LAMPIRAN I

HASIL PREDIKSI

DOLAR AS

NO	NILAI	TANGGAL	AKTUAL	PREDIKSI
1	1.00	21-Okt-16	12955	12996
2	1.00	24-Okt-16	12982	12990
3	1.00	25-Okt-16	12957	12992
4	1.00	26-Okt-16	12932	12973
5	1.00	27-Okt-16	12962	12940
6	1.00	28-Okt-16	12983	12985
7	1.00	31-Okt-16	12986	13015
8	1.00	01-Nop-16	12971	12994
9	1.00	02-Nop-16	12993	12966
10	1.00	03-Nop-16	12985	13003
11	1.00	04-Nop-16	13037	13050
12	1.00	07-Nop-16	13017	13058
13	1.00	08-Nop-16	13025	13024
14	1.00	09-Nop-16	13019	13041
15	1.00	10-Nop-16	13052	13072
16	1.00	11-Nop-16	13283	13087
17	1.00	14-Nop-16	13291	13212
18	1.00	15-Nop-16	13271	13247
19	1.00	16-Nop-16	13280	13302
20	1.00	17-Nop-16	13318	13330
21	1.00	18-Nop-16	13341	13399
22	1.00	21-Nop-16	13371	13425
23	1.00	22-Nop-16	13357	13359
24	1.00	23-Nop-16	13406	13342

25	1.00	24-Nop-16	13472	13443
26	1.00	25-Nop-16	13502	13488
27	1.00	28-Nop-16	13400	13470
28	1.00	29-Nop-16	13481	13456
29	1.00	30-Nop-16	13495	13457
30	1.00	01-Des-16	13514	13453
31	1.00	02-Des-16	13456	13465
32	1.00	05-Des-16	13448	13401
33	1.00	06-Des-16	13338	13386
34	1.00	07-Des-16	13269	13345
35	1.00	08-Des-16	13237	13294
36	1.00	09-Des-16	13270	13232
37	1.00	13-Des-16	13242	13261
38	1.00	14-Des-16	13219	13227
39	1.00	15-Des-16	13300	13239
40	1.00	16-Des-16	13359	13320
41	1.00	19-Des-16	13314	13368
42	1.00	20-Des-16	13326	13334
43	1.00	21-Des-16	13406	13341
44	1.00	22-Des-16	13368	13381
45	1.00	23-Des-16	13403	13397
46	1.00	27-Des-16	13369	13424
47	1.00	28-Des-16	13380	13367
48	1.00	29-Des-16	13406	13392
49	1.00	30-Des-16	13369	13411
50	1.00	31-Des-16	13369	13347
51	1.00	03-Jan-17	13418	13377
52	1.00	04-Jan-17	13411	13367
53	1.00	05-Jan-17	13303	13348
54	1.00	06-Jan-17	13280	13337
55	1.00	09-Jan-17	13318	13295

56	1.00	10-Jan-17	13253	13288
57	1.00	11-Jan-17	13260	13249
58	1.00	12-Jan-17	13222	13244
59	1.00	13-Jan-17	13241	13206
60	1.00	16-Jan-17	13287	13284
61	1.00	17-Jan-17	13314	13321
62	1.00	18-Jan-17	13261	13284
63	1.00	19-Jan-17	13309	13281
64	1.00	20-Jan-17	13315	13320
65	1.00	23-Jan-17	13305	13346
66	1.00	24-Jan-17	13263	13349
67	1.00	25-Jan-17	13273	13288
68	1.00	26-Jan-17	13258	13260
69	1.00	27-Jan-17	13292	13289
70	1.00	30-Jan-17	13268	13280
71	1.00	31-Jan-17	13276	13258
72	1.00	01-Feb-17	13282	13273
73	1.00	02-Feb-17	13307	13292
74	1.00	03-Feb-17	13295	13302
75	1.00	06-Feb-17	13262	13315
76	1.00	07-Feb-17	13255	13272
77	1.00	08-Feb-17	13270	13278
78	1.00	09-Feb-17	13241	13281
79	1.00	10-Feb-17	13251	13260
80	1.00	13-Feb-17	13263	13245
81	1.00	14-Feb-17	13263	13251
82	1.00	16-Feb-17	13262	13267
83	1.00	17-Feb-17	13261	13289
84	1.00	20-Feb-17	13285	13268
85	1.00	21-Feb-17	13303	13290
86	1.00	22-Feb-17	13289	13299

