
Epoch 102/5000
1126/1126 [=====] - 0s 32us/step - loss: 63.1884 - val_loss: 58.7443
Epoch 103/5000
1126/1126 [=====] - 0s 31us/step - loss: 63.1613 - val_loss: 58.6777

Epoch 104/5000
1126/1126 [=====] - 0s 33us/step - loss: 63.1248 - val_loss: 58.6067
Epoch 105/5000
1126/1126 [=====] - 0s 33us/step - loss: 63.0754 - val_loss: 58.6125
Epoch 106/5000
1126/1126 [=====] - 0s 31us/step - loss: 62.9849 - val_loss: 58.5144
Epoch 107/5000
1126/1126 [=====] - 0s 31us/step - loss: 62.9693 - val_loss: 58.4965
Epoch 108/5000
1126/1126 [=====] - 0s 33us/step - loss: 62.9038 - val_loss: 58.4965
Epoch 109/5000
1126/1126 [=====] - 0s 32us/step - loss: 62.8752 - val_loss: 58.4422
Epoch 110/5000
1126/1126 [=====] - 0s 31us/step - loss: 62.8489 - val_loss: 58.3427
Epoch 111/5000
1126/1126 [=====] - 0s 35us/step - loss: 62.7905 - val_loss: 58.3163
Epoch 112/5000
1126/1126 [=====] - 0s 32us/step - loss: 62.7438 - val_loss: 58.2777
Epoch 113/5000
1126/1126 [=====] - 0s 31us/step - loss: 62.6957 - val_loss: 58.2403
Epoch 114/5000
1126/1126 [=====] - 0s 32us/step - loss: 62.6477 - val_loss: 58.2581
Epoch 115/5000
1126/1126 [=====] - 0s 31us/step - loss: 62.6100 - val_loss: 58.2048
Epoch 116/5000
1126/1126 [=====] - 0s 34us/step - loss: 62.5785 - val_loss: 58.1011
Epoch 117/5000
1126/1126 [=====] - 0s 35us/step - loss: 62.5310 - val_loss: 58.0470
Epoch 118/5000
1126/1126 [=====] - 0s 34us/step - loss: 62.4785 - val_loss: 57.9892
Epoch 119/5000
1126/1126 [=====] - 0s 32us/step - loss: 62.4467 - val_loss: 57.9416
Epoch 120/5000
1126/1126 [=====] - 0s 33us/step - loss: 62.4295 - val_loss: 57.9375
Epoch 121/5000
1126/1126 [=====] - 0s 33us/step - loss: 62.3727 - val_loss: 57.8750
Epoch 122/5000
1126/1126 [=====] - 0s 33us/step - loss: 62.3016 - val_loss: 57.9497
Epoch 123/5000
1126/1126 [=====] - 0s 31us/step - loss: 62.2966 - val_loss: 57.8965
Epoch 124/5000
1126/1126 [=====] - 0s 33us/step - loss: 62.2729 - val_loss: 57.7611
Epoch 125/5000
1126/1126 [=====] - 0s 34us/step - loss: 62.2031 - val_loss: 57.7456
Epoch 126/5000
1126/1126 [=====] - 0s 33us/step - loss: 62.1437 - val_loss: 57.7982
Epoch 127/5000
1126/1126 [=====] - 0s 32us/step - loss: 62.1270 - val_loss: 57.6061

Epoch 128/5000
1126/1126 [=====] - 0s 32us/step - loss: 62.0508 - val_loss: 57.6119
Epoch 129/5000
1126/1126 [=====] - 0s 33us/step - loss: 62.0377 - val_loss: 57.5282
Epoch 130/5000
1126/1126 [=====] - 0s 31us/step - loss: 61.9978 - val_loss: 57.5164
Epoch 131/5000
1126/1126 [=====] - 0s 33us/step - loss: 61.9027 - val_loss: 57.4857
Epoch 132/5000
1126/1126 [=====] - 0s 33us/step - loss: 61.8570 - val_loss: 57.3728
Epoch 133/5000
1126/1126 [=====] - 0s 33us/step - loss: 61.7806 - val_loss: 57.3134
Epoch 134/5000
1126/1126 [=====] - 0s 34us/step - loss: 61.7333 - val_loss: 57.2543
Epoch 135/5000
1126/1126 [=====] - 0s 33us/step - loss: 61.7039 - val_loss: 57.3091
Epoch 136/5000
1126/1126 [=====] - 0s 37us/step - loss: 61.6639 - val_loss: 57.2368
Epoch 137/5000
1126/1126 [=====] - 0s 34us/step - loss: 61.6001 - val_loss: 57.1417
Epoch 138/5000
1126/1126 [=====] - 0s 33us/step - loss: 61.5432 - val_loss: 57.2111
Epoch 139/5000
1126/1126 [=====] - 0s 32us/step - loss: 61.5084 - val_loss: 57.1596
Epoch 140/5000
1126/1126 [=====] - 0s 32us/step - loss: 61.4667 - val_loss: 57.0236
Epoch 141/5000
1126/1126 [=====] - 0s 33us/step - loss: 61.3895 - val_loss: 56.9434
Epoch 142/5000
1126/1126 [=====] - 0s 32us/step - loss: 61.3278 - val_loss: 56.8009
Epoch 143/5000
1126/1126 [=====] - 0s 33us/step - loss: 61.3010 - val_loss: 56.7668
Epoch 144/5000
1126/1126 [=====] - 0s 32us/step - loss: 61.2385 - val_loss: 56.7241
Epoch 145/5000
1126/1126 [=====] - 0s 32us/step - loss: 61.1783 - val_loss: 56.7300
Epoch 146/5000
1126/1126 [=====] - 0s 32us/step - loss: 61.1301 - val_loss: 56.6263
Epoch 147/5000
1126/1126 [=====] - 0s 33us/step - loss: 61.0621 - val_loss: 56.5671
Epoch 148/5000
1126/1126 [=====] - 0s 32us/step - loss: 61.0411 - val_loss: 56.5724
Epoch 149/5000
1126/1126 [=====] - 0s 32us/step - loss: 60.9631 - val_loss: 56.4987
Epoch 150/5000
1126/1126 [=====] - 0s 32us/step - loss: 60.9282 - val_loss: 56.4145
Epoch 151/5000
1126/1126 [=====] - 0s 32us/step - loss: 60.8773 - val_loss: 56.3696

Epoch 152/5000
1126/1126 [=====] - 0s 33us/step - loss: 60.8430 - val_loss: 56.4268
Epoch 153/5000
1126/1126 [=====] - 0s 31us/step - loss: 60.7679 - val_loss: 56.3559
Epoch 154/5000
1126/1126 [=====] - 0s 32us/step - loss: 60.7316 - val_loss: 56.2758
Epoch 155/5000
1126/1126 [=====] - 0s 31us/step - loss: 60.6636 - val_loss: 56.2209
Epoch 156/5000
1126/1126 [=====] - 0s 32us/step - loss: 60.6378 - val_loss: 56.3374
Epoch 157/5000
1126/1126 [=====] - 0s 33us/step - loss: 60.5912 - val_loss: 56.4143
Epoch 158/5000
1126/1126 [=====] - 0s 31us/step - loss: 60.5888 - val_loss: 56.2622
Epoch 159/5000
1126/1126 [=====] - 0s 31us/step - loss: 60.4960 - val_loss: 56.1649
Epoch 160/5000
1126/1126 [=====] - 0s 32us/step - loss: 60.4323 - val_loss: 56.1592
Epoch 161/5000
1126/1126 [=====] - 0s 31us/step - loss: 60.3832 - val_loss: 56.0218
Epoch 162/5000
1126/1126 [=====] - 0s 32us/step - loss: 60.3564 - val_loss: 55.9424
Epoch 163/5000
1126/1126 [=====] - 0s 32us/step - loss: 60.2981 - val_loss: 55.8689
Epoch 164/5000
1126/1126 [=====] - 0s 36us/step - loss: 60.2647 - val_loss: 56.0085
Epoch 165/5000
1126/1126 [=====] - 0s 38us/step - loss: 60.2515 - val_loss: 55.8919
Epoch 166/5000
1126/1126 [=====] - 0s 34us/step - loss: 60.1714 - val_loss: 55.8095
Epoch 167/5000
1126/1126 [=====] - 0s 37us/step - loss: 60.1236 - val_loss: 55.7592
Epoch 168/5000
1126/1126 [=====] - 0s 36us/step - loss: 60.1005 - val_loss: 55.7273
Epoch 169/5000
1126/1126 [=====] - 0s 36us/step - loss: 60.0291 - val_loss: 55.6724
Epoch 170/5000
1126/1126 [=====] - 0s 37us/step - loss: 59.9829 - val_loss: 55.6990
Epoch 171/5000
1126/1126 [=====] - 0s 41us/step - loss: 59.9635 - val_loss: 55.6253
Epoch 172/5000
1126/1126 [=====] - 0s 46us/step - loss: 59.8936 - val_loss: 55.5279
Epoch 173/5000
1126/1126 [=====] - 0s 41us/step - loss: 59.8383 - val_loss: 55.5251
Epoch 174/5000
1126/1126 [=====] - 0s 43us/step - loss: 59.8115 - val_loss: 55.5517
Epoch 175/5000
1126/1126 [=====] - 0s 42us/step - loss: 59.7634 - val_loss: 55.4369

