CCOD

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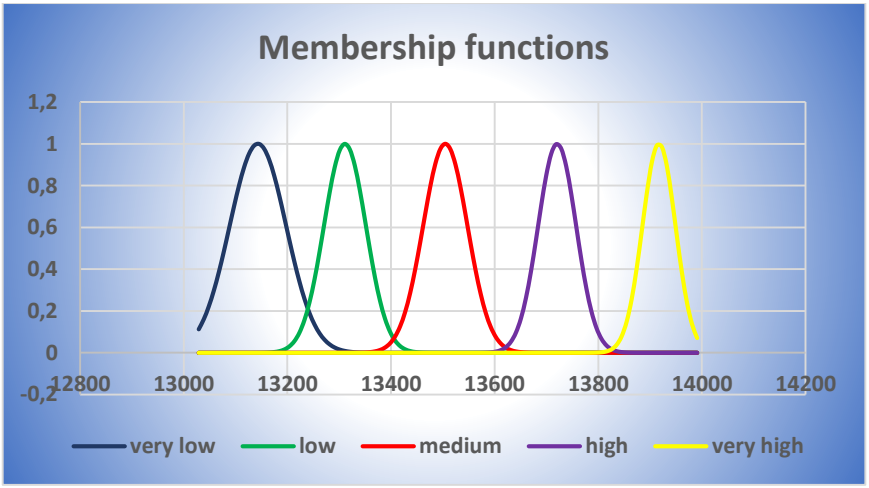
Lab 12

Table of rules

If X1 IS	AND X2 IS	Then Y
Very low	Very low	5
	Low	1
	Medium	3
	Large	3
	Very large	2
Low	Very low	2
	Low	3
	Medium	1
	Large	3
	Very large	1
Medium	Very low	5
	Low	4
	Medium	3
	Large	3
	Very large	1
Large	Very low	5
	Low	5
	Medium	4
	Large	5
	Very large	4
Very large	Very low	5
	Low	2
	Medium	5
	Large	5
	Very large	5

According to our data, let's build membership functions for Very low, Low, Medium, High, Very high



AVGs and STDs for each membership function

Very low:

avg:13143.095000000001

std: 5965.455191666638

Low:

avg:13311.071428571431

std: 3297.1899979591817

Medium:

avg:13504.73642857143

std: 3678.4623658163373

High:

avg:13720.540999999997

std: 2705.570649000042

Very high:

avg:13917.095000000001

std: 2044.8698138888785

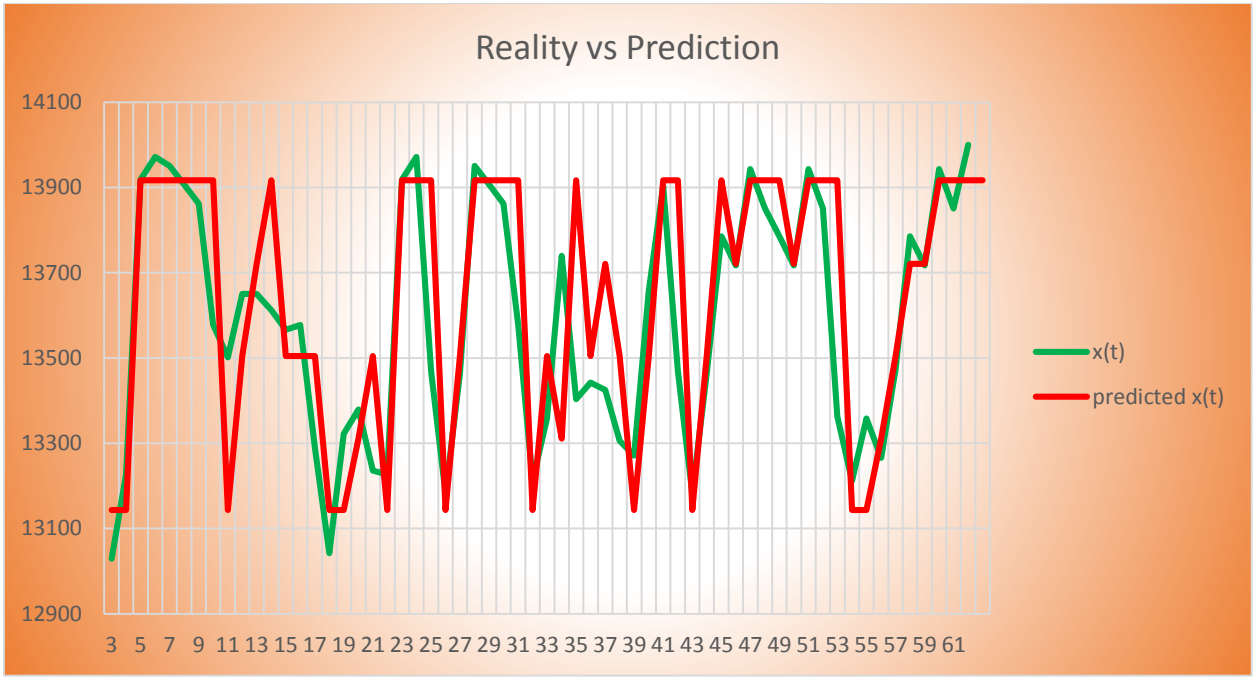
Let's predict new data according to our data and 2 previous periods like this