87	1.00	23-Feb-17	13293	13300
88	1.00	24-Feb-17	13269	13312
89	1.00	27-Feb-17	13272	13295
90	1.00	28-Feb-17	13280	13293
91	1.00	01-Mar-17	13294	13283
92	1.00	02-Mar-17	13294	13270
93	1.00	03-Mar-17	13308	13285
94	1.00	06-Mar-17	13297	13303
95	1.00	07-Mar-17	13283	13311
96	1.00	08-Mar-17	13273	13309
97	1.00	09-Mar-17	13306	13288
98	1.00	10-Mar-17	13326	13289
99	1.00	13-Mar-17	13297	13302
100	1.00	14-Mar-17	13293	13293
101	1.00	15-Mar-17	13308	13310
102	1.00	16-Mar-17	13269	13316
103	1.00	17-Mar-17	13275	13296
104	1.00	20-Mar-17	13262	13285
105	1.00	21-Mar-17	13241	13250
106	1.00	22-Mar-17	13268	13251
107	1.00	23-Mar-17	13265	13279
108	1.00	24-Mar-17	13262	13254
109	1.00	27-Mar-17	13247	13276
110	1.00	29-Mar-17	13256	13267
111	1.00	30-Mar-17	13249	13269
112	1.00	31-Mar-17	13254	13280
jumlah			1485943	1486420

Presentase eror = (nilai prediksi – nilai aktual) / nilai aktual x 100%

= 0,000321 x 100% = 0,0321%

EURO

NO	NILAI	TANGGAL	AKTUAL	PREDIKSI
1	1.00	21-Okt-16	14122	14169
2	1.00	24-Okt-16	14099	14134
3	1.00	25-Okt-16	14094	14103
4	1.00	26-Okt-16	14077	14026
5	1.00	27-Okt-16	14123	14070
6	1.00	28-Okt-16	14156	14099
7	1.00	31-Okt-16	14232	14179
8	1.00	01-Nop-16	14224	14250
9	1.00	02-Nop-16	14376	14307
10	1.00	03-Nop-16	14428	14329
11	1.00	04-Nop-16	14460	14488
12	1.00	07-Nop-16	14424	14427
13	1.00	08-Nop-16	14367	14457
14	1.00	09-Nop-16	14499	14377
15	1.00	10-Nop-16	14285	14408
16	1.00	11-Nop-16	14486	14320
17	1.00	14-Nop-16	14352	14269
18	1.00	15-Nop-16	14265	14364
19	1.00	16-Nop-16	14269	14209
20	1.00	17-Nop-16	14248	14281
21	1.00	18-Nop-16	14133	14201
22	1.00	21-Nop-16	14183	14135
23	1.00	22-Nop-16	14202	14134
24	1.00	23-Nop-16	14246	14249
25	1.00	24-Nop-16	14187	14230
26	1.00	25-Nop-16	14245	14219
27	1.00	28-Nop-16	14301	14324
28	1.00	29-Nop-16	14288	14276

29	1.00	30-Nop-16	14368	14375
30	1.00	01-Des-16	14315	14298
31	1.00	02-Des-16	14353	14324
32	1.00	05-Des-16	14194	14328
33	1.00	06-Des-16	14353	14262
34	1.00	07-Des-16	14220	14190
35	1.00	08-Des-16	14246	14211
36	1.00	09-Des-16	14059	14138
37	1.00	13-Des-16	14074	14092
38	1.00	14-Des-16	14061	14055
39	1.00	15-Des-16	13991	14050
40	1.00	16-Des-16	13926	14030
41	1.00	19-Des-16	13922	13914
42	1.00	20-Des-16	13869	13942
43	1.00	21-Des-16	13955	13892
44	1.00	22-Des-16	13950	13975
45	1.00	23-Des-16	13994	14018
46	1.00	27-Des-16	13951	14051
47	1.00	28-Des-16	14006	13963
48	1.00	29-Des-16	13991	14034
49	1.00	30-Des-16	14089	14007
50	1.00	31-Des-16	14089	14048
51	1.00	03-Jan-17	14058	14063
52	1.00	04-Jan-17	13947	14030
53	1.00	05-Jan-17	13993	13985
54	1.00	06-Jan-17	14059	14048
55	1.00	09-Jan-17	14031	14077
56	1.00	10-Jan-17	14033	14022
57	1.00	11-Jan-17	13986	14003
58	1.00	12-Jan-17	14011	14028
59	1.00	13-Jan-17	14048	14040

