

Initial data :

t	x(t-5)	x(t-4)	x(t-3)	x(t-2)	x(t-1)	x(t)
1						14000
2					14000	13851
3				14000	13851	13946
4			14000	13851	13946	13716
5		14000	13851	13946	13716	13785
6	14000	13851	13946	13716	13785	13473
7	13851	13946	13716	13785	13473	13265
8	13946	13716	13785	13473	13265	13358
9	13716	13785	13473	13265	13358	13211
10	13785	13473	13265	13358	13211	13362
11	13473	13265	13358	13211	13362	13851
12	13265	13358	13211	13362	13851	13943
13	13358	13211	13362	13851	13943	13716
14	13211	13362	13851	13943	13716	13785
15	13362	13851	13943	13716	13785	13851
16	13851	13943	13716	13785	13851	13943
17	13943	13716	13785	13851	13943	13716
18	13716	13785	13851	13943	13716	13785
19	13785	13851	13943	13716	13785	13463
20	13851	13943	13716	13785	13463	13181
21	13943	13716	13785	13463	13181	13468
22	13716	13785	13463	13181	13468	13904
23	13785	13463	13181	13468	13904	13657
24	13463	13181	13468	13904	13657	13270
25	13181	13468	13904	13657	13270	13305
26	13468	13904	13657	13270	13305	13424
27	13904	13657	13270	13305	13424	13442
28	13657	13270	13305	13424	13442	13403
29	13270	13305	13424	13442	13403	13739
30	13305	13424	13442	13403	13739	13815
31	13424	13442	13403	13739	13815	13725

Rules:

t	x(t-5)	x(t-4)	x(t-3)	x(t-2)	x(t-1)	x(t)
6	VH	VH	VH	H	H	L
7	VH	VH	H	H	L	VL
8	VH	H	H	L	VL	L
9	H	H	L	VL	L	VL
10	H	L	VL	L	VL	L
11	L	VL	L	VL	L	VH
12	VL	L	VL	L	VH	VH
13	L	VL	L	VH	VH	H
14	VL	L	VH	VH	H	H
15	L	VH	VH	H	H	VH
16	VH	VH	H	H	VH	VH
17	VH	H	H	VH	VH	H
18	H	H	VH	VH	H	H
19	H	VH	VH	H	H	L
20	VH	VH	H	H	L	VL
21	H	H	L	VL	L	VH
22	H	L	VL	L	VH	M
23	L	VL	L	VH	M	VL
24	VL	L	VH	M	VL	VL
25	L	VH	M	VL	VL	L
26	VH	M	VL	VL	L	L
27	M	VL	VL	L	L	L
28	VL	VL	L	L	L	H
29	VL	L	L	L	H	H
30	L	L	L	H	H	H

Data for prediction:

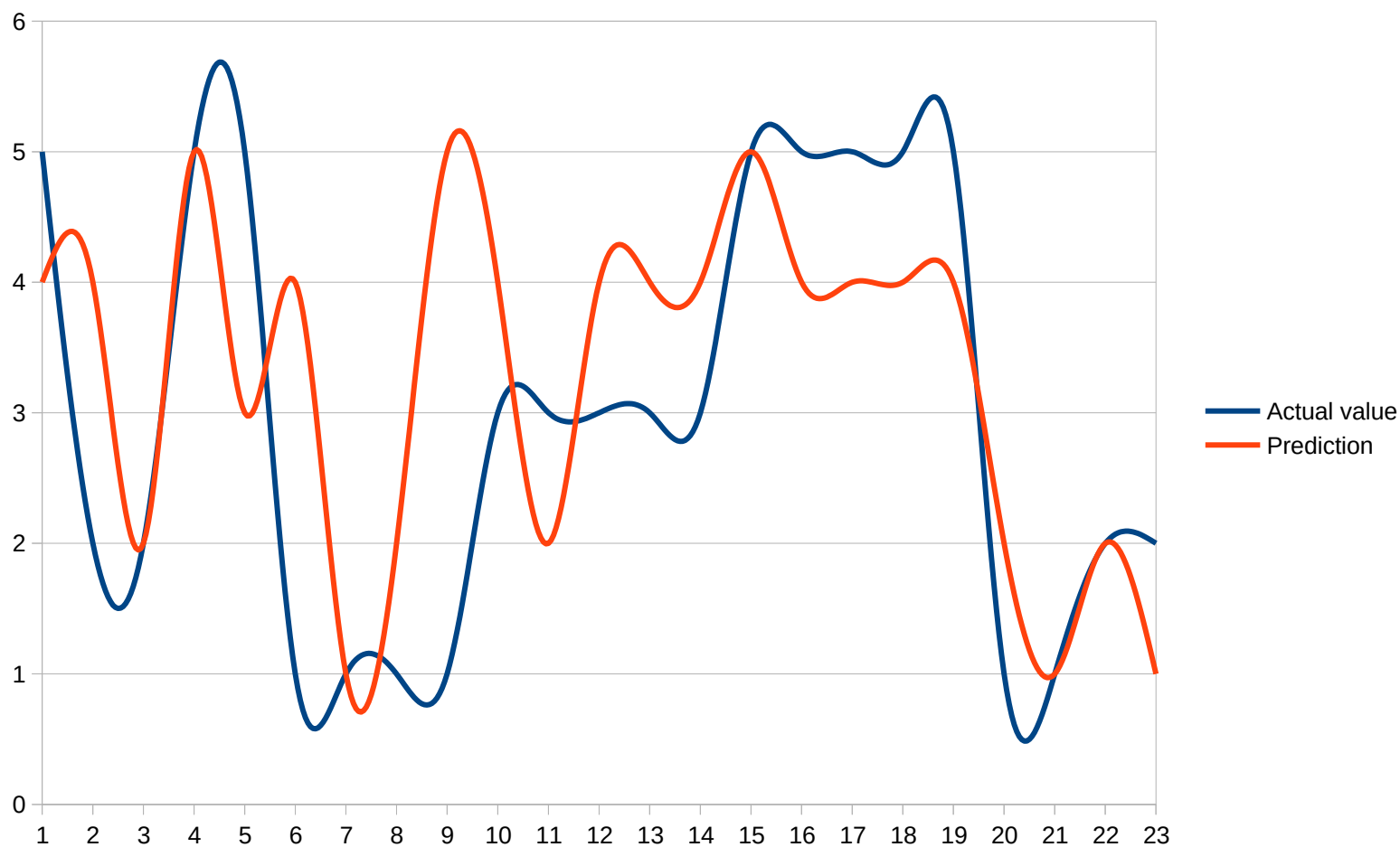
t	x(t-5)	x(t-4)	x(t-3)	x(t-2)	x(t-1)	x(t)
1						13358.00
2					13358.00	13211.00
3				13358.00	13211.00	13577.00
4			13358.00	13211.00	13577.00	13861.00
5		13358.00	13211.00	13577.00	13861.00	13907.00
6	13358.00	13211.00	13577.00	13861.00	13907.00	13950.00
7	13211.00	13577.00	13861.00	13907.00	13950.00	13463.00
8	13577.00	13861.00	13907.00	13950.00	13463.00	13181.00
9	13861.00	13907.00	13950.00	13463.00	13181.00	13468.00
10	13907.00	13950.00	13463.00	13181.00	13468.00	13971.00
11	13950.00	13463.00	13181.00	13468.00	13971.00	13918.00
12	13463.00	13181.00	13468.00	13971.00	13918.00	13226.00
13	13181.00	13468.00	13971.00	13918.00	13226.00	13235.00
14	13468.00	13971.00	13918.00	13226.00	13235.00	13378.00
15	13971.00	13918.00	13226.00	13235.00	13378.00	13322.00
16	13918.00	13226.00	13235.00	13378.00	13322.00	13041.00
17	13226.00	13235.00	13378.00	13322.00	13041.00	13289.00
18	13235.00	13378.00	13322.00	13041.00	13289.00	13577.00
19	13378.00	13322.00	13041.00	13289.00	13577.00	13565.00
20	13322.00	13041.00	13289.00	13577.00	13565.00	13611.00
21	13041.00	13289.00	13577.00	13565.00	13611.00	13649.00
22	13289.00	13577.00	13565.00	13611.00	13649.00	13649.00
23	13577.00	13565.00	13611.00	13649.00	13649.00	13501.00
24	13565.00	13611.00	13649.00	13649.00	13501.00	13577.00
25	13611.00	13649.00	13649.00	13501.00	13577.00	13861.00
26	13649.00	13649.00	13501.00	13577.00	13861.00	13907.00
27	13649.00	13501.00	13577.00	13861.00	13907.00	13950.00
28	13501.00	13577.00	13861.00	13907.00	13950.00	13971.00
29	13577.00	13861.00	13907.00	13950.00	13971.00	13918.00
30	13861.00	13907.00	13950.00	13971.00	13918.00	13226.00
31	13907.00	13950.00	13971.00	13918.00	13226.00	13028.00
32	13950.00	13971.00	13918.00	13226.00	13028.00	13351.00
33	13971.00	13918.00	13226.00	13028.00	13351.00	13448.00