Epoch 176/5000
1126/1126 [=====] - 0s 37us/step - loss: 59.7117 - val_loss: 55.3511
Epoch 177/5000
1126/1126 [=====] - 0s 36us/step - loss: 59.6942 - val_loss: 55.2590
Epoch 178/5000
1126/1126 [=====] - 0s 37us/step - loss: 59.6323 - val_loss: 55.2007
Epoch 179/5000
1126/1126 [=====] - 0s 36us/step - loss: 59.6070 - val_loss: 55.2453
Epoch 180/5000
1126/1126 [=====] - 0s 35us/step - loss: 59.5459 - val_loss: 55.2091
Epoch 181/5000
1126/1126 [=====] - 0s 33us/step - loss: 59.5188 - val_loss: 55.1818
Epoch 182/5000
1126/1126 [=====] - 0s 33us/step - loss: 59.4885 - val_loss: 55.2002
Epoch 183/5000
1126/1126 [=====] - 0s 32us/step - loss: 59.4365 - val_loss: 55.1488
Epoch 184/5000
1126/1126 [=====] - 0s 30us/step - loss: 59.3788 - val_loss: 54.9819
Epoch 185/5000
1126/1126 [=====] - 0s 31us/step - loss: 59.3571 - val_loss: 54.9831
Epoch 186/5000
1126/1126 [=====] - 0s 32us/step - loss: 59.2850 - val_loss: 54.9642
Epoch 187/5000
1126/1126 [=====] - 0s 33us/step - loss: 59.2586 - val_loss: 54.8948
Epoch 188/5000
1126/1126 [=====] - 0s 33us/step - loss: 59.2068 - val_loss: 54.8124
Epoch 189/5000
1126/1126 [=====] - 0s 32us/step - loss: 59.1737 - val_loss: 54.7423
Epoch 190/5000
1126/1126 [=====] - 0s 32us/step - loss: 59.1227 - val_loss: 54.7277
Epoch 191/5000
1126/1126 [=====] - 0s 31us/step - loss: 59.1021 - val_loss: 54.6820
Epoch 192/5000
1126/1126 [=====] - 0s 33us/step - loss: 59.0757 - val_loss: 54.6150
Epoch 193/5000
1126/1126 [=====] - 0s 31us/step - loss: 59.0041 - val_loss: 54.6813
Epoch 194/5000
1126/1126 [=====] - 0s 31us/step - loss: 58.9663 - val_loss: 54.5744
Epoch 195/5000
1126/1126 [=====] - 0s 32us/step - loss: 58.9181 - val_loss: 54.5401
Epoch 196/5000
1126/1126 [=====] - 0s 33us/step - loss: 58.8793 - val_loss: 54.5071
Epoch 197/5000
1126/1126 [=====] - 0s 32us/step - loss: 58.8540 - val_loss: 54.4620
Epoch 198/5000
1126/1126 [=====] - 0s 35us/step - loss: 58.7944 - val_loss: 54.4875
Epoch 199/5000
1126/1126 [=====] - 0s 36us/step - loss: 58.7386 - val_loss: 54.4703

Epoch 200/5000
1126/1126 [=====] - 0s 37us/step - loss: 58.7188 - val_loss: 54.4254
Epoch 201/5000
1126/1126 [=====] - 0s 36us/step - loss: 58.6602 - val_loss: 54.3769
Epoch 202/5000
1126/1126 [=====] - 0s 34us/step - loss: 58.6358 - val_loss: 54.3017
Epoch 203/5000
1126/1126 [=====] - 0s 35us/step - loss: 58.6110 - val_loss: 54.2322
Epoch 204/5000
1126/1126 [=====] - 0s 35us/step - loss: 58.5352 - val_loss: 54.1830
Epoch 205/5000
1126/1126 [=====] - 0s 35us/step - loss: 58.5250 - val_loss: 54.1315
Epoch 206/5000
1126/1126 [=====] - 0s 34us/step - loss: 58.4711 - val_loss: 54.1157
Epoch 207/5000
1126/1126 [=====] - 0s 37us/step - loss: 58.4207 - val_loss: 54.0802
Epoch 208/5000
1126/1126 [=====] - 0s 36us/step - loss: 58.3787 - val_loss: 54.0548
Epoch 209/5000
1126/1126 [=====] - 0s 32us/step - loss: 58.3546 - val_loss: 53.9771
Epoch 210/5000
1126/1126 [=====] - 0s 32us/step - loss: 58.3145 - val_loss: 53.9445
Epoch 211/5000
1126/1126 [=====] - 0s 32us/step - loss: 58.2707 - val_loss: 53.9642
Epoch 212/5000
1126/1126 [=====] - 0s 33us/step - loss: 58.2314 - val_loss: 53.9314
Epoch 213/5000
1126/1126 [=====] - 0s 31us/step - loss: 58.1719 - val_loss: 53.8286
Epoch 214/5000
1126/1126 [=====] - 0s 33us/step - loss: 58.1579 - val_loss: 53.7916
Epoch 215/5000
1126/1126 [=====] - 0s 34us/step - loss: 58.1065 - val_loss: 53.7707
Epoch 216/5000
1126/1126 [=====] - 0s 35us/step - loss: 58.0733 - val_loss: 53.7312
Epoch 217/5000
1126/1126 [=====] - 0s 40us/step - loss: 58.0128 - val_loss: 53.6607
Epoch 218/5000
1126/1126 [=====] - 0s 35us/step - loss: 57.9947 - val_loss: 53.6492
Epoch 219/5000
1126/1126 [=====] - 0s 37us/step - loss: 57.9499 - val_loss: 53.6242
Epoch 220/5000
1126/1126 [=====] - 0s 35us/step - loss: 57.8854 - val_loss: 53.5407
Epoch 221/5000
1126/1126 [=====] - 0s 35us/step - loss: 57.8525 - val_loss: 53.4928
Epoch 222/5000
1126/1126 [=====] - 0s 33us/step - loss: 57.8159 - val_loss: 53.4411
Epoch 223/5000
1126/1126 [=====] - 0s 31us/step - loss: 57.7744 - val_loss: 53.4215

Epoch 224/5000
1126/1126 [=====] - 0s 33us/step - loss: 57.7301 - val_loss: 53.4249
Epoch 225/5000
1126/1126 [=====] - 0s 33us/step - loss: 57.6924 - val_loss: 53.3718
Epoch 226/5000
1126/1126 [=====] - 0s 35us/step - loss: 57.6364 - val_loss: 53.2719
Epoch 227/5000
1126/1126 [=====] - 0s 33us/step - loss: 57.6022 - val_loss: 53.2587
Epoch 228/5000
1126/1126 [=====] - 0s 37us/step - loss: 57.5648 - val_loss: 53.1285
Epoch 229/5000
1126/1126 [=====] - 0s 35us/step - loss: 57.5330 - val_loss: 53.1472
Epoch 230/5000
1126/1126 [=====] - 0s 35us/step - loss: 57.5085 - val_loss: 53.1080
Epoch 231/5000
1126/1126 [=====] - 0s 34us/step - loss: 57.4474 - val_loss: 53.1170
Epoch 232/5000
1126/1126 [=====] - 0s 31us/step - loss: 57.4102 - val_loss: 53.1529
Epoch 233/5000
1126/1126 [=====] - 0s 31us/step - loss: 57.3859 - val_loss: 53.0218
Epoch 234/5000
1126/1126 [=====] - 0s 32us/step - loss: 57.3198 - val_loss: 52.9837
Epoch 235/5000
1126/1126 [=====] - 0s 32us/step - loss: 57.2859 - val_loss: 52.9970
Epoch 236/5000
1126/1126 [=====] - 0s 31us/step - loss: 57.2465 - val_loss: 52.9413
Epoch 237/5000
1126/1126 [=====] - 0s 31us/step - loss: 57.2140 - val_loss: 52.8892
Epoch 238/5000
1126/1126 [=====] - 0s 31us/step - loss: 57.1659 - val_loss: 52.8635
Epoch 239/5000
1126/1126 [=====] - 0s 35us/step - loss: 57.1428 - val_loss: 52.9280
Epoch 240/5000
1126/1126 [=====] - 0s 39us/step - loss: 57.0702 - val_loss: 52.9368
Epoch 241/5000
1126/1126 [=====] - 0s 37us/step - loss: 57.0374 - val_loss: 52.8275
Epoch 242/5000
1126/1126 [=====] - 0s 37us/step - loss: 57.0131 - val_loss: 52.7700
Epoch 243/5000
1126/1126 [=====] - 0s 35us/step - loss: 56.9689 - val_loss: 52.7107
Epoch 244/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.9409 - val_loss: 52.7413
Epoch 245/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.8785 - val_loss: 52.5983
Epoch 246/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.8360 - val_loss: 52.4955
Epoch 247/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.8009 - val_loss: 52.4619

Epoch 248/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.7713 - val_loss: 52.3955
Epoch 249/5000
1126/1126 [=====] - 0s 31us/step - loss: 56.7313 - val_loss: 52.4676
Epoch 250/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.6915 - val_loss: 52.3999
Epoch 251/5000
1126/1126 [=====] - 0s 34us/step - loss: 56.6593 - val_loss: 52.3746
Epoch 252/5000
1126/1126 [=====] - 0s 35us/step - loss: 56.6142 - val_loss: 52.2907
Epoch 253/5000
1126/1126 [=====] - 0s 37us/step - loss: 56.5662 - val_loss: 52.2838
Epoch 254/5000
1126/1126 [=====] - 0s 35us/step - loss: 56.5213 - val_loss: 52.2631
Epoch 255/5000
1126/1126 [=====] - 0s 35us/step - loss: 56.5066 - val_loss: 52.2730
Epoch 256/5000
1126/1126 [=====] - 0s 34us/step - loss: 56.4739 - val_loss: 52.2490
Epoch 257/5000
1126/1126 [=====] - 0s 33us/step - loss: 56.4209 - val_loss: 52.1790
Epoch 258/5000
1126/1126 [=====] - 0s 35us/step - loss: 56.3841 - val_loss: 52.1285
Epoch 259/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.3405 - val_loss: 52.1920
Epoch 260/5000
1126/1126 [=====] - 0s 31us/step - loss: 56.3062 - val_loss: 52.1461
Epoch 261/5000
1126/1126 [=====] - 0s 31us/step - loss: 56.2630 - val_loss: 52.0479
Epoch 262/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.2154 - val_loss: 51.9818
Epoch 263/5000
1126/1126 [=====] - 0s 35us/step - loss: 56.1820 - val_loss: 51.9963
Epoch 264/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.1482 - val_loss: 51.9937
Epoch 265/5000
1126/1126 [=====] - 0s 35us/step - loss: 56.1158 - val_loss: 51.9139
Epoch 266/5000
1126/1126 [=====] - 0s 31us/step - loss: 56.0622 - val_loss: 51.8351
Epoch 267/5000
1126/1126 [=====] - 0s 32us/step - loss: 56.0264 - val_loss: 51.7550
Epoch 268/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.9934 - val_loss: 51.8378
Epoch 269/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.9425 - val_loss: 51.6862
Epoch 270/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.9137 - val_loss: 51.6780
Epoch 271/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.8756 - val_loss: 51.6528