60	1.00	16-Jan-17	14109	14072
61	1.00	17-Jan-17	14127	14092
62	1.00	18-Jan-17	14173	14087
63	1.00	19-Jan-17	14155	14130
64	1.00	20-Jan-17	14215	14151
65	1.00	23-Jan-17	14294	14153
66	1.00	24-Jan-17	14273	14228
67	1.00	25-Jan-17	14239	14208
68	1.00	26-Jan-17	14258	14173
69	1.00	27-Jan-17	14198	14216
70	1.00	30-Jan-17	14236	14159
71	1.00	31-Jan-17	14215	14147
72	1.00	01-Feb-17	14331	14135
73	1.00	02-Feb-17	14343	14161
74	1.00	03-Feb-17	14302	14295
75	1.00	06-Feb-17	14295	14280
76	1.00	07-Feb-17	14215	14268
77	1.00	08-Feb-17	14181	14267
78	1.00	09-Feb-17	14138	14170
79	1.00	10-Feb-17	14120	14101
80	1.00	13-Feb-17	14081	14073
81	1.00	14-Feb-17	14053	14041
82	1.00	16-Feb-17	14080	14027
83	1.00	17-Feb-17	14152	14103
84	1.00	20-Feb-17	14094	14179
85	1.00	21-Feb-17	14074	14184
86	1.00	22-Feb-17	14022	14073
87	1.00	23-Feb-17	14025	14039
88	1.00	24-Feb-17	14027	14018
89	1.00	27-Feb-17	14025	13996
90	1.00	28-Feb-17	14055	14019

91	1.00	01-Mar-17	14063	14022
92	1.00	02-Mar-17	13997	14052
93	1.00	03-Mar-17	14001	14020
94	1.00	06-Mar-17	14102	14008
95	1.00	07-Mar-17	14057	14099
96	1.00	08-Mar-17	14020	14081
97	1.00	09-Mar-17	14027	13960
98	1.00	10-Mar-17	14112	14019
99	1.00	13-Mar-17	14215	14095
100	1.00	14-Mar-17	14159	14161
101	1.00	15-Mar-17	14125	14122
102	1.00	16-Mar-17	14229	14076
103	1.00	17-Mar-17	14298	14216
104	1.00	20-Mar-17	14267	14270
105	1.00	21-Mar-17	14249	14147
106	1.00	22-Mar-17	14320	14157
107	1.00	23-Mar-17	14304	14271
108	1.00	24-Mar-17	14271	14280
109	1.00	27-Mar-17	14365	14190
110	1.00	29-Mar-17	14344	14189
111	1.00	30-Mar-17	14237	14286
112	1.00	31-Mar-17	14155	14268
jumlah			1586535	1584761

