

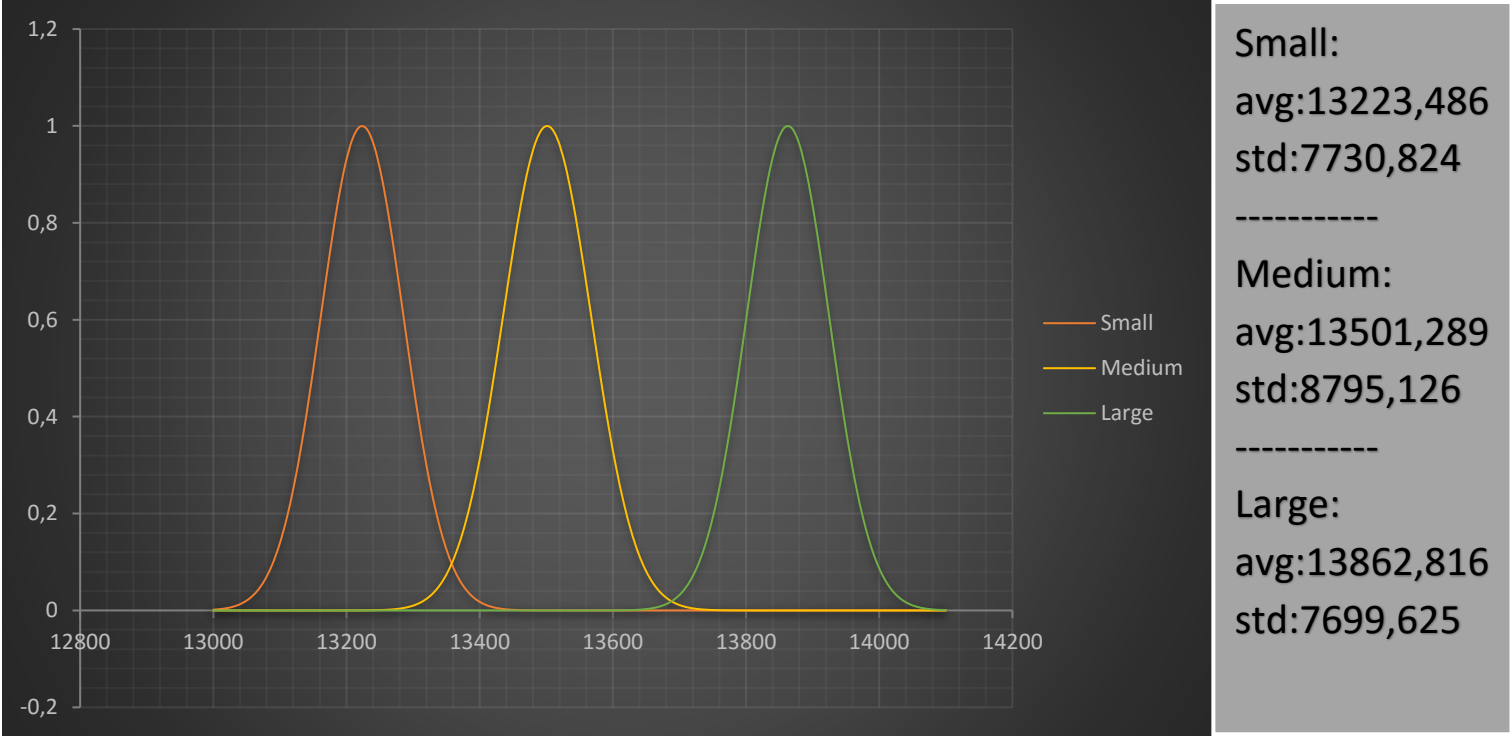
Contemporary Data Processing Technology (CCOD)

Task 11 (November 08, 2016)

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Prediction from Time-Series dataset

Create 3 membership function of small, medium, large from dataset



Design 9 rules

IF	X(t-1) = small	AND	X(t) = small	THEN	y = 1
IF	X(t-1) = small	AND	X(t) = medium	THEN	y = 2
IF	X(t-1) = small	AND	X(t) = large	THEN	y = 3
IF	X(t-1) = medium	AND	X(t) = small	THEN	y = 4
IF	X(t-1) = medium	AND	X(t) = medium	THEN	y = 5
IF	X(t-1) = medium	AND	X(t) = large	THEN	y = 6
IF	X(t-1) = large	AND	X(t) = small	THEN	y = 7
IF	X(t-1) = large	AND	X(t) = medium	THEN	y = 8
IF	X(t-1) = large	AND	X(t) = large	THEN	y = 9

Create a table Apply TS-rule and fill the column y above.

Predict x(t) by y such as if $y > 5$ then large, if $3 < y < 5$ then medium, etc.