Epoch 272/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.8313 - val_loss: 51.7554
Epoch 273/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.7958 - val_loss: 51.6276
Epoch 274/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.7714 - val_loss: 51.5969
Epoch 275/5000
1126/1126 [=====] - 0s 35us/step - loss: 55.7274 - val_loss: 51.5963
Epoch 276/5000
1126/1126 [=====] - 0s 36us/step - loss: 55.7055 - val_loss: 51.5446
Epoch 277/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.6510 - val_loss: 51.5118
Epoch 278/5000
1126/1126 [=====] - 0s 34us/step - loss: 55.6169 - val_loss: 51.5591
Epoch 279/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.5907 - val_loss: 51.4904
Epoch 280/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.5358 - val_loss: 51.4409
Epoch 281/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.5220 - val_loss: 51.3883
Epoch 282/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.4648 - val_loss: 51.3700
Epoch 283/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.4360 - val_loss: 51.2999
Epoch 284/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.3845 - val_loss: 51.2422
Epoch 285/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.3648 - val_loss: 51.1809
Epoch 286/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.3120 - val_loss: 51.1692
Epoch 287/5000
1126/1126 [=====] - 0s 31us/step - loss: 55.2930 - val_loss: 51.1333
Epoch 288/5000
1126/1126 [=====] - 0s 33us/step - loss: 55.2539 - val_loss: 51.0747
Epoch 289/5000
1126/1126 [=====] - 0s 35us/step - loss: 55.2136 - val_loss: 51.0524
Epoch 290/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.1979 - val_loss: 50.9677
Epoch 291/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.1288 - val_loss: 50.9390
Epoch 292/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.0943 - val_loss: 50.9284
Epoch 293/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.0702 - val_loss: 50.9006
Epoch 294/5000
1126/1126 [=====] - 0s 32us/step - loss: 55.0214 - val_loss: 50.8129
Epoch 295/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.9783 - val_loss: 50.8351

Epoch 296/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.9535 - val_loss: 50.7647
Epoch 297/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.9122 - val_loss: 50.7258
Epoch 298/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.8813 - val_loss: 50.8472
Epoch 299/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.8422 - val_loss: 50.7988
Epoch 300/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.7893 - val_loss: 50.6839
Epoch 301/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.7586 - val_loss: 50.6413
Epoch 302/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.7261 - val_loss: 50.6217
Epoch 303/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.6836 - val_loss: 50.5388
Epoch 304/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.6553 - val_loss: 50.5238
Epoch 305/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.6137 - val_loss: 50.5770
Epoch 306/5000
1126/1126 [=====] - 0s 34us/step - loss: 54.5636 - val_loss: 50.5204
Epoch 307/5000
1126/1126 [=====] - 0s 34us/step - loss: 54.5529 - val_loss: 50.5731
Epoch 308/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.4979 - val_loss: 50.4289
Epoch 309/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.4688 - val_loss: 50.4007
Epoch 310/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.4231 - val_loss: 50.3757
Epoch 311/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.3916 - val_loss: 50.3944
Epoch 312/5000
1126/1126 [=====] - 0s 34us/step - loss: 54.3695 - val_loss: 50.3311
Epoch 313/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.3304 - val_loss: 50.3154
Epoch 314/5000
1126/1126 [=====] - 0s 35us/step - loss: 54.3144 - val_loss: 50.2406
Epoch 315/5000
1126/1126 [=====] - 0s 36us/step - loss: 54.2664 - val_loss: 50.1873
Epoch 316/5000
1126/1126 [=====] - 0s 33us/step - loss: 54.2080 - val_loss: 50.2693
Epoch 317/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.1859 - val_loss: 50.2606
Epoch 318/5000
1126/1126 [=====] - 0s 34us/step - loss: 54.1321 - val_loss: 50.1582
Epoch 319/5000
1126/1126 [=====] - 0s 31us/step - loss: 54.1066 - val_loss: 50.1423

Epoch 320/5000
1126/1126 [=====] - 0s 32us/step - loss: 54.0797 - val_loss: 50.0392
Epoch 321/5000
1126/1126 [=====] - 0s 36us/step - loss: 54.0471 - val_loss: 49.9879
Epoch 322/5000
1126/1126 [=====] - 0s 35us/step - loss: 54.0057 - val_loss: 49.9579
Epoch 323/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.9589 - val_loss: 49.9212
Epoch 324/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.9258 - val_loss: 49.9506
Epoch 325/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.8817 - val_loss: 49.8863
Epoch 326/5000
1126/1126 [=====] - 0s 34us/step - loss: 53.8630 - val_loss: 49.8806
Epoch 327/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.8181 - val_loss: 49.8687
Epoch 328/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.7810 - val_loss: 49.8783
Epoch 329/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.7524 - val_loss: 49.8101
Epoch 330/5000
1126/1126 [=====] - 0s 31us/step - loss: 53.7267 - val_loss: 49.7968
Epoch 331/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.6711 - val_loss: 49.7411
Epoch 332/5000
1126/1126 [=====] - 0s 36us/step - loss: 53.6443 - val_loss: 49.7690
Epoch 333/5000
1126/1126 [=====] - 0s 38us/step - loss: 53.6176 - val_loss: 49.6747
Epoch 334/5000
1126/1126 [=====] - 0s 37us/step - loss: 53.5825 - val_loss: 49.7136
Epoch 335/5000
1126/1126 [=====] - 0s 37us/step - loss: 53.5449 - val_loss: 49.6700
Epoch 336/5000
1126/1126 [=====] - 0s 36us/step - loss: 53.5137 - val_loss: 49.6376
Epoch 337/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.4549 - val_loss: 49.6278
Epoch 338/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.4329 - val_loss: 49.5865
Epoch 339/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.4081 - val_loss: 49.5482
Epoch 340/5000
1126/1126 [=====] - 0s 33us/step - loss: 53.3637 - val_loss: 49.5641
Epoch 341/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.3263 - val_loss: 49.4846
Epoch 342/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.3056 - val_loss: 49.4516
Epoch 343/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.2493 - val_loss: 49.4016

Epoch 344/5000
1126/1126 [=====] - 0s 37us/step - loss: 53.2202 - val_loss: 49.3871
Epoch 345/5000
1126/1126 [=====] - 0s 38us/step - loss: 53.1926 - val_loss: 49.3597
Epoch 346/5000
1126/1126 [=====] - 0s 45us/step - loss: 53.1499 - val_loss: 49.4384
Epoch 347/5000
1126/1126 [=====] - 0s 38us/step - loss: 53.1467 - val_loss: 49.3698
Epoch 348/5000
1126/1126 [=====] - 0s 35us/step - loss: 53.0837 - val_loss: 49.3156
Epoch 349/5000
1126/1126 [=====] - 0s 35us/step - loss: 53.0599 - val_loss: 49.3152
Epoch 350/5000
1126/1126 [=====] - 0s 32us/step - loss: 53.0407 - val_loss: 49.2300
Epoch 351/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.9867 - val_loss: 49.2211
Epoch 352/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.9510 - val_loss: 49.2602
Epoch 353/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.9252 - val_loss: 49.2210
Epoch 354/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.8880 - val_loss: 49.1742
Epoch 355/5000
1126/1126 [=====] - 0s 34us/step - loss: 52.8531 - val_loss: 49.1197
Epoch 356/5000
1126/1126 [=====] - 0s 33us/step - loss: 52.8031 - val_loss: 49.0397
Epoch 357/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.7807 - val_loss: 49.0050
Epoch 358/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.7715 - val_loss: 48.9374
Epoch 359/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.7139 - val_loss: 48.9124
Epoch 360/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.6862 - val_loss: 48.9644
Epoch 361/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.6389 - val_loss: 48.8850
Epoch 362/5000
1126/1126 [=====] - 0s 37us/step - loss: 52.6129 - val_loss: 48.8606
Epoch 363/5000
1126/1126 [=====] - 0s 37us/step - loss: 52.5895 - val_loss: 48.8890
Epoch 364/5000
1126/1126 [=====] - 0s 37us/step - loss: 52.5562 - val_loss: 48.8812
Epoch 365/5000
1126/1126 [=====] - 0s 36us/step - loss: 52.4946 - val_loss: 48.8119
Epoch 366/5000
1126/1126 [=====] - 0s 34us/step - loss: 52.4714 - val_loss: 48.7925
Epoch 367/5000
1126/1126 [=====] - 0s 35us/step - loss: 52.4345 - val_loss: 48.7575