Presentase eror = (nilai prediksi – nilai aktual) / nilai aktual x 100%

= 0,00111816 x 100% = 0,111816%

POUND STERLING

NO	NILAI	TANGGAL	AKTUAL	PREDIKSI
1	1.00	21-Okt-16	15847	15737
2	1.00	24-Okt-16	15827	15846
3	1.00	25-Okt-16	15832	15891
4	1.00	26-Okt-16	15729	15830
5	1.00	27-Okt-16	15835	15894
6	1.00	28-Okt-16	15808	15830
7	1.00	31-Okt-16	15815	15899
8	1.00	01-Nop-16	15863	15905
9	1.00	02-Nop-16	15890	15935
10	1.00	03-Nop-16	16004	15896
11	1.00	04-Nop-16	16254	16042
12	1.00	07-Nop-16	16221	16163
13	1.00	08-Nop-16	16137	16242
14	1.00	09-Nop-16	16202	16261
15	1.00	10-Nop-16	16201	16346
16	1.00	11-Nop-16	16676	16424
17	1.00	14-Nop-16	16681	16669
18	1.00	15-Nop-16	16571	16654
19	1.00	16-Nop-16	16569	16479
20	1.00	17-Nop-16	16535	16571
21	1.00	18-Nop-16	16524	16593
22	1.00	21-Nop-16	16502	16650
23	1.00	22-Nop-16	16681	16519
24	1.00	23-Nop-16	16650	16593
25	1.00	24-Nop-16	16744	16804
26	1.00	25-Nop-16	16788	16825
27	1.00	28-Nop-16	16755	16627
28	1.00	29-Nop-16	16715	16727

29	1.00	30-Nop-16	16840	16756
30	1.00	01-Des-16	16911	16744
31	1.00	02-Des-16	16950	16861
32	1.00	05-Des-16	17037	16955
33	1.00	06-Des-16	16988	16951
34	1.00	07-Des-16	16797	16900
35	1.00	08-Des-16	16731	16827
36	1.00	09-Des-16	16696	16771
37	1.00	13-Des-16	16784	16694
38	1.00	14-Des-16	16723	16845
39	1.00	15-Des-16	16696	16726
40	1.00	16-Des-16	16575	16626
41	1.00	19-Des-16	16625	16594
42	1.00	20-Des-16	16524	16646
43	1.00	21-Des-16	16583	16491
44	1.00	22-Des-16	16525	16478
45	1.00	23-Des-16	16453	16452
46	1.00	27-Des-16	16403	16447
47	1.00	28-Des-16	16445	16452
48	1.00	29-Des-16	16410	16411
49	1.00	30-Des-16	16418	16407
50	1.00	31-Des-16	16418	16391
51	1.00	03-Jan-17	16497	16365
52	1.00	04-Jan-17	16402	16441
53	1.00	05-Jan-17	16401	16422
54	1.00	06-Jan-17	16456	16360
55	1.00	09-Jan-17	16326	16390
56	1.00	10-Jan-17	16110	16394
57	1.00	11-Jan-17	16140	16302
58	1.00	12-Jan-17	16112	16201
59	1.00	13-Jan-17	16097	16247

60	1.00	16-Jan-17	15966	16245
61	1.00	17-Jan-17	16048	15983
62	1.00	18-Jan-17	16373	15995
63	1.00	19-Jan-17	16336	16341
64	1.00	20-Jan-17	16446	16255
65	1.00	23-Jan-17	16528	16164
66	1.00	24-Jan-17	16633	16287
67	1.00	25-Jan-17	16624	16673
68	1.00	26-Jan-17	16762	16828
69	1.00	27-Jan-17	16731	16719
70	1.00	30-Jan-17	16703	16729
71	1.00	31-Jan-17	16616	16822
72	1.00	01-Feb-17	16692	16765
73	1.00	02-Feb-17	16861	16675
74	1.00	03-Feb-17	16641	16855
75	1.00	06-Feb-17	16562	16675
76	1.00	07-Feb-17	16540	16639
77	1.00	08-Feb-17	16587	16613
78	1.00	09-Feb-17	16548	16745
79	1.00	10-Feb-17	16582	16600
80	1.00	13-Feb-17	16558	16426
81	1.00	14-Feb-17	16607	16502
82	1.00	16-Feb-17	16528	16654
83	1.00	17-Feb-17	16576	16503
84	1.00	20-Feb-17	16492	16446
85	1.00	21-Feb-17	16552	16455
86	1.00	22-Feb-17	16612	16535
87	1.00	23-Feb-17	16529	16576
88	1.00	24-Feb-17	16640	16506
89	1.00	27-Feb-17	16474	16608
90	1.00	28-Feb-17	16508	16475