Red lines are excluded.

Translated to fuzzy logic +Y column:

t	x(t-5)	x(t-4)	x(t-3)	x(t-2)	x(t-1)	x(t)	Y
6	L	VL	M	VH	VH	VH	H
7	VL	M	VH	VH	VH	L	H
8	VH	VH	VH	L	VL	L	L
9	VH	VH	L	VL	L	VH	VH
10	VH	L	VL	L	VH	VH	M
11	L	VL	L	VH	VH	VL	H
12	VH	VH	VL	VL	L	VL	VL
13	VH	VL	VL	L	VL	VL	L
14	VL	VL	L	VL	VL	VL	VH
15	VL	L	VL	VL	VL	M	H
16	L	VL	VL	VL	M	M	L
17	VL	VL	VL	M	M	M	H
18	VL	VL	VL	M	M	M	H
19	VL	M	M	M	M	M	H
20	M	M	M	L	M	VH	VH
21	M	M	L	M	VH	VH	H
22	M	L	M	VH	VH	VH	H
23	L	M	VH	VH	VH	VH	H
24	M	VH	VH	VH	VH	VH	H
25	VH	VH	VH	VH	VH	VL	L
26	VH	VH	VH	VH	VL	VL	VL
27	VH	VH	VH	VL	VL	L	L
28	VH	VH	VL	VL	L	L	VL

Graph of the coincidence of actual value and prediction:



Takagi-Sugeno rules: Estimation

	Mu																							
Rules	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	
6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.64	0	0	0	
7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.79	0	0	
8	0	0	0	0.69	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.44	0	
9	0	0	0	0	0.31	0	0	0.81	0	0	0	0	0	0	0.23	0	0	0	0	0	0	0	0.37	
10	0	0	0	0	0	0	0	0.66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
11	0	0	0	0	0	0	0	0	0.53	0	0.22	0	0	0	0	0	0	0	0	0	0	0	0	
12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
13	0.5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.56	0	0	0	0	0	0	
14	0	0.25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.61	0	0	0	0	0	
15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.11	0	0	0	0	
16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
17	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.48	0	0	0	0	
20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.19	0	0.66		
21	0	0	0	0.77	0	0	0.31	0	0	0	0	0	0	0	0.47	0	0	0	0	0	0	0	0	
22	0	0	0	0	0.45	0	0	0	0	0	0	0	0	0	0	0.26	0	0	0	0	0	0	0	
23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
25	0.0123	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
28	0	0	0	0	0	0	0	0	0	0.77	0	0.81	0	0	0	0	0	0	0	0	0	0	0	
29	0	0	0	0	0	0	0	0	0	0	0	0.77	0.77	0.61	0	0	0	0	0	0	0	0	0	
30	0	0	0	0	0	0.64	0	0	0	0	0	0.49	0.49	0.3	0	0.7	0	0	0	0	0	0	0	

Membership function