Epoch 368/5000
1126/1126 [=====] - 0s 33us/step - loss: 52.4076 - val_loss: 48.7373
Epoch 369/5000
1126/1126 [=====] - 0s 34us/step - loss: 52.3741 - val_loss: 48.8059
Epoch 370/5000
1126/1126 [=====] - 0s 36us/step - loss: 52.3501 - val_loss: 48.7260
Epoch 371/5000
1126/1126 [=====] - 0s 44us/step - loss: 52.3175 - val_loss: 48.6970
Epoch 372/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.2932 - val_loss: 48.6351
Epoch 373/5000
1126/1126 [=====] - 0s 30us/step - loss: 52.2296 - val_loss: 48.5837
Epoch 374/5000
1126/1126 [=====] - 0s 34us/step - loss: 52.2164 - val_loss: 48.5353
Epoch 375/5000
1126/1126 [=====] - 0s 36us/step - loss: 52.1905 - val_loss: 48.4679
Epoch 376/5000
1126/1126 [=====] - 0s 34us/step - loss: 52.1676 - val_loss: 48.5221
Epoch 377/5000
1126/1126 [=====] - 0s 36us/step - loss: 52.1160 - val_loss: 48.5035
Epoch 378/5000
1126/1126 [=====] - 0s 37us/step - loss: 52.1025 - val_loss: 48.4723
Epoch 379/5000
1126/1126 [=====] - 0s 31us/step - loss: 52.0494 - val_loss: 48.4274
Epoch 380/5000
1126/1126 [=====] - 0s 32us/step - loss: 52.0182 - val_loss: 48.3803
Epoch 381/5000
1126/1126 [=====] - 0s 33us/step - loss: 51.9879 - val_loss: 48.3919
Epoch 382/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.9697 - val_loss: 48.3563
Epoch 383/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.9426 - val_loss: 48.2957
Epoch 384/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.9003 - val_loss: 48.2588
Epoch 385/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.8745 - val_loss: 48.2623
Epoch 386/5000
1126/1126 [=====] - 0s 33us/step - loss: 51.8381 - val_loss: 48.2761
Epoch 387/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.7938 - val_loss: 48.2095
Epoch 388/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.7779 - val_loss: 48.1854
Epoch 389/5000
1126/1126 [=====] - 0s 33us/step - loss: 51.7354 - val_loss: 48.1732
Epoch 390/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.7155 - val_loss: 48.1440
Epoch 391/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.6739 - val_loss: 48.1514

Epoch 392/5000
1126/1126 [=====] - 0s 32us/step - loss: 51.6532 - val_loss: 48.1518
Epoch 393/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.6145 - val_loss: 48.0601
Epoch 394/5000
1126/1126 [=====] - 0s 38us/step - loss: 51.5903 - val_loss: 48.1582
Epoch 395/5000
1126/1126 [=====] - 0s 33us/step - loss: 51.5516 - val_loss: 48.1155
Epoch 396/5000
1126/1126 [=====] - 0s 33us/step - loss: 51.5252 - val_loss: 48.0859
Epoch 397/5000
1126/1126 [=====] - 0s 35us/step - loss: 51.4794 - val_loss: 48.1210
Epoch 398/5000
1126/1126 [=====] - 0s 33us/step - loss: 51.4709 - val_loss: 47.9990
Epoch 399/5000
1126/1126 [=====] - 0s 35us/step - loss: 51.4316 - val_loss: 47.9781
Epoch 400/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.3997 - val_loss: 47.9119
Epoch 401/5000
1126/1126 [=====] - 0s 35us/step - loss: 51.3634 - val_loss: 47.9035
Epoch 402/5000
1126/1126 [=====] - 0s 36us/step - loss: 51.3339 - val_loss: 47.8364
Epoch 403/5000
1126/1126 [=====] - 0s 38us/step - loss: 51.3137 - val_loss: 47.8220
Epoch 404/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.2705 - val_loss: 47.8122
Epoch 405/5000
1126/1126 [=====] - 0s 33us/step - loss: 51.2637 - val_loss: 47.7980
Epoch 406/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.2148 - val_loss: 47.7748
Epoch 407/5000
1126/1126 [=====] - 0s 36us/step - loss: 51.1866 - val_loss: 47.7756
Epoch 408/5000
1126/1126 [=====] - 0s 36us/step - loss: 51.1446 - val_loss: 47.7517
Epoch 409/5000
1126/1126 [=====] - 0s 38us/step - loss: 51.1318 - val_loss: 47.6849
Epoch 410/5000
1126/1126 [=====] - 0s 35us/step - loss: 51.0995 - val_loss: 47.6448
Epoch 411/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.0633 - val_loss: 47.6176
Epoch 412/5000
1126/1126 [=====] - 0s 34us/step - loss: 51.0362 - val_loss: 47.6534
Epoch 413/5000
1126/1126 [=====] - 0s 31us/step - loss: 51.0114 - val_loss: 47.7122
Epoch 414/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.9733 - val_loss: 47.6592
Epoch 415/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.9441 - val_loss: 47.6334

Epoch 416/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.9161 - val_loss: 47.5862
Epoch 417/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.8830 - val_loss: 47.5883
Epoch 418/5000
1126/1126 [=====] - 0s 36us/step - loss: 50.8688 - val_loss: 47.5425
Epoch 419/5000
1126/1126 [=====] - 0s 36us/step - loss: 50.8357 - val_loss: 47.5741
Epoch 420/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.7969 - val_loss: 47.5224
Epoch 421/5000
1126/1126 [=====] - 0s 35us/step - loss: 50.7673 - val_loss: 47.5084
Epoch 422/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.7384 - val_loss: 47.4761
Epoch 423/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.7225 - val_loss: 47.4578
Epoch 424/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.6925 - val_loss: 47.4171
Epoch 425/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.6668 - val_loss: 47.4301
Epoch 426/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.6414 - val_loss: 47.4314
Epoch 427/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.6142 - val_loss: 47.3955
Epoch 428/5000
1126/1126 [=====] - 0s 38us/step - loss: 50.5894 - val_loss: 47.3256
Epoch 429/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.5449 - val_loss: 47.2921
Epoch 430/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.5158 - val_loss: 47.2492
Epoch 431/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.5099 - val_loss: 47.2174
Epoch 432/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.4712 - val_loss: 47.2147
Epoch 433/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.4535 - val_loss: 47.1850
Epoch 434/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.4164 - val_loss: 47.1729
Epoch 435/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.3935 - val_loss: 47.1191
Epoch 436/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.3634 - val_loss: 47.0881
Epoch 437/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.3484 - val_loss: 47.1539
Epoch 438/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.2962 - val_loss: 47.1466
Epoch 439/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.2849 - val_loss: 47.1183

Epoch 440/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.2619 - val_loss: 47.0719
Epoch 441/5000
1126/1126 [=====] - 0s 33us/step - loss: 50.2211 - val_loss: 47.0519
Epoch 442/5000
1126/1126 [=====] - 0s 34us/step - loss: 50.1944 - val_loss: 47.0157
Epoch 443/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.1759 - val_loss: 47.0091
Epoch 444/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.1555 - val_loss: 47.0262
Epoch 445/5000
1126/1126 [=====] - 0s 36us/step - loss: 50.1196 - val_loss: 46.9545
Epoch 446/5000
1126/1126 [=====] - 0s 36us/step - loss: 50.0788 - val_loss: 46.9843
Epoch 447/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.0473 - val_loss: 46.8814
Epoch 448/5000
1126/1126 [=====] - 0s 32us/step - loss: 50.0460 - val_loss: 47.0102
Epoch 449/5000
1126/1126 [=====] - 0s 31us/step - loss: 50.0104 - val_loss: 46.9416
Epoch 450/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.9863 - val_loss: 46.9118
Epoch 451/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.9476 - val_loss: 46.9341
Epoch 452/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9404 - val_loss: 46.8697
Epoch 453/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.9112 - val_loss: 46.8587
Epoch 454/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.8684 - val_loss: 46.8556
Epoch 455/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.8358 - val_loss: 46.8448
Epoch 456/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.8242 - val_loss: 46.8059
Epoch 457/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.7847 - val_loss: 46.7566
Epoch 458/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.7707 - val_loss: 46.7649
Epoch 459/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.7401 - val_loss: 46.7393
Epoch 460/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.7105 - val_loss: 46.7039
Epoch 461/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.6876 - val_loss: 46.6939
Epoch 462/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.6588 - val_loss: 46.7223
Epoch 463/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6288 - val_loss: 46.6697

Epoch 464/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.6135 - val_loss: 46.6441
Epoch 465/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.5854 - val_loss: 46.6605
Epoch 466/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.5500 - val_loss: 46.5961
Epoch 467/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.5588 - val_loss: 46.5611
Epoch 468/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.5204 - val_loss: 46.5644
Epoch 469/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.4731 - val_loss: 46.5565
Epoch 470/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.4550 - val_loss: 46.5274
Epoch 471/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.4385 - val_loss: 46.5684
Epoch 472/5000
1126/1126 [=====] - 0s 35us/step - loss: 49.4232 - val_loss: 46.5326
Epoch 473/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.3967 - val_loss: 46.5469
Epoch 474/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.3729 - val_loss: 46.4779
Epoch 475/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.3373 - val_loss: 46.4753
Epoch 476/5000
1126/1126 [=====] - 0s 31us/step - loss: 49.2937 - val_loss: 46.3763
Epoch 477/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2843 - val_loss: 46.3713
Epoch 478/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.2530 - val_loss: 46.3083
Epoch 479/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.2213 - val_loss: 46.3628
Epoch 480/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.2208 - val_loss: 46.3235
Epoch 481/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.1797 - val_loss: 46.3491
Epoch 482/5000
1126/1126 [=====] - 0s 36us/step - loss: 49.1643 - val_loss: 46.2984
Epoch 483/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.1330 - val_loss: 46.2944
Epoch 484/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.1185 - val_loss: 46.2520
Epoch 485/5000
1126/1126 [=====] - 0s 32us/step - loss: 49.0849 - val_loss: 46.2223
Epoch 486/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.0398 - val_loss: 46.1738
Epoch 487/5000
1126/1126 [=====] - 0s 33us/step - loss: 49.0265 - val_loss: 46.1160