My prediction rules:

If $y=2$ or $y=3$ or $y=4$ or $y=6$ then small

If $y=1$ or $y=5$ or $y=7$ then medium

If $y=8$ or $y=9$ then large

t	x(t)	x(t-1)	howbig	x(t-2)	howbig	y	prediction x(t)
0	13725.13	---	---	---	---	---	---
1	13815.6	13725.13	large	---	---	---	---
2	13739.39	13815.6	large	13725.13	large	9	13862.816
3	13403.42	13739.39	large	13815.6	large	9	13862.816
4	13442.52	13403.42	medium	13739.39	large	6	13223.486
5	13424.88	13442.52	medium	13403.42	medium	5	13501.2895
6	13305.47	13424.88	medium	13442.52	medium	5	13501.2895
7	13270.68	13305.47	small	13424.88	medium	2	13223.486
8	13657.86	13270.68	small	13305.47	small	1	13501.2895
9	13904.3	13657.86	medium	13270.68	small	4	13223.486
10	13468.78	13904.3	large	13657.86	medium	8	13862.816
11	13181.91	13468.78	medium	13904.3	large	6	13223.486
12	13463.33	13181.91	small	13468.78	medium	2	13223.486
13	13785.79	13463.33	medium	13181.91	small	4	13223.486
14	13716.95	13785.79	large	13463.33	medium	8	13862.816
15	13943.42	13716.95	large	13785.79	large	9	13862.816
16	13851.08	13943.42	large	13716.95	large	9	13862.816
17	13785.79	13851.08	large	13943.42	large	9	13862.816
18	13716.95	13785.79	large	13851.08	large	9	13862.816
19	13943.42	13716.95	large	13785.79	large	9	13862.816
20	13851.08	13943.42	large	13716.95	large	9	13862.816
21	13362.37	13851.08	large	13943.42	large	9	13862.816
22	13211.99	13362.37	medium	13851.08	large	5	13501.2895
23	13358.31	13211.99	small	13362.37	medium	2	13223.486
24	13265.47	13358.31	medium	13211.99	small	3	13223.486
25	13473.57	13265.47	small	13358.31	medium	2	13223.486
26	13785.79	13473.57	medium	13265.47	small	4	13223.486
27	13716.95	13785.79	large	13473.57	medium	8	13862.816
28	13943.42	13716.95	large	13785.79	large	9	13862.816
29	13851.08	13943.42	large	13716.95	large	9	13862.816
30	14000.41	13851.08	large	13943.42	large	9	13862.816
31	13448.86	14000.41	large	13851.08	large	9	13862.816
32	13351.74	13448.86	medium	14000.41	large	6	13223.486
33	13028.92	13351.74	small	13448.86	medium	3	13223.486
34	13226.53	13028.92	small	13351.74	small	1	13501.2895

35	13918.22	13226.53	small	13028.92	small	1	13501.2895
36	13971.55	13918.22	large	13226.53	small	7	13501.2895
37	13950.98	13971.55	large	13918.22	large	9	13862.816
38	13907.25	13950.98	large	13971.55	large	9	13862.816
39	13861.75	13907.25	large	13950.98	large	9	13862.816
40	13577.87	13861.75	large	13907.25	large	9	13862.816
41	13501.7	13577.87	medium	13861.75	large	6	13223.486
42	13649.97	13501.7	medium	13577.87	medium	5	13501.2895
43	13649.97	13649.97	medium	13501.7	medium	5	13501.2895
44	13611.68	13649.97	medium	13649.97	medium	5	13501.2895
45	13565.84	13611.68	medium	13649.97	medium	5	13501.2895
46	13577.3	13565.84	medium	13611.68	medium	5	13501.2895
47	13289.29	13577.3	medium	13565.84	medium	5	13501.2895
48	13041.85	13289.29	small	13577.3	medium	2	13223.486
49	13322.13	13041.85	small	13289.29	small	1	13501.2895
50	13378.87	13322.13	small	13041.85	small	1	13501.2895
51	13235.88	13378.87	medium	13322.13	small	3	13223.486
52	13226.53	13235.88	small	13378.87	medium	2	13223.486
53	13918.22	13226.53	small	13235.88	small	1	13501.2895
54	13971.55	13918.22	large	13226.53	small	7	13501.2895
55	13468.78	13971.55	large	13918.22	large	9	13862.816
56	13181.91	13468.78	medium	13971.55	large	6	13223.486
57	13463.33	13181.91	small	13468.78	medium	2	13223.486
58	13950.98	13463.33	medium	13181.91	small	4	13223.486
59	13907.25	13950.98	large	13463.33	medium	8	13862.816
60	13861.75	13907.25	large	13950.98	large	9	13862.816
61	13577.87	13861.75	large	13907.25	large	9	13862.816
62	13211.99	13577.87	medium	13861.75	large	6	13223.486
63	---	13211.99	small	13577.87	medium	2	13223.486

Draw 2 graphs of $x(t)$ and predicted $x(t) = \text{avg of prediction}$