91	1.00	01-Mar-17	16468	16562
92	1.00	02-Mar-17	16325	16476
93	1.00	03-Mar-17	16328	16407
94	1.00	06-Mar-17	16331	16418
95	1.00	07-Mar-17	16262	16349
96	1.00	08-Mar-17	16194	16355
97	1.00	09-Mar-17	16185	16269
98	1.00	10-Mar-17	16199	16205
99	1.00	13-Mar-17	16177	16244
100	1.00	14-Mar-17	16225	16241
101	1.00	15-Mar-17	16181	16157
102	1.00	16-Mar-17	16281	16134
103	1.00	17-Mar-17	16387	16261
104	1.00	20-Mar-17	16432	16311
105	1.00	21-Mar-17	16377	16316
106	1.00	22-Mar-17	16547	16358
107	1.00	23-Mar-17	16558	16479
108	1.00	24-Mar-17	16564	16618
109	1.00	27-Mar-17	16583	16641
110	1.00	29-Mar-17	16456	16612
111	1.00	30-Mar-17	16481	16559
112	1.00	31-Mar-17	16554	16673
jumlah			1841879	1842338

Presentase eror = (nilai prediksi – nilai aktual) / nilai aktual x 100%

= 0,000249 x 100% = 0,0249%

LAMPIRAN III

KODE PROGRAM

Pelatihan Dolar AS

```
clc;clear;close all;warning off;

% Proses membaca data latih dari excel
filename = 'dolar.xlsx';
sheet = 2;
xlRange = 'B4:P59';

Data = xlsread(filename, sheet, xlRange);
data_latih = Data(:,1:14)';
target_latih = Data(:,15)';
[m,n] = size(data_latih);

% Pembuatan JST
net = newff(minmax(data_latih),[10
1],{'logsig','purelin'},'traingdx');

% Memberikan nilai untuk mempengaruhi proses pelatihan
net.performFcn = 'mse';
net.trainParam.goal = 0.001;
net.trainParam.show = 20;
net.trainParam.epochs = 1500;
net.trainParam.mc = 0.95;
net.trainParam.lr = 0.1;

% Proses training
[net_keluaran,tr,Y,E] = train(net,data_latih,target_latih);

% Hasil setelah pelatihan
bobot_hidden = net_keluaran.IW{1,1};
bobot_keluaran = net_keluaran.LW{2,1};
bias_hidden = net_keluaran.b{1,1};
bias_keluaran = net_keluaran.b{2,1};
jumlah_iterasi = tr.num_epochs;
nilai_keluaran = Y;
nilai_error = E;
error_MSE = (1/n)*sum(nilai_error.^2);

save net.mat net_keluaran

% Hasil prediksi
hasil_latih = sim(net_keluaran,data_latih);
max_data = 13514;
min_data = 12904;
hasil_latih = ((hasil_latih-0.1)*(max_data-
min_data)/0.8)+min_data;
```

```
% Performansi hasil prediksi
filename = 'dolar.xlsx';
sheet = 1;
xlRange = 'B17:BE17';

target_latih_asli = xlsread(filename, sheet, xlRange);

figure,
plotregression(target_latih_asli,hasil_latih,'Regression')

figure,
plotperform(tr)

figure,
plot(hasil_latih,'bo-')
hold on
plot(target_latih_asli,'ro-')
hold off
grid on
title(strcat(['Grafik Keluaran JST vs Target dengan nilai MSE =
',...
    num2str(error_MSE)]))
xlabel('Pola ke-')
ylabel('Kurs')
legend('Keluaran JST','Target','Location','Best')
```