Epoch 488/5000
1126/1126 [=====] - 0s 34us/step - loss: 49.0046 - val_loss: 46.1258
Epoch 489/5000
1126/1126 [=====] - 0s 37us/step - loss: 48.9843 - val_loss: 46.0420
Epoch 490/5000
1126/1126 [=====] - 0s 40us/step - loss: 48.9571 - val_loss: 46.0408
Epoch 491/5000
1126/1126 [=====] - 0s 40us/step - loss: 48.9352 - val_loss: 46.0315
Epoch 492/5000
1126/1126 [=====] - 0s 37us/step - loss: 48.9006 - val_loss: 46.0482
Epoch 493/5000
1126/1126 [=====] - 0s 36us/step - loss: 48.8949 - val_loss: 46.0630
Epoch 494/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.8697 - val_loss: 46.0418
Epoch 495/5000
1126/1126 [=====] - 0s 38us/step - loss: 48.8390 - val_loss: 46.0283
Epoch 496/5000
1126/1126 [=====] - 0s 35us/step - loss: 48.8194 - val_loss: 46.0037
Epoch 497/5000
1126/1126 [=====] - 0s 38us/step - loss: 48.7950 - val_loss: 46.0269
Epoch 498/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.7790 - val_loss: 45.9628
Epoch 499/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.7385 - val_loss: 45.9438
Epoch 500/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.7039 - val_loss: 45.9423
Epoch 501/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.7035 - val_loss: 45.9184
Epoch 502/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.6765 - val_loss: 45.9509
Epoch 503/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.6527 - val_loss: 45.9525
Epoch 504/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.6124 - val_loss: 45.9188
Epoch 505/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.5983 - val_loss: 45.9618
Epoch 506/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.5814 - val_loss: 45.8191
Epoch 507/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.5500 - val_loss: 45.8507
Epoch 508/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.5353 - val_loss: 45.8379
Epoch 509/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.5149 - val_loss: 45.8264
Epoch 510/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.4795 - val_loss: 45.8208
Epoch 511/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.4646 - val_loss: 45.8355

Epoch 512/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.4550 - val_loss: 45.8344
Epoch 513/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.4211 - val_loss: 45.7846
Epoch 514/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.3953 - val_loss: 45.7591
Epoch 515/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.3757 - val_loss: 45.7102
Epoch 516/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.3551 - val_loss: 45.6818
Epoch 517/5000
1126/1126 [=====] - 0s 35us/step - loss: 48.3398 - val_loss: 45.6689
Epoch 518/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.2868 - val_loss: 45.6433
Epoch 519/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.2704 - val_loss: 45.6052
Epoch 520/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.2687 - val_loss: 45.6518
Epoch 521/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.2346 - val_loss: 45.6813
Epoch 522/5000
1126/1126 [=====] - 0s 36us/step - loss: 48.2236 - val_loss: 45.6312
Epoch 523/5000
1126/1126 [=====] - 0s 37us/step - loss: 48.1977 - val_loss: 45.6203
Epoch 524/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.1835 - val_loss: 45.5408
Epoch 525/5000
1126/1126 [=====] - 0s 33us/step - loss: 48.1494 - val_loss: 45.5156
Epoch 526/5000
1126/1126 [=====] - 0s 34us/step - loss: 48.1310 - val_loss: 45.5053
Epoch 527/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.1051 - val_loss: 45.5490
Epoch 528/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.0867 - val_loss: 45.4937
Epoch 529/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.0531 - val_loss: 45.5473
Epoch 530/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.0364 - val_loss: 45.5135
Epoch 531/5000
1126/1126 [=====] - 0s 31us/step - loss: 48.0140 - val_loss: 45.4620
Epoch 532/5000
1126/1126 [=====] - 0s 32us/step - loss: 48.0063 - val_loss: 45.4106
Epoch 533/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.9828 - val_loss: 45.3815
Epoch 534/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.9502 - val_loss: 45.3441
Epoch 535/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.9432 - val_loss: 45.3290

Epoch 536/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.9178 - val_loss: 45.3100
Epoch 537/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.9071 - val_loss: 45.3040
Epoch 538/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.8704 - val_loss: 45.2456
Epoch 539/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.8568 - val_loss: 45.2642
Epoch 540/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.8466 - val_loss: 45.2857
Epoch 541/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.8170 - val_loss: 45.2736
Epoch 542/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.7835 - val_loss: 45.2748
Epoch 543/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.7693 - val_loss: 45.2621
Epoch 544/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.7554 - val_loss: 45.2648
Epoch 545/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.7244 - val_loss: 45.2280
Epoch 546/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.6969 - val_loss: 45.2678
Epoch 547/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.6914 - val_loss: 45.2233
Epoch 548/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6846 - val_loss: 45.1561
Epoch 549/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.6461 - val_loss: 45.1457
Epoch 550/5000
1126/1126 [=====] - 0s 35us/step - loss: 47.6468 - val_loss: 45.1604
Epoch 551/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.6208 - val_loss: 45.1981
Epoch 552/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.5884 - val_loss: 45.1443
Epoch 553/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.5626 - val_loss: 45.0764
Epoch 554/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.5422 - val_loss: 45.0655
Epoch 555/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.5223 - val_loss: 45.0683
Epoch 556/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.5075 - val_loss: 45.0694
Epoch 557/5000
1126/1126 [=====] - 0s 35us/step - loss: 47.4936 - val_loss: 45.0024
Epoch 558/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.4718 - val_loss: 45.0603
Epoch 559/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.4601 - val_loss: 44.9633

Epoch 560/5000
1126/1126 [=====] - 0s 35us/step - loss: 47.4340 - val_loss: 44.9831
Epoch 561/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.4165 - val_loss: 44.9554
Epoch 562/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.4062 - val_loss: 44.9526
Epoch 563/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.3722 - val_loss: 44.9338
Epoch 564/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.3497 - val_loss: 44.8961
Epoch 565/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.3313 - val_loss: 44.9187
Epoch 566/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.3225 - val_loss: 44.9274
Epoch 567/5000
1126/1126 [=====] - 0s 35us/step - loss: 47.3094 - val_loss: 44.9178
Epoch 568/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.3007 - val_loss: 44.8539
Epoch 569/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.2705 - val_loss: 44.8094
Epoch 570/5000
1126/1126 [=====] - 0s 35us/step - loss: 47.2507 - val_loss: 44.7522
Epoch 571/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.2322 - val_loss: 44.7985
Epoch 572/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.2033 - val_loss: 44.8116
Epoch 573/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.1927 - val_loss: 44.8401
Epoch 574/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.1791 - val_loss: 44.7910
Epoch 575/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.1569 - val_loss: 44.8014
Epoch 576/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.1301 - val_loss: 44.7550
Epoch 577/5000
1126/1126 [=====] - 0s 32us/step - loss: 47.1172 - val_loss: 44.7317
Epoch 578/5000
1126/1126 [=====] - 0s 35us/step - loss: 47.0977 - val_loss: 44.7528
Epoch 579/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.0886 - val_loss: 44.7174
Epoch 580/5000
1126/1126 [=====] - 0s 43us/step - loss: 47.0680 - val_loss: 44.6863
Epoch 581/5000
1126/1126 [=====] - 0s 33us/step - loss: 47.0471 - val_loss: 44.6358
Epoch 582/5000
1126/1126 [=====] - 0s 34us/step - loss: 47.0362 - val_loss: 44.6550
Epoch 583/5000
1126/1126 [=====] - 0s 31us/step - loss: 47.0131 - val_loss: 44.6475

Epoch 584/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.9903 - val_loss: 44.6365
Epoch 585/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.9715 - val_loss: 44.6526
Epoch 586/5000
1126/1126 [=====] - 0s 34us/step - loss: 46.9701 - val_loss: 44.6679
Epoch 587/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.9401 - val_loss: 44.6424
Epoch 588/5000
1126/1126 [=====] - 0s 35us/step - loss: 46.9286 - val_loss: 44.5435
Epoch 589/5000
1126/1126 [=====] - 0s 31us/step - loss: 46.8964 - val_loss: 44.5166
Epoch 590/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.8820 - val_loss: 44.5644
Epoch 591/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.8796 - val_loss: 44.5460
Epoch 592/5000
1126/1126 [=====] - 0s 34us/step - loss: 46.8423 - val_loss: 44.5057
Epoch 593/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.8276 - val_loss: 44.4888
Epoch 594/5000
1126/1126 [=====] - 0s 34us/step - loss: 46.8032 - val_loss: 44.5056
Epoch 595/5000
1126/1126 [=====] - 0s 34us/step - loss: 46.7859 - val_loss: 44.4599
Epoch 596/5000
1126/1126 [=====] - 0s 34us/step - loss: 46.7783 - val_loss: 44.4633
Epoch 597/5000
1126/1126 [=====] - 0s 34us/step - loss: 46.7680 - val_loss: 44.4133
Epoch 598/5000
1126/1126 [=====] - 0s 34us/step - loss: 46.7399 - val_loss: 44.4430
Epoch 599/5000
1126/1126 [=====] - 0s 35us/step - loss: 46.7246 - val_loss: 44.4360
Epoch 600/5000
1126/1126 [=====] - 0s 35us/step - loss: 46.7073 - val_loss: 44.4485
Epoch 601/5000
1126/1126 [=====] - 0s 37us/step - loss: 46.6887 - val_loss: 44.4417
Epoch 602/5000
1126/1126 [=====] - 0s 34us/step - loss: 46.6757 - val_loss: 44.4596
Epoch 603/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.6524 - val_loss: 44.4059
Epoch 604/5000
1126/1126 [=====] - 0s 34us/step - loss: 46.6377 - val_loss: 44.3366
Epoch 605/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.6247 - val_loss: 44.3537
Epoch 606/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.5994 - val_loss: 44.3182
Epoch 607/5000
1126/1126 [=====] - 0s 36us/step - loss: 46.5904 - val_loss: 44.4019

