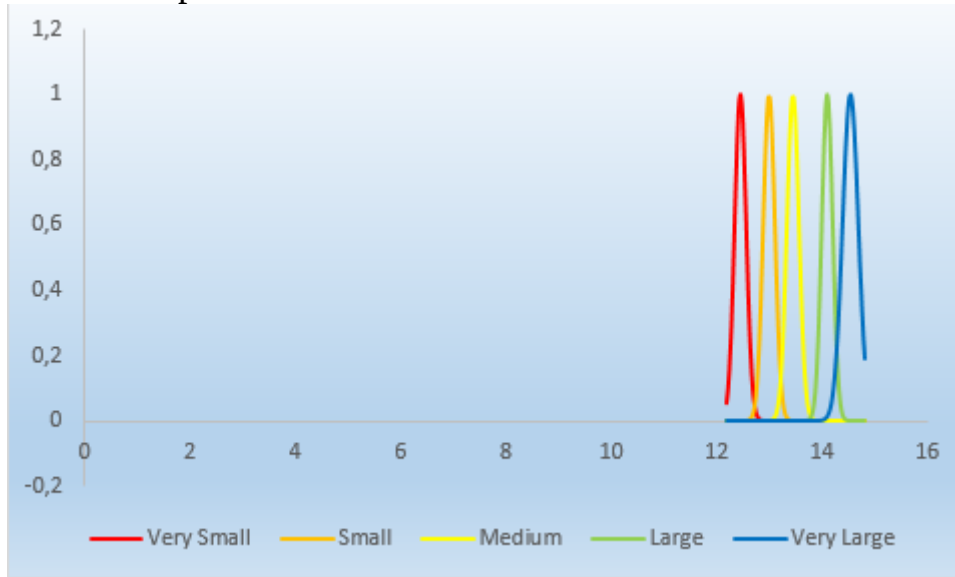


Contemporary Data Processing Technology (CCOD)

Lab 9 (October 27, 2016)

Melnikov Artem, AS-36

Membership function of attribute №1:



MS 1:

very small:

avg:12.43416666666667

std: 0.02387430555555556

small:

avg:12.98

std: 0.024371428571428492

medium:

avg:13.435

std: 0.026324999999999984

large:

avg:14.0875

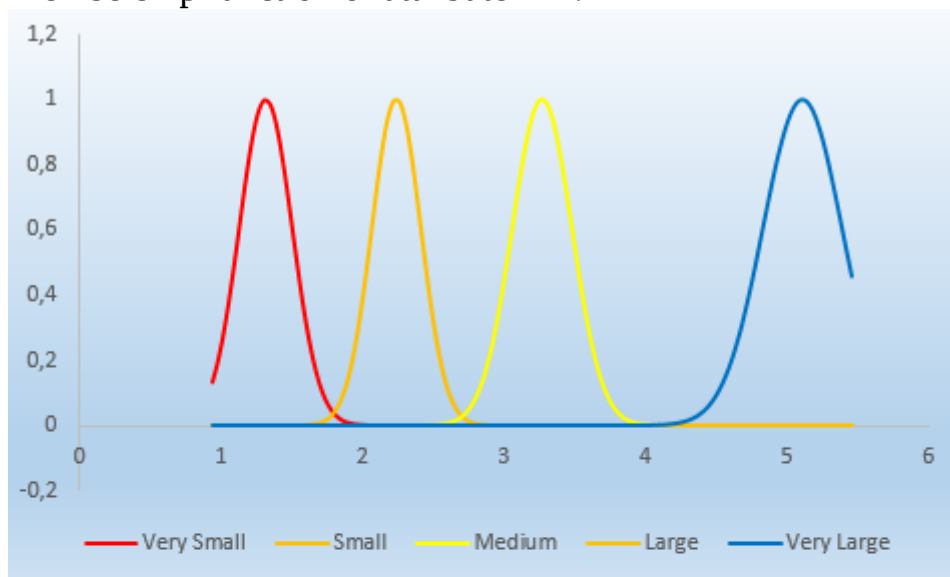
std: 0.021368750000000047

very large:

avg:14.53

std: 0.045066666666666671

Membership function of attribute №2:



MS 2:

very small:

avg:1.3170588235294114

std: 0.0703031141868512

small:

avg:2.2414285714285715

std: 0.059897959183673445

medium:

avg:3.2725

std: 0.08881874999999992

large:

avg:0

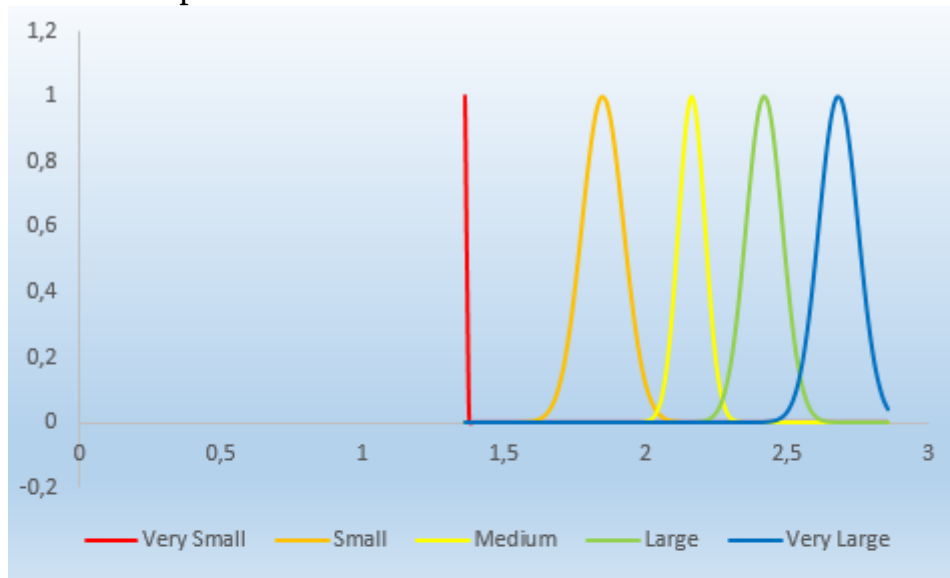
std: 0

very large:

avg:5.115

std: 0.15602500000000002

Membership function of attribute №3:



MS 3:

very small:

avg:1.36

std: 0

small:

avg:1.8466666666666667

std: 0.010755555555555553

medium:

avg:2.1614285714285715

std: 0.0043836734693877555

large:

avg:2.4178571428571427

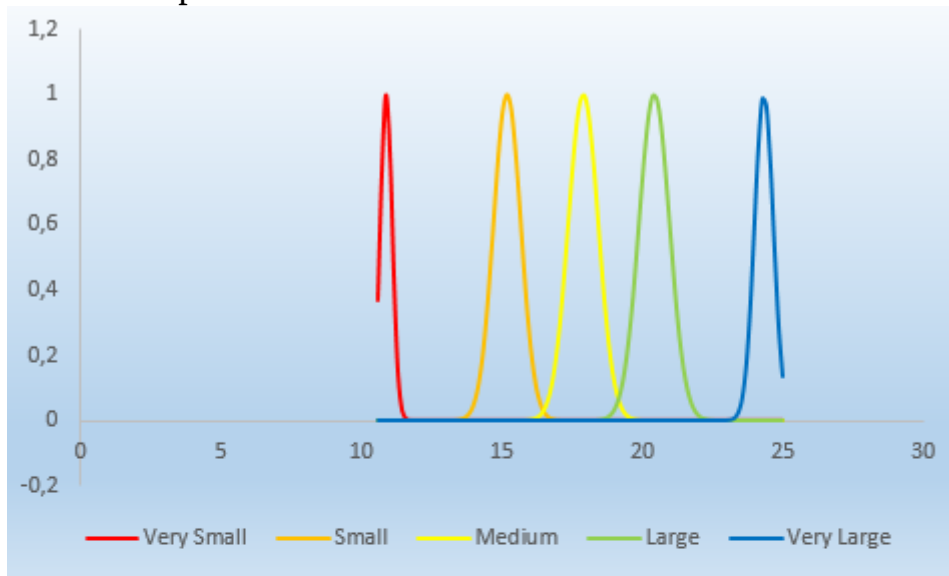
std: 0.008173979591836742

very large:

avg:2.6799999999999997

std: 0.009520000000000013

Membership function of attribute №4:



MS 4:

very small:

avg:10.899999999999999

std: 0.08999999999999989

small:

avg:15.2

std: 0.4685714285714286

medium:

avg:17.908333333333335

std: 0.5674305555555555

large:

avg:20.433333333333337

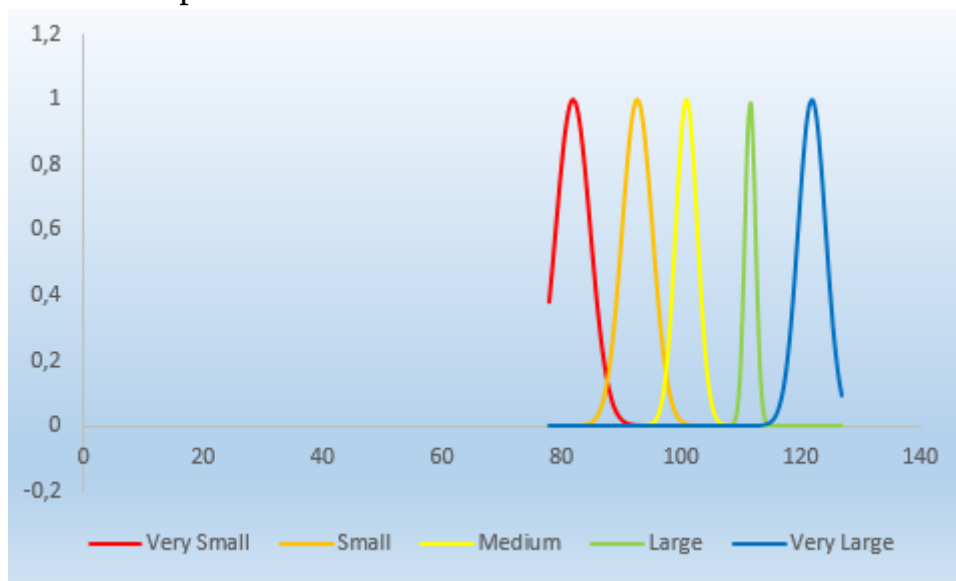
std: 0.5888888888888886

very large:

avg:24.333333333333336

std: 0.2222222222222224

Membership function of attribute №5:



MS 5:

very small:

avg:82

std: 16.5

small:

avg:92.75

std: 12.6875

medium:

avg:101

std: 6.545454545454547

large:

avg:111.66666666666666

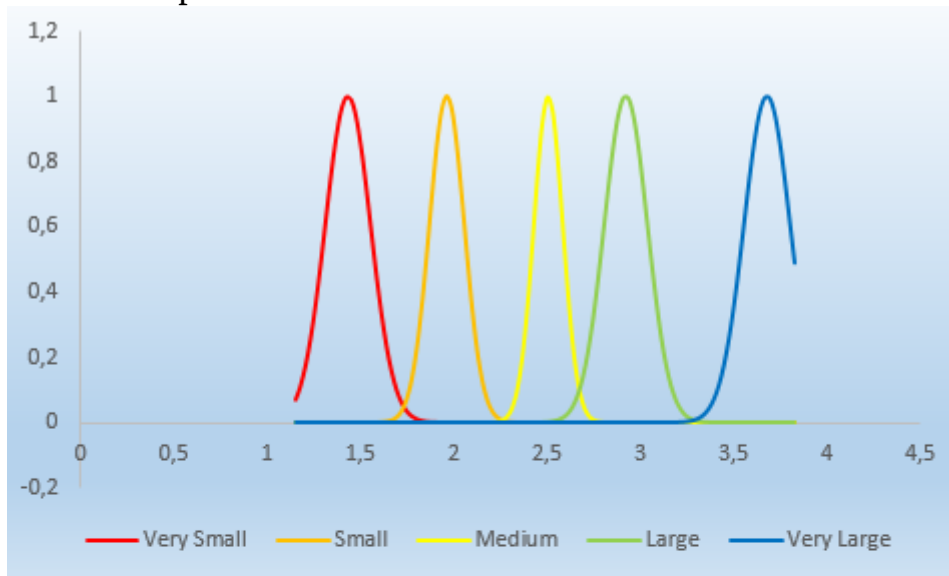
std: 1.5555555555555556

very large:

avg:122

std: 10.5

Membership function of attribute №6:



MS 6:

very small:

avg:1.43

std: 0.02940000000000002

small:

avg:1.96

std: 0.017466666666666665

medium:

avg:2.5033333333333334

std: 0.012022222222222223

large:

avg:2.9185714285714286

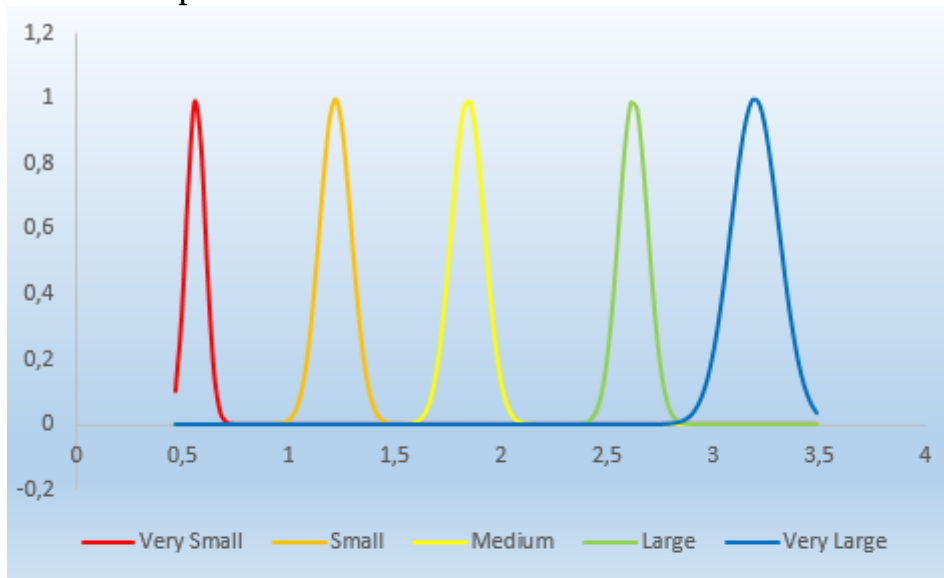
std: 0.026755102040816353

very large:

avg:3.675

std: 0.030625000000000013

Membership function of attribute №7:



MS 7:

very small:

avg:0.5657142857142857

std: 0.00399591836734694

small:

avg:1.222857142857143

std: 0.011077551020408156

medium:

avg:1.8466666666666667

std: 0.012022222222222222

large:

avg:2.6260000000000003

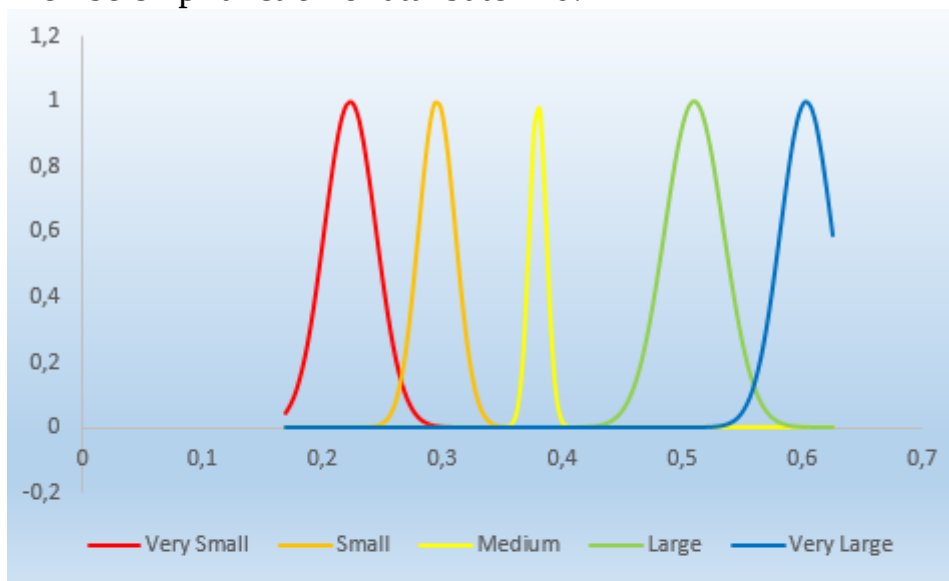
std: 0.009463999999999997

very large:

avg:3.1987500000000004

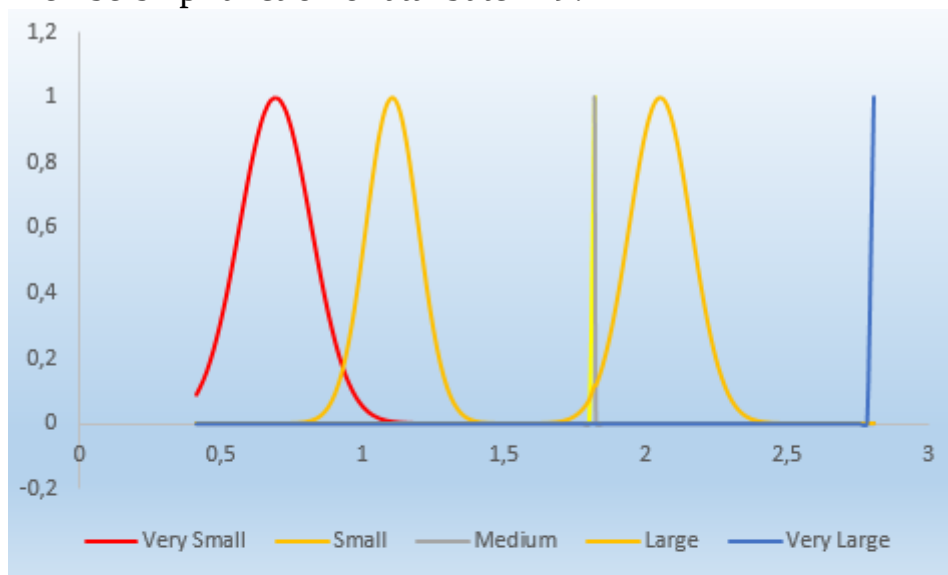
std: 0.02533593750000002

Membership function of attribute №8:



MS 8:
very small:
avg:0.22374999999999998
std: 0.0009234375
small:
avg:0.29600000000000004
std: 0.0004639999999999999
medium:
avg:0.38
std: 0.00010000000000000018
large:
avg:0.51
std: 0.0012000000000000008
very large:
avg:0.6033333333333333
std: 0.0009222222222222221

Membership function of attribute №9:



MS 9:

very small:

avg:0.69

std: 0.032272727272728

small:

avg:1.10375

std: 0.0171234375

medium:

avg:1.82

std: 0

large:

avg:2.0533333333333332

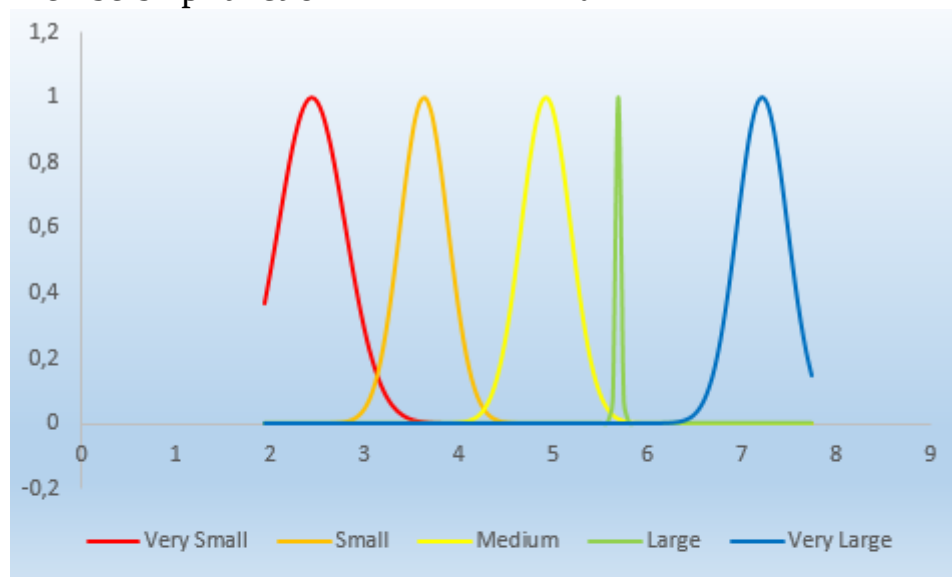
std: 0.024088888888888888

very large:

avg:2.81

std: 0

Membership function of attribute №10:



MS 10:

very small:

avg:2.45

std: 0.2500000000000001

small:

avg:3.638

std: 0.12781599999999993

medium:

avg:4.928571428571429

std: 0.13601224489795918

large:

avg:5.694000000000001

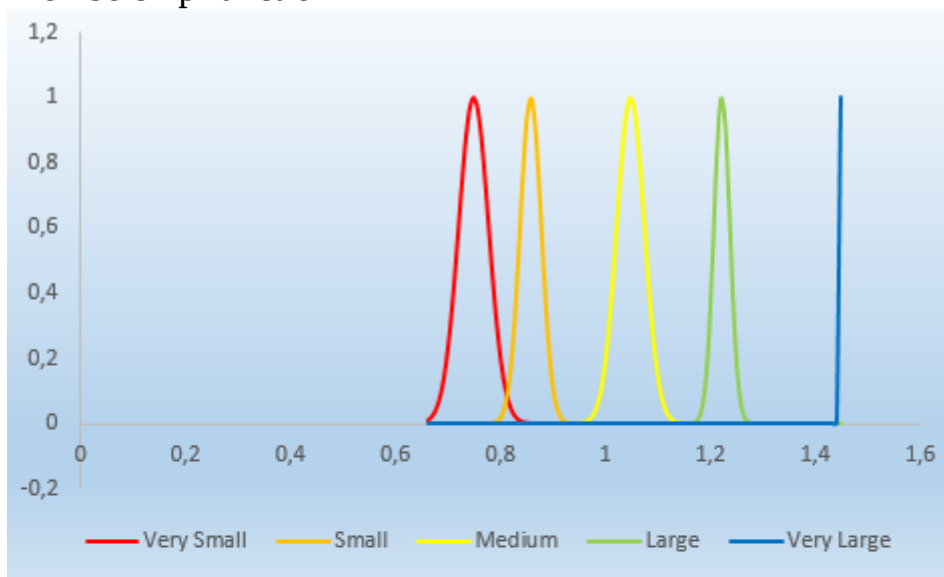
std: 0.0012640000000000095

very large:

avg:7.2175

std: 0.14291874999999996

Membership function of attribute №11:



MS 11:

very small:

avg:0.7475

std: 0.0016437500000000005

small:

avg:0.8566666666666667

std: 0.0008222222222222238

medium:

avg:1.0478571428571428

std: 0.0014025510204081658

large:

avg:1.2225000000000001

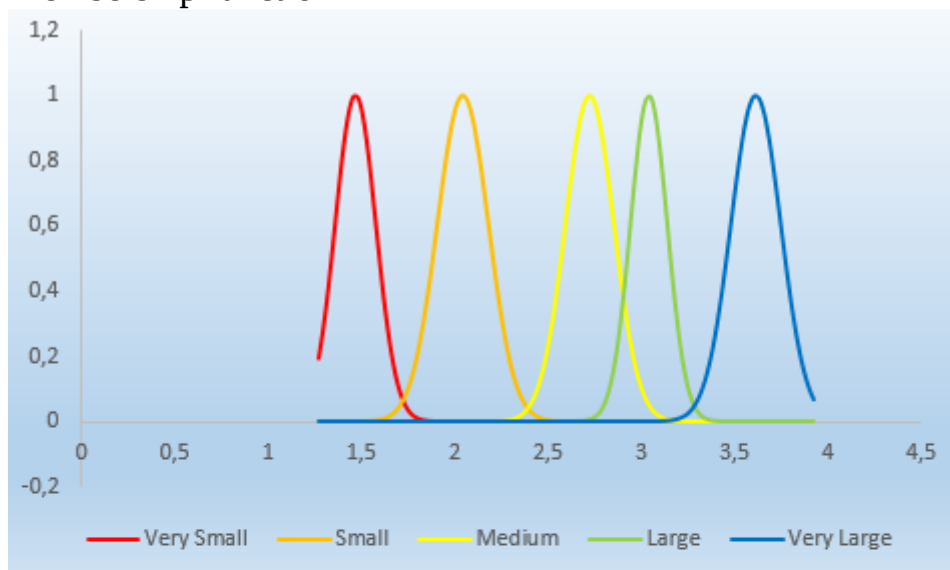
std: 0.00046875000000000085

very large:

avg:1.45

std: 0

Membership function of attribute №12:



MS 12:

very small:

avg:1.4669999999999999

std: 0.023580999999999998

small:

avg:2.0416666666666665

std: 0.03744722222222222

medium:

avg:2.72

std: 0.0338000000000000024

large:

avg:3.0374999999999996

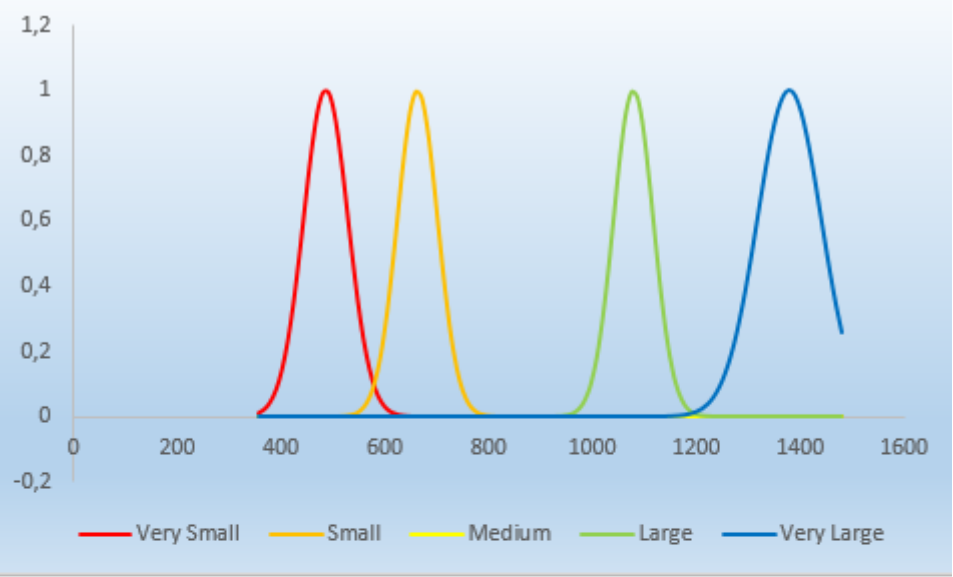
std: 0.019368749999999999

very large:

avg:3.6100000000000003

std: 0.035524999999999999

Membership function of attribute №13:



MS 13:
very small:
avg:484.6666666666663
std: 3670.8888888888887
small:
avg:661.5
std: 3003.9166666666665
medium:
avg:0
std: 0
large:
avg:1078
std: 2916.0000000000005
very large:
avg:1378.75
std: 7554.6875

Table of rules

if x1	if x2	if x3	if x4	if x5	if x6	if x7	if x8	if x9	if x10	if x11	if x12	if x13	then
very large	small	large	very small	medium	medium	large	very small	large	very large	large	large	large	1
very large	small	large	very small	medium	medium	large	small	large	very large	large	medium	large	1
medium	very small	medium	very large	very small	small	small	small	large	small	large	small	small	2
medium	very small	medium	medium	medium	medium	small	large	large	medium	medium	very small	very small	2
small	small	very large	medium	large	very small	very small	small	very small	medium	very small	small	very small	3
very small	small	large	medium	large	small	very small	large	small	medium	small	medium	small	3
small	medium	medium	small	medium	medium	small	medium	medium	small	medium	medium	medium	other

Table of conformities

	Type 1	Type 2	Typr 3
1	1	2	3
2	1	3	3
3	1	2	3
4	1	2	2
5	1	1	3
succes rate	100%	60%	80%

Table of initial:

Type of wine	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	x13
1	14,23	1,71	2,43	15,6	127	2,8	3,06	0,28	2,29	5,64	1,04	3,92	1065
	13,2	1,78	2,14	11,2	100	2,65	2,76	0,26	1,28	4,38	1,05	3,4	1050
	13,16	2,36	2,67	18,6	101	2,8	3,24	0,3	2,81	5,68	1,03	3,17	1185
	14,37	1,95	2,5	16,8	113	3,85	3,49	0,24	2,18	7,8	0,86	3,45	1480
	13,24	2,59	2,87	21	118	2,8	2,69	0,39	1,82	4,32	1,04	2,93	735
	14,2	1,76	2,45	15,2	112	3,27	3,39	0,34	1,97	6,75	1,05	2,85	1450
	14,39	1,87	2,45	14,6	96	2,5	2,52	0,3	1,98	5,25	1,02	3,58	1290
	14,06	2,15	2,61	17,6	121	2,6	2,51	0,31	1,25	5,05	1,06	3,58	1295
	14,83	1,64	2,17	14	97	2,8	2,98	0,29	1,98	5,2	1,08	2,85	1045
2	13,86	1,35	2,27	16	98	2,98	3,15	0,22	1,85	7,22	1,01	3,55	1045
	12,37	0,94	1,36	10,6	88	1,98	0,57	0,28	0,42	1,95	1,05	1,82	520
	12,33	1,1	2,28	16	101	2,05	1,09	0,63	0,41	3,27	1,25	1,67	680
	12,64	1,36	2,02	16,8	100	2,02	1,41	0,53	0,62	5,75	0,98	1,59	450
	13,67	1,25	1,92	18	94	2,1	1,79	0,32	0,73	3,8	1,23	2,46	630
	12,37	1,13	2,16	19	87	3,5	3,1	0,19	1,87	4,45	1,22	2,87	420
	12,17	1,45	2,53	19	104	1,89	1,75	0,45	1,03	2,95	1,45	2,23	355
	12,37	1,21	2,56	18,1	98	2,42	2,65	0,37	2,08	4,6	1,19	2,3	678
	13,11	1,01	1,7	15	78	2,98	3,18	0,26	2,28	5,3	1,12	3,18	502
3	12,37	1,17	1,92	19,6	78	2,11	2	0,27	1,04	4,68	1,12	3,48	510
	13,34	0,94	2,36	17	110	2,53	1,3	0,55	0,42	3,17	1,02	1,93	750
	12,86	1,35	2,32	18	122	1,51	1,25	0,21	0,94	4,1	0,76	1,29	630
	12,88	2,99	2,4	20	104	1,3	1,22	0,24	0,83	5,4	0,74	1,42	530
	12,81	2,31	2,4	24	98	1,15	1,09	0,27	0,83	5,7	0,66	1,36	560
	12,7	3,55	2,36	21,5	106	1,7	1,2	0,17	0,84	5	0,78	1,29	600
	12,51	1,24	2,25	17,5	85	2	0,58	0,6	1,25	5,45	0,75	1,51	650
	12,6	2,46	2,2	18,5	94	1,62	0,66	0,63	0,94	7,1	0,73	1,58	695
	12,25	4,72	2,54	21	89	1,38	0,47	0,53	0,8	3,85	0,75	1,27	720
	12,53	5,51	2,64	25	96	1,79	0,6	0,63	1,1	5	0,82	1,69	515
	13,49	3,59	2,19	19,5	88	1,62	0,48	0,58	0,88	5,7	0,81	1,82	580
	12,84	2,96	2,61	24	101	2,32	0,6	0,53	0,81	4,92	0,89	2,15	590

Table of validation:

Type of wine	x1	x2	x3	x4	x5	x6	x7	x8	x9	x10	x11	x12	x13
1	14,1	2,16	2,3	18	105	2,95	3,32	0,22	2,38	5,75	1,25	3,17	1510
	14,12	1,48	2,32	16,8	95	2,2	2,43	0,26	1,57	5	1,17	2,82	1280
	13,75	1,73	2,41	16	89	2,6	2,76	0,29	1,81	5,6	1,15	2,9	1320
	14,75	1,73	2,39	11,4	91	3,1	3,69	0,43	2,81	5,4	1,25	2,73	1150
	14,38	1,87	2,38	12	102	3,3	3,64	0,29	2,96	7,5	1,2	3	1547
2	12,21	1,19	1,75	16,8	151	1,85	1,28	0,14	2,5	2,85	1,28	3,07	718
	12,29	1,61	2,21	20,4	103	1,1	1,02	0,37	1,46	3,05	0,906	1,82	870
	13,86	1,51	2,67	25	86	2,95	2,86	0,21	1,87	3,38	1,36	3,16	410
	13,49	1,66	2,24	24	87	1,88	1,84	0,27	1,03	3,74	0,98	2,78	472
	12,99	1,67	2,6	30	139	3,3	2,89	0,21	1,96	3,35	1,31	3,5	985
3	12,93	2,81	2,7	21	96	1,54	0,5	0,53	0,75	4,6	0,77	2,31	600
	13,36	2,56	2,35	20	89	1,4	0,5	0,37	0,64	5,6	0,7	2,47	780
	13,52	3,17	2,72	23,5	97	1,55	0,52	0,5	0,55	4,35	0,89	2,06	520
	13,62	4,95	2,35	20	92	2	0,8	0,47	1,02	4,4	0,91	2,05	550
	12,25	3,88	2,2	18,5	112	1,38	0,78	0,29	1,14	8,21	0,65	2	855