Pengujian Dolar AS

```
clc;clear;close all;

% load jaringan yang sudah dibuat pada proses pelatihan
load net.mat

% Proses membaca data uji dari excel
filename = 'dolar.xlsx';
sheet = 2;
xlRange = 'B66:P121';

Data = xlsread(filename, sheet, xlRange);
data_uji = Data(:,1:14)';
target_uji = Data(:,15)';
[m,n] = size(data_uji);

% Hasil prediksi
hasil_uji = sim(net_keluaran,data_uji);
nilai_error = hasil_uji-target_uji;

max_data = 13514;
min_data = 12904;
hasil_uji = ((hasil_uji-0.1)*(max_data-min_data)/0.8)+min_data;

% Performansi hasil prediksi
```

```
error_MSE = (1/n)*sum(nilai_error.^2);

filename = 'dolar.xlsx';
sheet = 1;
xlRange = 'B18:BE18';

target_uji_asli = xlsread(filename, sheet, xlRange);

figure,
plotregression(target_uji_asli,hasil_uji,'Regression')

figure,
plot(hasil_uji,'bo-')
hold on
plot(target_uji_asli,'ro-')
hold off
grid on
title(strcat(['Grafik Keluaran JST vs Target dengan nilai MSE =
',...
    num2str(error_MSE)]))
xlabel('Pola ke -')
ylabel('Kurs')
legend('Keluaran JST','Target','Location','Best')
```

Pelatihan Euro

```
clc;clear;close all;warning off;

% Proses membaca data latih dari excel
filename = 'euro.xlsx';
sheet = 2;
xlRange = 'B4:P59';

Data = xlsread(filename, sheet, xlRange);
data_latih = Data(:,1:14)';
target_latih = Data(:,15)';
[m,n] = size(data_latih);

% Pembuatan JST
net = newff(minmax(data_latih),[10
1],{'logsig','purelin'},'traingdx');

% Memberikan nilai untuk mempengaruhi proses pelatihan
net.performFcn = 'mse';
net.trainParam.goal = 0.0001;
net.trainParam.show = 20;
net.trainParam.epochs = 500;
net.trainParam.mc = 0.95;
net.trainParam.lr = 0.1;

% Proses training
[net_keluaran,tr,Y,E] = train(net,data_latih,target_latih);
```

```
% Hasil setelah pelatihan
bobot_hidden = net_keluaran.IW{1,1};
bobot_keluaran = net_keluaran.LW{2,1};
bias_hidden = net_keluaran.b{1,1};
bias_keluaran = net_keluaran.b{2,1};
jumlah_iterasi = tr.num_epochs;
nilai_keluaran = Y;
nilai_error = E;
error_MSE = (1/n)*sum(nilai_error.^2);

save net.mat net_keluaran

% Hasil prediksi
hasil_latih = sim(net_keluaran,data_latih);
max_data = 14541;
min_data = 13869;
hasil_latih = ((hasil_latih-0.1)*(max_data-
min_data)/0.8)+min_data;

% Performansi hasil prediksi
filename = 'euro.xlsx';
sheet = 1;
xlRange = 'B17:BE17';

target_latih_asli = xlsread(filename, sheet, xlRange);

figure,
plotregression(target_latih_asli,hasil_latih,'Regression')

figure,
plotperform(tr)

figure,
plot(hasil_latih,'bo-')
hold on
plot(target_latih_asli,'ro-')
hold off
grid on
title(strcat(['Grafik Keluaran JST vs Target dengan nilai MSE =
',...
    num2str(error_MSE)]))
xlabel('Pola ke-')
ylabel('Kurs')
legend('Keluaran JST','Target','Location','Best')
```

Pengujian Euro

```
clc;clear;close all;

% load jaringan yang sudah dibuat pada proses pelatihan
load net.mat
```

```
% Proses membaca data uji dari excel
filename = 'euro.xlsx';
sheet = 2;
xlRange = 'B65:P120';

Data = xlsread(filename, sheet, xlRange);
data_uji = Data(:,1:14)';
target_uji = Data(:,15)';
[m,n] = size(data_uji);

% Hasil prediksi
hasil_uji = sim(net_keluaran,data_uji);
nilai_error = hasil_uji-target_uji;

max_data = 14541;
min_data = 13869;
hasil_uji = ((hasil_uji-0.1)*(max_data-min_data)/0.8)+min_data;

% Performansi hasil prediksi
error_MSE = (1/n)*sum(nilai_error.^2);

filename = 'euro.xlsx';
sheet = 1;
xlRange = 'B18:BE18';

target_uji_asli = xlsread(filename, sheet, xlRange);

figure,
plotregression(target_uji_asli,hasil_uji,'Regression')

figure,
plot(hasil_uji,'bo-')
hold on
plot(target_uji_asli,'ro-')
hold off
grid on
title(strcat(['Grafik Keluaran JST vs Target dengan nilai MSE =
',...
    num2str(error_MSE)]))
xlabel('Pola ke -')
ylabel('Kurs')
legend('Keluaran JST','Target','Location','Best')
```