Epoch 608/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.5829 - val_loss: 44.4054
Epoch 609/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.5631 - val_loss: 44.3476
Epoch 610/5000
1126/1126 [=====] - 0s 34us/step - loss: 46.5378 - val_loss: 44.3206
Epoch 611/5000
1126/1126 [=====] - 0s 31us/step - loss: 46.5200 - val_loss: 44.3281
Epoch 612/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.5075 - val_loss: 44.2777
Epoch 613/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.4807 - val_loss: 44.2563
Epoch 614/5000
1126/1126 [=====] - 0s 34us/step - loss: 46.4804 - val_loss: 44.2212
Epoch 615/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.4475 - val_loss: 44.2325
Epoch 616/5000
1126/1126 [=====] - 0s 34us/step - loss: 46.4241 - val_loss: 44.2287
Epoch 617/5000
1126/1126 [=====] - 0s 31us/step - loss: 46.4221 - val_loss: 44.2019
Epoch 618/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.4014 - val_loss: 44.1759
Epoch 619/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.4006 - val_loss: 44.1562
Epoch 620/5000
1126/1126 [=====] - 0s 31us/step - loss: 46.3771 - val_loss: 44.1682
Epoch 621/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.3554 - val_loss: 44.1741
Epoch 622/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.3416 - val_loss: 44.2468
Epoch 623/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.3264 - val_loss: 44.2027
Epoch 624/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.3072 - val_loss: 44.1801
Epoch 625/5000
1126/1126 [=====] - 0s 34us/step - loss: 46.2940 - val_loss: 44.1358
Epoch 626/5000
1126/1126 [=====] - 0s 35us/step - loss: 46.2749 - val_loss: 44.1877
Epoch 627/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.2620 - val_loss: 44.1353
Epoch 628/5000
1126/1126 [=====] - 0s 35us/step - loss: 46.2424 - val_loss: 44.1017
Epoch 629/5000
1126/1126 [=====] - 0s 31us/step - loss: 46.2319 - val_loss: 44.0688
Epoch 630/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.2208 - val_loss: 44.0849
Epoch 631/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.1919 - val_loss: 44.0569

Epoch 632/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.1781 - val_loss: 44.0399
Epoch 633/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.1593 - val_loss: 43.9846
Epoch 634/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.1526 - val_loss: 44.0035
Epoch 635/5000
1126/1126 [=====] - 0s 34us/step - loss: 46.1329 - val_loss: 43.9959
Epoch 636/5000
1126/1126 [=====] - 0s 34us/step - loss: 46.1095 - val_loss: 43.9844
Epoch 637/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.1086 - val_loss: 43.9550
Epoch 638/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.0897 - val_loss: 43.9711
Epoch 639/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.0817 - val_loss: 43.9609
Epoch 640/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.0624 - val_loss: 44.0254
Epoch 641/5000
1126/1126 [=====] - 0s 32us/step - loss: 46.0417 - val_loss: 43.9650
Epoch 642/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.0317 - val_loss: 43.9699
Epoch 643/5000
1126/1126 [=====] - 0s 33us/step - loss: 46.0165 - val_loss: 43.9081
Epoch 644/5000
1126/1126 [=====] - 0s 31us/step - loss: 45.9988 - val_loss: 43.8748
Epoch 645/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.9786 - val_loss: 43.8541
Epoch 646/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.9566 - val_loss: 43.8578
Epoch 647/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.9436 - val_loss: 43.8483
Epoch 648/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.9352 - val_loss: 43.8393
Epoch 649/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.9149 - val_loss: 43.8457
Epoch 650/5000
1126/1126 [=====] - 0s 31us/step - loss: 45.9080 - val_loss: 43.8841
Epoch 651/5000
1126/1126 [=====] - 0s 34us/step - loss: 45.8979 - val_loss: 43.8383
Epoch 652/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.8735 - val_loss: 43.8358
Epoch 653/5000
1126/1126 [=====] - 0s 31us/step - loss: 45.8544 - val_loss: 43.8519
Epoch 654/5000
1126/1126 [=====] - 0s 39us/step - loss: 45.8567 - val_loss: 43.8266
Epoch 655/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.8248 - val_loss: 43.7982

Epoch 656/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.8001 - val_loss: 43.7644
Epoch 657/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.8089 - val_loss: 43.7823
Epoch 658/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.7807 - val_loss: 43.7529
Epoch 659/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.7698 - val_loss: 43.7326
Epoch 660/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.7643 - val_loss: 43.7047
Epoch 661/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.7451 - val_loss: 43.7333
Epoch 662/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.7318 - val_loss: 43.7192
Epoch 663/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.7219 - val_loss: 43.7123
Epoch 664/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.7005 - val_loss: 43.6901
Epoch 665/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.6771 - val_loss: 43.6845
Epoch 666/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.6874 - val_loss: 43.6893
Epoch 667/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.6603 - val_loss: 43.6794
Epoch 668/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.6391 - val_loss: 43.6781
Epoch 669/5000
1126/1126 [=====] - 0s 34us/step - loss: 45.6378 - val_loss: 43.6886
Epoch 670/5000
1126/1126 [=====] - 0s 31us/step - loss: 45.6125 - val_loss: 43.6848
Epoch 671/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.5942 - val_loss: 43.6101
Epoch 672/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.5810 - val_loss: 43.5654
Epoch 673/5000
1126/1126 [=====] - 0s 34us/step - loss: 45.5768 - val_loss: 43.5605
Epoch 674/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.5558 - val_loss: 43.5374
Epoch 675/5000
1126/1126 [=====] - 0s 35us/step - loss: 45.5357 - val_loss: 43.5345
Epoch 676/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.5276 - val_loss: 43.5744
Epoch 677/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.5138 - val_loss: 43.5557
Epoch 678/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.4951 - val_loss: 43.5190
Epoch 679/5000
1126/1126 [=====] - 0s 31us/step - loss: 45.4841 - val_loss: 43.5200

Epoch 680/5000
1126/1126 [=====] - 0s 35us/step - loss: 45.4637 - val_loss: 43.5045
Epoch 681/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.4594 - val_loss: 43.4921
Epoch 682/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.4462 - val_loss: 43.5481
Epoch 683/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.4267 - val_loss: 43.5235
Epoch 684/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.4145 - val_loss: 43.4928
Epoch 685/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.4057 - val_loss: 43.4511
Epoch 686/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.3874 - val_loss: 43.4573
Epoch 687/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.3799 - val_loss: 43.4377
Epoch 688/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.3616 - val_loss: 43.4465
Epoch 689/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.3452 - val_loss: 43.4274
Epoch 690/5000
1126/1126 [=====] - 0s 31us/step - loss: 45.3379 - val_loss: 43.3872
Epoch 691/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.3173 - val_loss: 43.3608
Epoch 692/5000
1126/1126 [=====] - 0s 34us/step - loss: 45.3115 - val_loss: 43.3962
Epoch 693/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.2930 - val_loss: 43.3970
Epoch 694/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.2768 - val_loss: 43.3536
Epoch 695/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.2624 - val_loss: 43.3559
Epoch 696/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.2717 - val_loss: 43.3781
Epoch 697/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.2318 - val_loss: 43.3519
Epoch 698/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.2316 - val_loss: 43.3433
Epoch 699/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.2177 - val_loss: 43.3200
Epoch 700/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.1980 - val_loss: 43.3005
Epoch 701/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.2006 - val_loss: 43.3143
Epoch 702/5000
1126/1126 [=====] - 0s 34us/step - loss: 45.1679 - val_loss: 43.2665
Epoch 703/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.1601 - val_loss: 43.2512

Epoch 704/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.1570 - val_loss: 43.2559
Epoch 705/5000
1126/1126 [=====] - 0s 35us/step - loss: 45.1359 - val_loss: 43.2747
Epoch 706/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.1236 - val_loss: 43.2727
Epoch 707/5000
1126/1126 [=====] - 0s 37us/step - loss: 45.0970 - val_loss: 43.2911
Epoch 708/5000
1126/1126 [=====] - 0s 34us/step - loss: 45.0967 - val_loss: 43.2438
Epoch 709/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.0756 - val_loss: 43.2444
Epoch 710/5000
1126/1126 [=====] - 0s 32us/step - loss: 45.0673 - val_loss: 43.2193
Epoch 711/5000
1126/1126 [=====] - 0s 35us/step - loss: 45.0485 - val_loss: 43.2405
Epoch 712/5000
1126/1126 [=====] - 0s 31us/step - loss: 45.0406 - val_loss: 43.2093
Epoch 713/5000
1126/1126 [=====] - 0s 31us/step - loss: 45.0241 - val_loss: 43.2048
Epoch 714/5000
1126/1126 [=====] - 0s 33us/step - loss: 45.0149 - val_loss: 43.1636
Epoch 715/5000
1126/1126 [=====] - 0s 34us/step - loss: 45.0073 - val_loss: 43.1770
Epoch 716/5000
1126/1126 [=====] - 0s 34us/step - loss: 44.9825 - val_loss: 43.1569
Epoch 717/5000
1126/1126 [=====] - 0s 33us/step - loss: 44.9810 - val_loss: 43.1400
Epoch 718/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.9692 - val_loss: 43.1442
Epoch 719/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.9492 - val_loss: 43.1473
Epoch 720/5000
1126/1126 [=====] - 0s 33us/step - loss: 44.9431 - val_loss: 43.1215
Epoch 721/5000
1126/1126 [=====] - 0s 34us/step - loss: 44.9268 - val_loss: 43.1188
Epoch 722/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.9080 - val_loss: 43.1240
Epoch 723/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.9020 - val_loss: 43.1691
Epoch 724/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.8880 - val_loss: 43.1459
Epoch 725/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.8935 - val_loss: 43.1671
Epoch 726/5000
1126/1126 [=====] - 0s 33us/step - loss: 44.8611 - val_loss: 43.1597
Epoch 727/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.8404 - val_loss: 43.0885