IF x(t-1) is smth AND x(t-2) is smth THEN y

t	x(t)	x(t-1)	how-big	x(t-2)	how-big	y	predicted x(t)
1	13448,86	---	---	---	---	---	---
2	13351,74	13448,86	medium	---	---	---	---
3	13028,92	13351,74	low	13448,86	medium	1	13143,095
4	13226,53	13028,92	very low	13351,74	low	1	13143,095
5	13918,22	13226,53	very low	13028,92	very low	5	13917,095
6	13971,55	13918,22	very high	13226,53	very low	5	13917,095
7	13950,98	13971,55	very high	13918,22	very high	5	13917,095
8	13907,25	13950,98	very high	13971,55	very high	5	13917,095
9	13861,75	13907,25	very high	13950,98	very high	5	13917,095
10	13577,87	13861,75	very high	13907,25	very high	5	13917,095
11	13501,7	13577,87	medium	13861,75	very high	1	13143,095
12	13649,97	13501,7	medium	13577,87	medium	3	13504,73643
13	13649,97	13649,97	high	13501,7	medium	4	13720,541
14	13611,68	13649,97	high	13649,97	high	5	13917,095
15	13565,84	13611,68	medium	13649,97	high	3	13504,73643
16	13577,3	13565,84	medium	13611,68	medium	3	13504,73643
17	13289,29	13577,3	medium	13565,84	medium	3	13504,73643
18	13041,85	13289,29	low	13577,3	medium	1	13143,095
19	13322,13	13041,85	very low	13289,29	low	1	13143,095
20	13378,87	13322,13	low	13041,85	very low	2	13311,07143
21	13235,88	13378,87	low	13322,13	low	3	13504,73643

22	13226,53	13235,88	very low	13378,87	low	1	13143,095
23	13918,22	13226,53	very low	13235,88	very low	5	13917,095
24	13971,55	13918,22	very high	13226,53	very low	5	13917,095
25	13468,78	13971,55	very high	13918,22	very high	5	13917,095
26	13181,91	13468,78	medium	13971,55	very high	1	13143,095
27	13463,33	13181,91	very low	13468,78	medium	3	13504,73643
28	13950,98	13463,33	medium	13181,91	very low	5	13917,095
29	13907,25	13950,98	very high	13463,33	medium	5	13917,095
30	13861,75	13907,25	very high	13950,98	very high	5	13917,095
31	13577,87	13861,75	very high	13907,25	very high	5	13917,095
32	13211,99	13577,87	medium	13861,75	very high	1	13143,095
33	13358,31	13211,99	very low	13577,87	medium	3	13504,73643
34	13739,39	13358,31	low	13211,99	very low	2	13311,07143
35	13403,42	13739,39	high	13358,31	low	5	13917,095
36	13442,52	13403,42	low	13739,39	high	3	13504,73643
37	13424,88	13442,52	medium	13403,42	low	4	13720,541
38	13305,47	13424,88	medium	13442,52	medium	3	13504,73643
39	13270,68	13305,47	low	13424,88	medium	1	13143,095
40	13657,86	13270,68	low	13305,47	low	3	13504,73643
41	13904,3	13657,86	high	13270,68	low	5	13917,095
42	13468,78	13904,3	very high	13657,86	high	5	13917,095
43	13181,91	13468,78	medium	13904,3	very high	1	13143,095
44	13463,33	13181,91	very low	13468,78	medium	3	13504,73643
45	13785,79	13463,33	medium	13181,91	very low	5	13917,095
46	13716,95	13785,79	high	13463,33	medium	4	13720,541
47	13943,42	13716,95	high	13785,79	high	5	13917,095
48	13851,08	13943,42	very high	13716,95	high	5	13917,095
49	13785,79	13851,08	very high	13943,42	very high	5	13917,095
50	13716,95	13785,79	high	13851,08	very high	4	13720,541
51	13943,42	13716,95	high	13785,79	high	5	13917,095
52	13851,08	13943,42	very high	13716,95	high	5	13917,095
53	13362,37	13851,08	very high	13943,42	very high	5	13917,095
54	13211,99	13362,37	low	13851,08	very high	1	13143,095
55	13358,31	13211,99	very low	13362,37	low	1	13143,095
56	13265,47	13358,31	low	13211,99	very low	2	13311,07143
57	13473,57	13265,47	low	13358,31	low	3	13504,73643
58	13785,79	13473,57	medium	13265,47	low	4	13720,541
59	13716,95	13785,79	high	13473,57	medium	4	13720,541
60	13943,42	13716,95	high	13785,79	high	5	13917,095
61	13851,08	13943,42	very high	13716,95	high	5	13917,095
62	14000,41	13851,08	very high	13943,42	very high	5	13917,095
63	---	14000,41	very high	13851,08	very high	5	13917,095

OK, according to data that we've predicted and data from a table, let's build a graphic of comparability of predicted and real data


Reality vs Prediction
14100
13900
13700
13500
13300
13100
12900
3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61
x(t)
predicted x(t)