Pelatihan Pound Sterling

```
clc;clear;close all;warning off;

% Proses membaca data latih dari excel
filename = 'pound.xlsx';
sheet = 2;
xlRange = 'B4:P59';
```

```
Data = xlsread(filename, sheet, xlRange);
data_latih = Data(:,1:14)';
target_latih = Data(:,15)';
[m,n] = size(data_latih);

% Pembuatan JST
net = newff(minmax(data_latih),[10
1],{'logsig','purelin'},'traingdx');

% Memberikan nilai untuk mempengaruhi proses pelatihan
net.performFcn = 'mse';
net.trainParam.goal = 0.001;
net.trainParam.show = 20;
net.trainParam.epochs = 500;
net.trainParam.mc = 0.95;
net.trainParam.lr = 0.1;

% Proses training
[net_keluaran,tr,Y,E] = train(net,data_latih,target_latih);

% Hasil setelah pelatihan
bobot_hidden = net_keluaran.IW{1,1};
bobot_keluaran = net_keluaran.LW{2,1};
bias_hidden = net_keluaran.b{1,1};
bias_keluaran = net_keluaran.b{2,1};
jumlah_iterasi = tr.num_epochs;
nilai_keluaran = Y;
nilai_error = E;
error_MSE = (1/n)*sum(nilai_error.^2);

save net.mat net_keluaran

% Hasil prediksi
hasil_latih = sim(net_keluaran,data_latih);
max_data = 17037;
min_data = 15729;
hasil_latih = ((hasil_latih-0.1)*(max_data-
min_data)/0.8)+min_data;

% Performansi hasil prediksi
filename = 'pound.xlsx';
sheet = 1;
xlRange = 'B17:BE17';

target_latih_asli = xlsread(filename, sheet, xlRange);

figure,
plotregression(target_latih_asli,hasil_latih,'Regression')

figure,
plotperform(tr)

figure,
plot(hasil_latih,'bo-')
```

```
hold on
plot(target_latih_asli,'ro-')
hold off
grid on
title(strcat(['Grafik Keluaran JST vs Target dengan nilai MSE =
',...
    num2str(error_MSE)]))
xlabel('Pola ke-')
ylabel('Kurs')
legend('Keluaran JST','Target','Location','Best')
```

Pengujian Pound Sterling

```
clc;clear;close all;

% load jaringan yang sudah dibuat pada proses pelatihan
load net.mat

% Proses membaca data uji dari excel
filename = 'pound.xlsx';
sheet = 2;
xlRange = 'B66:P121';

Data = xlsread(filename, sheet, xlRange);
data_uji = Data(:,1:14)';
target_uji = Data(:,15)';
[m,n] = size(data_uji);

% Hasil prediksi
hasil_uji = sim(net_keluaran,data_uji);
nilai_error = hasil_uji-target_uji;

max_data = 17037;
min_data = 15729;
hasil_uji = ((hasil_uji-0.1)*(max_data-min_data)/0.8)+min_data;

% Performansi hasil prediksi
error_MSE = (1/n)*sum(nilai_error.^2);

filename = 'pound.xlsx';
sheet = 1;
xlRange = 'B18:BE18';

target_uji_asli = xlsread(filename, sheet, xlRange);

figure,
plotregression(target_uji_asli,hasil_uji,'Regression')

figure,
plot(hasil_uji,'bo-')
hold on
plot(target_uji_asli,'ro-')
```

```
hold off
grid on
title(strcat(['Grafik Keluaran JST vs Target dengan nilai MSE =
',...
    num2str(error_MSE)]))
xlabel('Pola ke -')
ylabel('Kurs')
legend('Keluaran JST','Target','Location','Best')
```