Epoch 728/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.8343 - val_loss: 43.0833
Epoch 729/5000
1126/1126 [=====] - 0s 33us/step - loss: 44.8206 - val_loss: 43.0900
Epoch 730/5000
1126/1126 [=====] - 0s 33us/step - loss: 44.8072 - val_loss: 43.0584
Epoch 731/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.8110 - val_loss: 43.0634
Epoch 732/5000
1126/1126 [=====] - 0s 33us/step - loss: 44.7888 - val_loss: 43.0564
Epoch 733/5000
1126/1126 [=====] - 0s 34us/step - loss: 44.7728 - val_loss: 43.0350
Epoch 734/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.7705 - val_loss: 43.0470
Epoch 735/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.7476 - val_loss: 43.0675
Epoch 736/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.7500 - val_loss: 43.0428
Epoch 737/5000
1126/1126 [=====] - 0s 35us/step - loss: 44.7187 - val_loss: 43.0292
Epoch 738/5000
1126/1126 [=====] - 0s 33us/step - loss: 44.7145 - val_loss: 43.0388
Epoch 739/5000
1126/1126 [=====] - 0s 34us/step - loss: 44.6955 - val_loss: 43.0155
Epoch 740/5000
1126/1126 [=====] - 0s 33us/step - loss: 44.6868 - val_loss: 42.9921
Epoch 741/5000
1126/1126 [=====] - 0s 34us/step - loss: 44.6688 - val_loss: 42.9849
Epoch 742/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.6618 - val_loss: 42.9809
Epoch 743/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.6462 - val_loss: 43.0217
Epoch 744/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.6380 - val_loss: 43.0072
Epoch 745/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.6366 - val_loss: 42.9314
Epoch 746/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.6098 - val_loss: 43.0092
Epoch 747/5000
1126/1126 [=====] - 0s 33us/step - loss: 44.6045 - val_loss: 42.9450
Epoch 748/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.5931 - val_loss: 42.9269
Epoch 749/5000
1126/1126 [=====] - 0s 34us/step - loss: 44.5772 - val_loss: 42.8902
Epoch 750/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.5652 - val_loss: 42.9092
Epoch 751/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.5524 - val_loss: 42.9092

Epoch 752/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.5399 - val_loss: 42.8926
Epoch 753/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.5442 - val_loss: 42.8852
Epoch 754/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.5273 - val_loss: 42.8527
Epoch 755/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.5144 - val_loss: 42.8423
Epoch 756/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.5093 - val_loss: 42.8496
Epoch 757/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.4902 - val_loss: 42.9366
Epoch 758/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.4875 - val_loss: 42.9138
Epoch 759/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.4702 - val_loss: 42.8818
Epoch 760/5000
1126/1126 [=====] - 0s 34us/step - loss: 44.4576 - val_loss: 42.8376
Epoch 761/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.4510 - val_loss: 42.8356
Epoch 762/5000
1126/1126 [=====] - 0s 33us/step - loss: 44.4257 - val_loss: 42.8290
Epoch 763/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.4167 - val_loss: 42.8206
Epoch 764/5000
1126/1126 [=====] - 0s 37us/step - loss: 44.4030 - val_loss: 42.7903
Epoch 765/5000
1126/1126 [=====] - 0s 35us/step - loss: 44.3855 - val_loss: 42.8134
Epoch 766/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.3891 - val_loss: 42.8082
Epoch 767/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.3793 - val_loss: 42.8001
Epoch 768/5000
1126/1126 [=====] - 0s 34us/step - loss: 44.3525 - val_loss: 42.7833
Epoch 769/5000
1126/1126 [=====] - 0s 39us/step - loss: 44.3465 - val_loss: 42.8025
Epoch 770/5000
1126/1126 [=====] - 0s 40us/step - loss: 44.3461 - val_loss: 42.7578
Epoch 771/5000
1126/1126 [=====] - 0s 36us/step - loss: 44.3318 - val_loss: 42.7443
Epoch 772/5000
1126/1126 [=====] - 0s 35us/step - loss: 44.3183 - val_loss: 42.7409
Epoch 773/5000
1126/1126 [=====] - 0s 34us/step - loss: 44.3180 - val_loss: 42.7992
Epoch 774/5000
1126/1126 [=====] - 0s 33us/step - loss: 44.3034 - val_loss: 42.7620
Epoch 775/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.2809 - val_loss: 42.7261

Epoch 776/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.2605 - val_loss: 42.6911
Epoch 777/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.2581 - val_loss: 42.6706
Epoch 778/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.2427 - val_loss: 42.6575
Epoch 779/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.2487 - val_loss: 42.6696
Epoch 780/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.2244 - val_loss: 42.6561
Epoch 781/5000
1126/1126 [=====] - 0s 33us/step - loss: 44.2150 - val_loss: 42.6955
Epoch 782/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.2057 - val_loss: 42.7412
Epoch 783/5000
1126/1126 [=====] - 0s 35us/step - loss: 44.1949 - val_loss: 42.7285
Epoch 784/5000
1126/1126 [=====] - 0s 35us/step - loss: 44.1873 - val_loss: 42.6987
Epoch 785/5000
1126/1126 [=====] - 0s 34us/step - loss: 44.1736 - val_loss: 42.6798
Epoch 786/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.1548 - val_loss: 42.6578
Epoch 787/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.1509 - val_loss: 42.6457
Epoch 788/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.1341 - val_loss: 42.6113
Epoch 789/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.1229 - val_loss: 42.5930
Epoch 790/5000
1126/1126 [=====] - 0s 33us/step - loss: 44.1141 - val_loss: 42.6116
Epoch 791/5000
1126/1126 [=====] - 0s 40us/step - loss: 44.0938 - val_loss: 42.5995
Epoch 792/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.0869 - val_loss: 42.5779
Epoch 793/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.0909 - val_loss: 42.5388
Epoch 794/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.0666 - val_loss: 42.5295
Epoch 795/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.0596 - val_loss: 42.5289
Epoch 796/5000
1126/1126 [=====] - 0s 31us/step - loss: 44.0620 - val_loss: 42.5254
Epoch 797/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.0456 - val_loss: 42.5407
Epoch 798/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.0230 - val_loss: 42.5422
Epoch 799/5000
1126/1126 [=====] - 0s 32us/step - loss: 44.0145 - val_loss: 42.5602

Epoch 800/5000
1126/1126 [=====] - 0s 33us/step - loss: 44.0140 - val_loss: 42.5235
Epoch 801/5000
1126/1126 [=====] - 0s 34us/step - loss: 43.9931 - val_loss: 42.5180
Epoch 802/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.9973 - val_loss: 42.4897
Epoch 803/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.9856 - val_loss: 42.5130
Epoch 804/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.9569 - val_loss: 42.4514
Epoch 805/5000
1126/1126 [=====] - 0s 31us/step - loss: 43.9517 - val_loss: 42.4676
Epoch 806/5000
1126/1126 [=====] - 0s 31us/step - loss: 43.9382 - val_loss: 42.4649
Epoch 807/5000
1126/1126 [=====] - 0s 31us/step - loss: 43.9293 - val_loss: 42.4644
Epoch 808/5000
1126/1126 [=====] - 0s 31us/step - loss: 43.9205 - val_loss: 42.4487
Epoch 809/5000
1126/1126 [=====] - 0s 31us/step - loss: 43.9008 - val_loss: 42.4500
Epoch 810/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.9013 - val_loss: 42.4124
Epoch 811/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.8838 - val_loss: 42.4206
Epoch 812/5000
1126/1126 [=====] - 0s 36us/step - loss: 43.8757 - val_loss: 42.5086
Epoch 813/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.8784 - val_loss: 42.4739
Epoch 814/5000
1126/1126 [=====] - 0s 34us/step - loss: 43.8559 - val_loss: 42.4868
Epoch 815/5000
1126/1126 [=====] - 0s 31us/step - loss: 43.8423 - val_loss: 42.4430
Epoch 816/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.8470 - val_loss: 42.4511
Epoch 817/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.8217 - val_loss: 42.4226
Epoch 818/5000
1126/1126 [=====] - 0s 35us/step - loss: 43.8098 - val_loss: 42.3928
Epoch 819/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.8031 - val_loss: 42.3740
Epoch 820/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.7902 - val_loss: 42.3834
Epoch 821/5000
1126/1126 [=====] - 0s 37us/step - loss: 43.7785 - val_loss: 42.3742
Epoch 822/5000
1126/1126 [=====] - 0s 34us/step - loss: 43.7704 - val_loss: 42.3407
Epoch 823/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.7665 - val_loss: 42.3073

Epoch 824/5000
1126/1126 [=====] - 0s 38us/step - loss: 43.7651 - val_loss: 42.3104
Epoch 825/5000
1126/1126 [=====] - 0s 41us/step - loss: 43.7295 - val_loss: 42.2946
Epoch 826/5000
1126/1126 [=====] - 0s 42us/step - loss: 43.7350 - val_loss: 42.3211
Epoch 827/5000
1126/1126 [=====] - 0s 38us/step - loss: 43.7109 - val_loss: 42.3060
Epoch 828/5000
1126/1126 [=====] - 0s 34us/step - loss: 43.6966 - val_loss: 42.3060
Epoch 829/5000
1126/1126 [=====] - 0s 37us/step - loss: 43.6898 - val_loss: 42.3138
Epoch 830/5000
1126/1126 [=====] - 0s 35us/step - loss: 43.6859 - val_loss: 42.3115
Epoch 831/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.6679 - val_loss: 42.2911
Epoch 832/5000
1126/1126 [=====] - 0s 35us/step - loss: 43.6646 - val_loss: 42.2785
Epoch 833/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.6520 - val_loss: 42.2839
Epoch 834/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.6463 - val_loss: 42.2726
Epoch 835/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.6276 - val_loss: 42.2841
Epoch 836/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.6225 - val_loss: 42.3255
Epoch 837/5000
1126/1126 [=====] - 0s 34us/step - loss: 43.6175 - val_loss: 42.2734
Epoch 838/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.6039 - val_loss: 42.2346
Epoch 839/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.5984 - val_loss: 42.2122
Epoch 840/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.5779 - val_loss: 42.1973
Epoch 841/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.5695 - val_loss: 42.2059
Epoch 842/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.5644 - val_loss: 42.2215
Epoch 843/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.5325 - val_loss: 42.2185
Epoch 844/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.5331 - val_loss: 42.2229
Epoch 845/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.5281 - val_loss: 42.2036
Epoch 846/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.5226 - val_loss: 42.1980
Epoch 847/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.5039 - val_loss: 42.2385

Epoch 848/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.5069 - val_loss: 42.2019
Epoch 849/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.4906 - val_loss: 42.1881
Epoch 850/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.4787 - val_loss: 42.1492
Epoch 851/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.4727 - val_loss: 42.1281
Epoch 852/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.4619 - val_loss: 42.1169
Epoch 853/5000
1126/1126 [=====] - 0s 34us/step - loss: 43.4515 - val_loss: 42.0963
Epoch 854/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.4469 - val_loss: 42.1003
Epoch 855/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.4245 - val_loss: 42.0792
Epoch 856/5000
1126/1126 [=====] - 0s 31us/step - loss: 43.4184 - val_loss: 42.0864
Epoch 857/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.4015 - val_loss: 42.0831
Epoch 858/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.3926 - val_loss: 42.1367
Epoch 859/5000
1126/1126 [=====] - 0s 31us/step - loss: 43.3819 - val_loss: 42.1269
Epoch 860/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.3764 - val_loss: 42.1266
Epoch 861/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.3645 - val_loss: 42.0879
Epoch 862/5000
1126/1126 [=====] - 0s 34us/step - loss: 43.3615 - val_loss: 42.0709
Epoch 863/5000
1126/1126 [=====] - 0s 35us/step - loss: 43.3400 - val_loss: 42.0454
Epoch 864/5000
1126/1126 [=====] - 0s 38us/step - loss: 43.3404 - val_loss: 42.0629
Epoch 865/5000
1126/1126 [=====] - 0s 36us/step - loss: 43.3257 - val_loss: 42.0392
Epoch 866/5000
1126/1126 [=====] - 0s 36us/step - loss: 43.3174 - val_loss: 42.0450
Epoch 867/5000
1126/1126 [=====] - 0s 35us/step - loss: 43.3139 - val_loss: 42.0460
Epoch 868/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.3006 - val_loss: 42.0089
Epoch 869/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.2806 - val_loss: 41.9734
Epoch 870/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.2718 - val_loss: 41.9930
Epoch 871/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.2673 - val_loss: 42.0080

Epoch 872/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.2630 - val_loss: 41.9927
Epoch 873/5000
1126/1126 [=====] - 0s 31us/step - loss: 43.2532 - val_loss: 41.9884
Epoch 874/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.2422 - val_loss: 41.9999
Epoch 875/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.2323 - val_loss: 42.0512
Epoch 876/5000
1126/1126 [=====] - 0s 34us/step - loss: 43.2340 - val_loss: 42.0228
Epoch 877/5000
1126/1126 [=====] - 0s 34us/step - loss: 43.2131 - val_loss: 41.9899
Epoch 878/5000
1126/1126 [=====] - 0s 35us/step - loss: 43.1923 - val_loss: 42.0059
Epoch 879/5000
1126/1126 [=====] - 0s 32us/step - loss: 43.1890 - val_loss: 41.9708
Epoch 880/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.1870 - val_loss: 41.9189
Epoch 881/5000
1126/1126 [=====] - 0s 34us/step - loss: 43.1600 - val_loss: 41.9300
Epoch 882/5000
1126/1126 [=====] - 0s 35us/step - loss: 43.1606 - val_loss: 41.9003
Epoch 883/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.1496 - val_loss: 41.9213
Epoch 884/5000
1126/1126 [=====] - 0s 33us/step - loss: 43.1442 - val_loss: 41.8775
Epoch 885/5000
1126/1126 [=====] - 0s 34us/step - loss: 43.1366 - val_loss: 41.9472
Epoch 886/5000
1126/1126 [=====] - 0s 34us/step - loss: 43.1225 - val_loss: 41.9204
Epoch 887/5000
1126/1126 [=====] - 0s 31us/step - loss: 43.1115 - val_loss: 41.9229
Epoch 888/5000
1126/1126 [=====] - 0s 34us/step - loss: 43.1075 - val_loss: 41.9111
Epoch 889/5000
1126/1126 [=====] - 0s 34us/step - loss: 43.1079 - val_loss: 42.0370
Epoch 890/5000
1126/1126 [=====] - 0s 35us/step - loss: 43.1271 - val_loss: 41.9483
Epoch 891/5000
1126/1126 [=====] - 0s 37us/step - loss: 43.0978 - val_loss: 41.9133
Epoch 892/5000
1126/1126 [=====] - 0s 36us/step - loss: 43.0786 - val_loss: 41.9720
Epoch 893/5000
1126/1126 [=====] - 0s 38us/step - loss: 43.0689 - val_loss: 41.8881
Epoch 894/5000
1126/1126 [=====] - 0s 37us/step - loss: 43.0495 - val_loss: 41.8868
Epoch 00894: early stopping

```

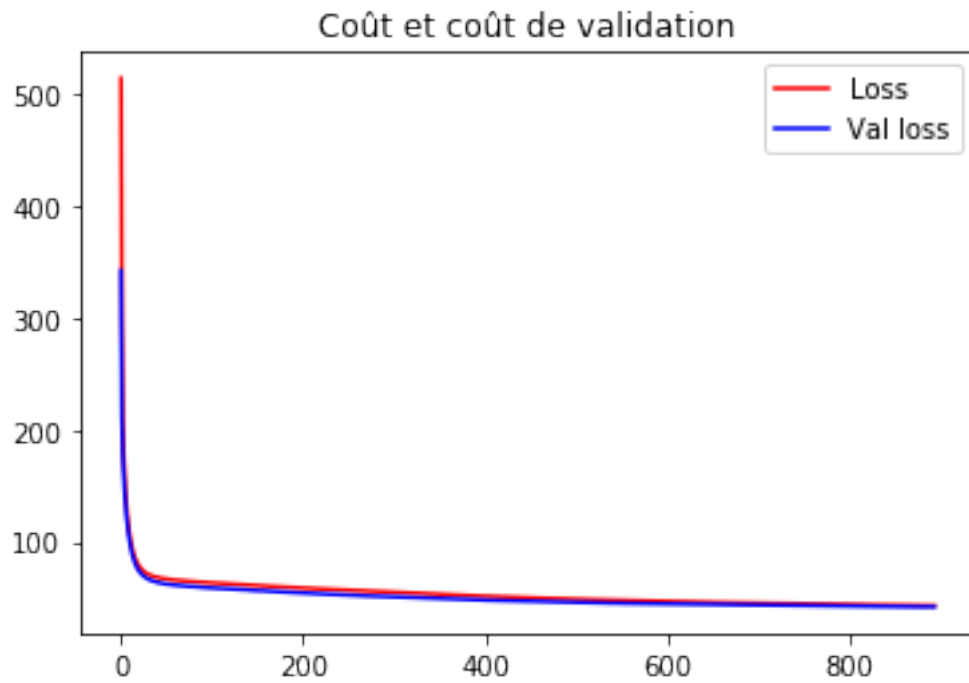
In [12]: y_pred = model.predict(X_test)
plt.title('Coût et coût de validation')
line1=plt.plot(history.history['loss'], label="Loss", linestyle='-', color='r')
line2=plt.plot(history.history['val_loss'], label="Val loss", linestyle='-', color='b')
first_legend = plt.legend(handles=[line1, line2], loc=1)

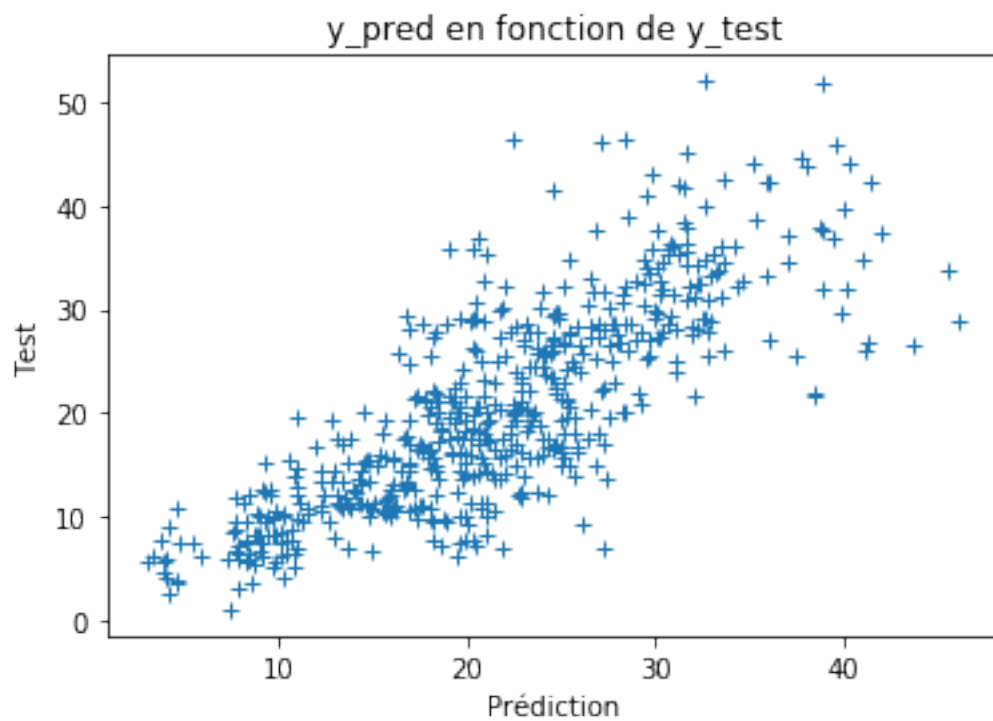
plt.show()

plt.title('y_pred en fonction de y_test')

plt.plot(y_pred[:], y_test[:], '+')
plt.ylabel('Test')
plt.xlabel('Prédiction')
plt.show()

```





In []:

In []:

In []:

In []:

In []: