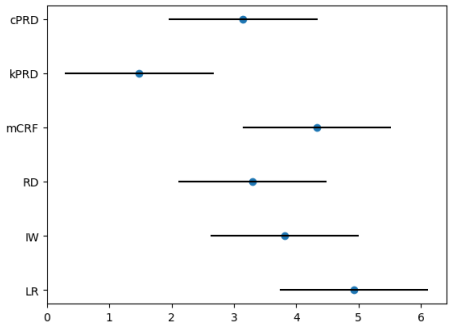
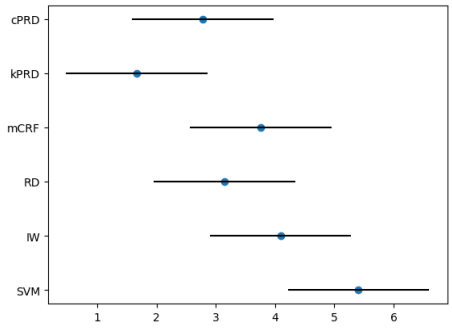
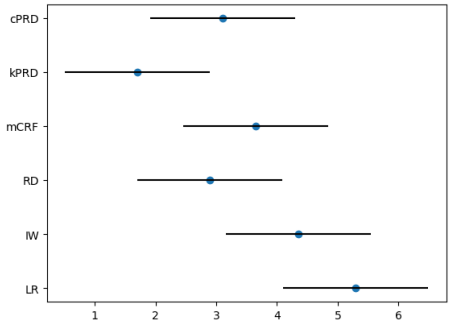
Supplementary Materials



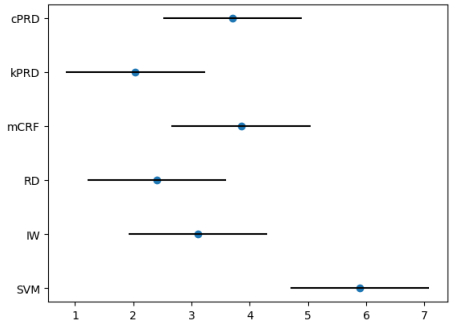
(a) kernel logistic-loss-based methods



(b) kernel hinge-loss-based methods

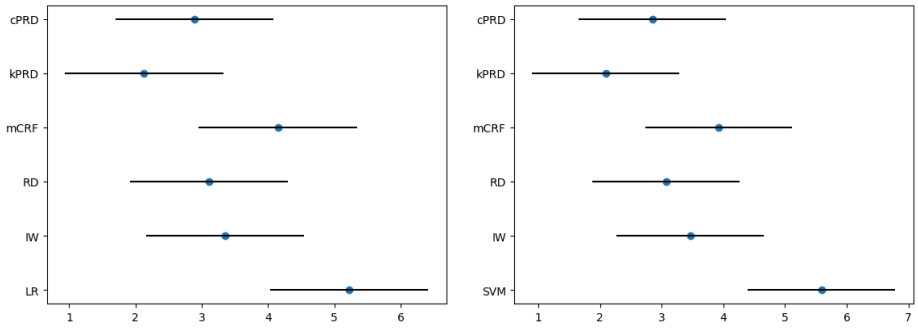


(c) linear logistic-loss-based methods



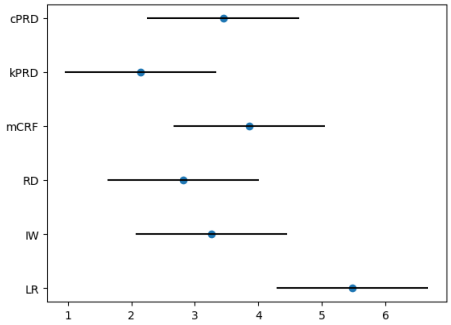
(d) linear hinge-loss-based methods

Figure 1: Test results on four surrogate loss functions(kernel width = 2^0)

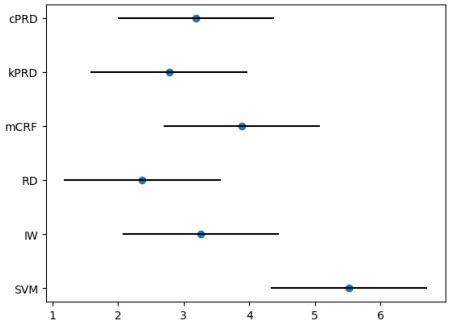


(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods

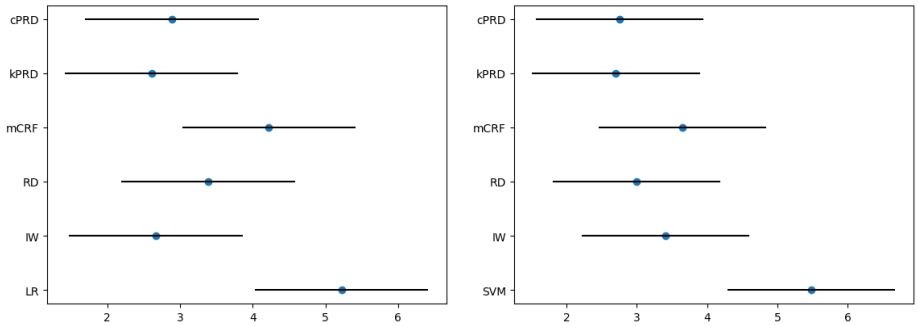


(c) linear logistic-loss-based methods



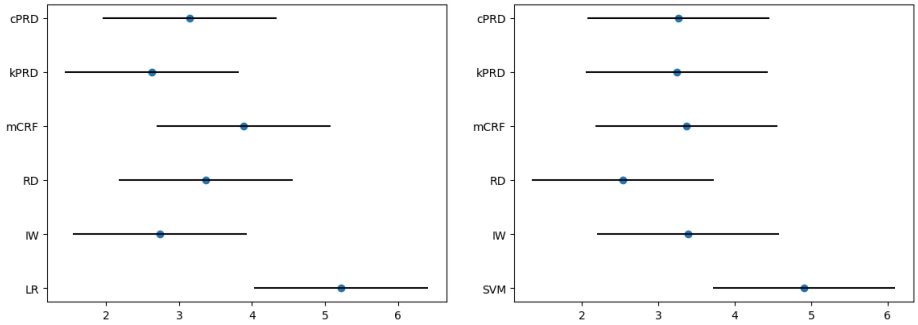
(d) linear hinge-loss-based methods

Figure 2: Test results on four surrogate loss functions(kernel width = 2^1)



(a) kernel logistic-loss-based methods

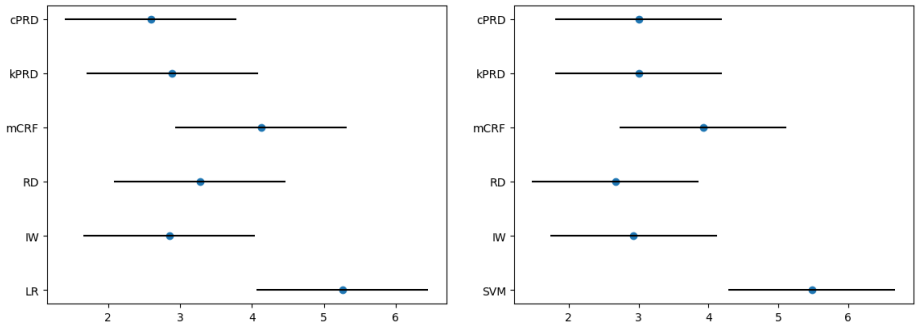
(b) kernel hinge-loss-based methods



(c) linear logistic-loss-based methods

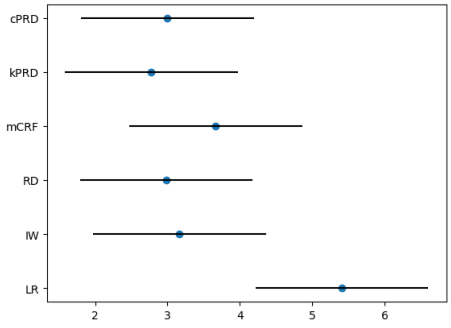
(d) linear hinge-loss-based methods

Figure 3: Test results on four surrogate loss functions(kernel width = 2^2)

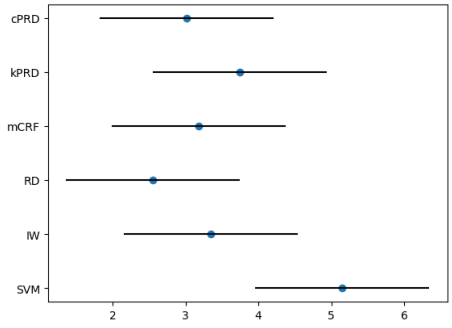


(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods

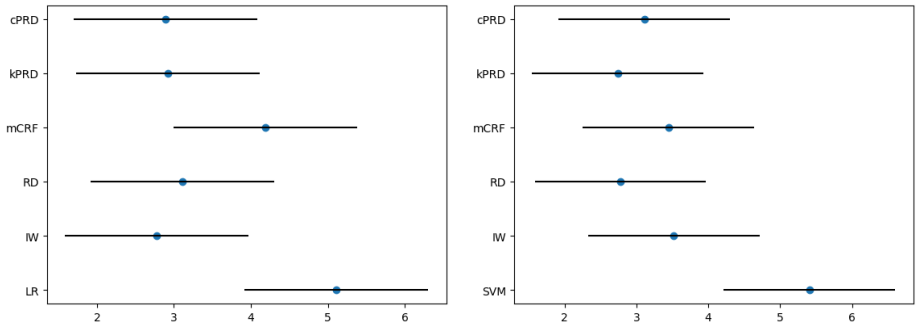


(c) linear logistic-loss-based methods



(d) linear hinge-loss-based methods

Figure 4: Test results on four surrogate loss functions(kernel width = 2^3)



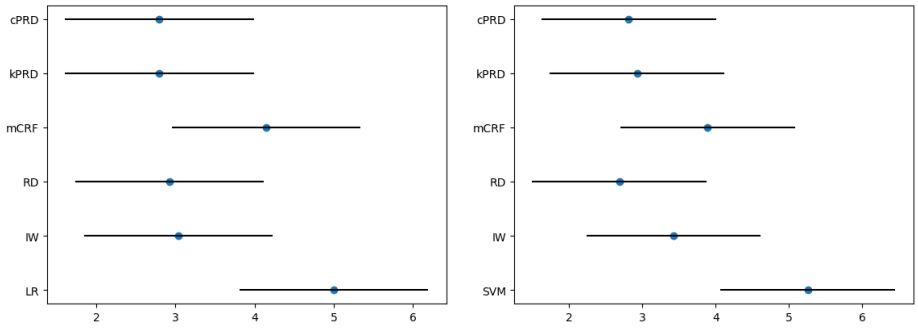
(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods

(c) linear logistic-loss-based methods

(d) linear hinge-loss-based methods

Figure 5: Test results on four surrogate loss functions(kernel width = 2^4)



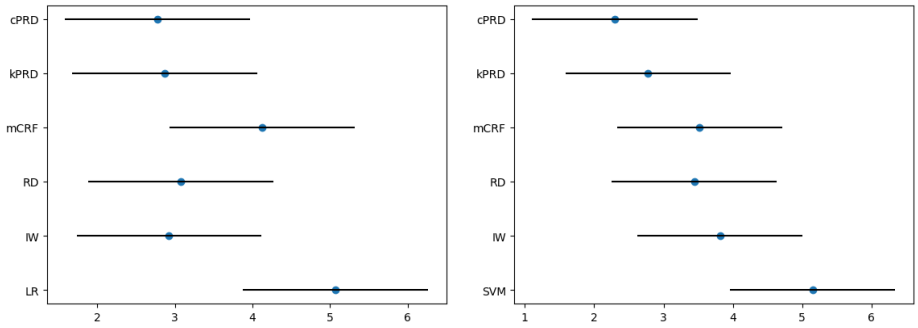
(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods

(c) linear logistic-loss-based methods

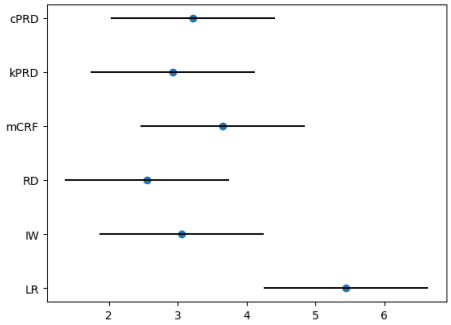
(d) linear hinge-loss-based methods

Figure 6: Test results on four surrogate loss functions(kernel width = 2^5)

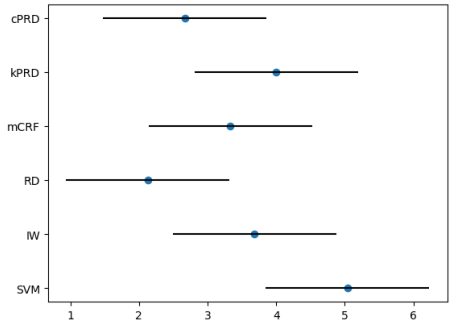


(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods

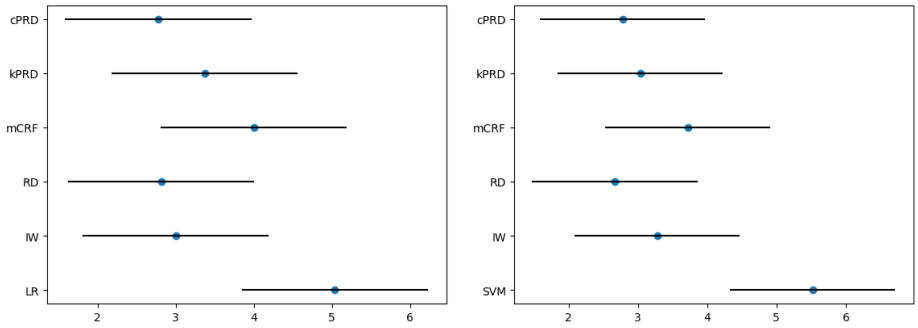


(c) linear logistic-loss-based methods



(d) linear hinge-loss-based methods

Figure 7: Test results on four surrogate loss functions(kernel width = 2^6)



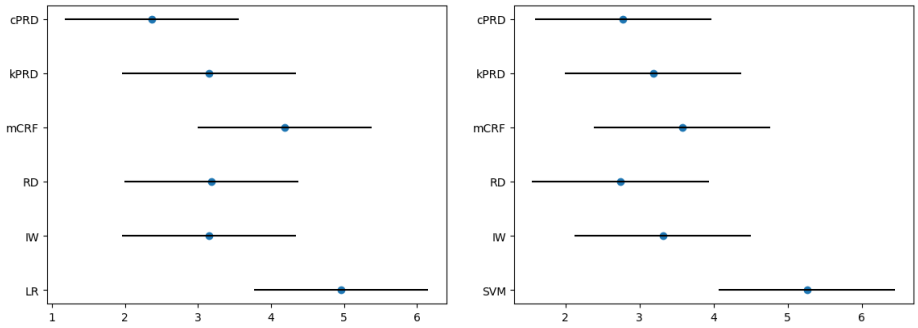
(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods

(c) linear logistic-loss-based methods

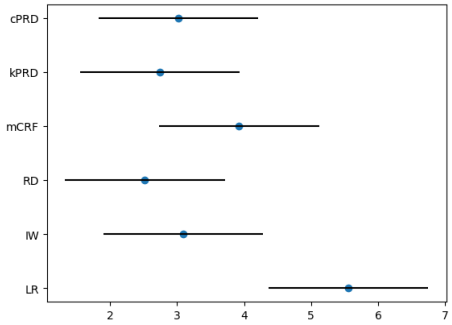
(d) linear hinge-loss-based methods

Figure 8: Test results on four surrogate loss functions(kernel width = 2^7)

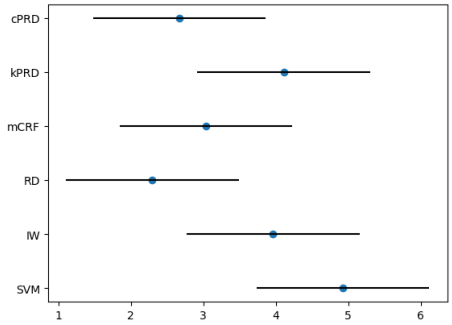


(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods

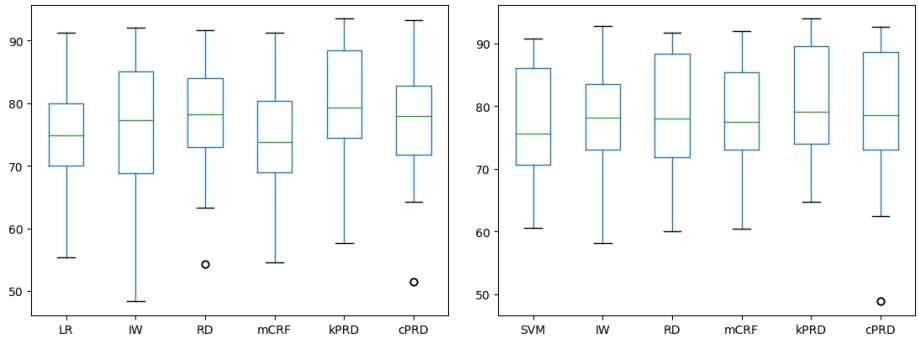


(c) linear logistic-loss-based methods



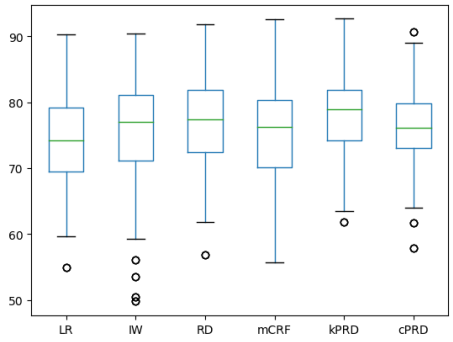
(d) linear hinge-loss-based methods

Figure 9: Test results on four surrogate loss functions(kernel width = 2^8)

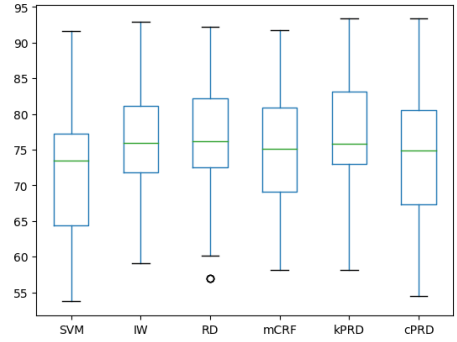


(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods

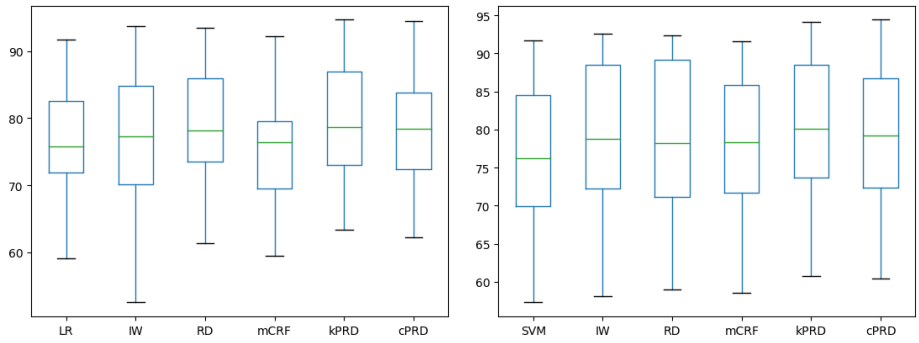


(c) linear logistic-loss-based methods



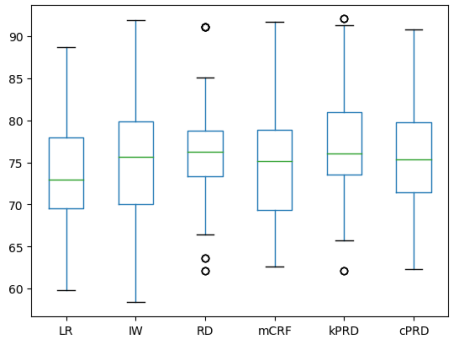
(d) linear hinge-loss-based methods

Figure 10: Box plot results on four surrogate loss functions(kernel width = 2^0)

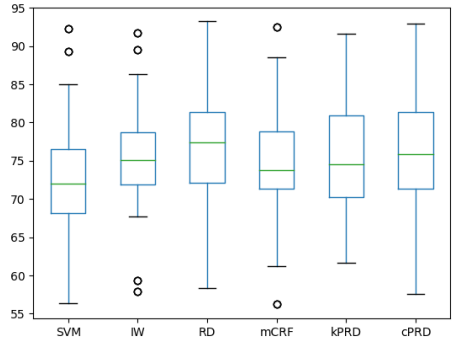


(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods

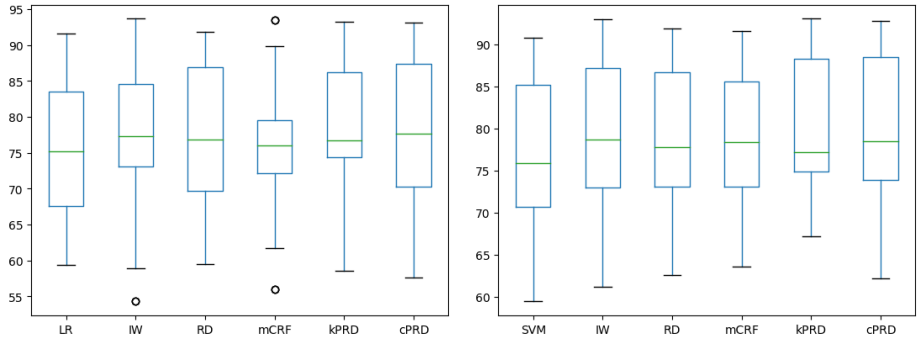


(c) linear logistic-loss-based methods



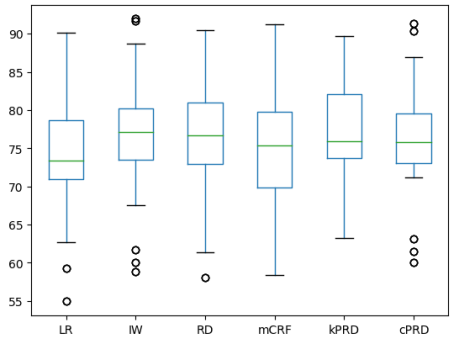
(d) linear hinge-loss-based methods

Figure 11: Box plot results on four surrogate loss functions(kernel width = 2^1)

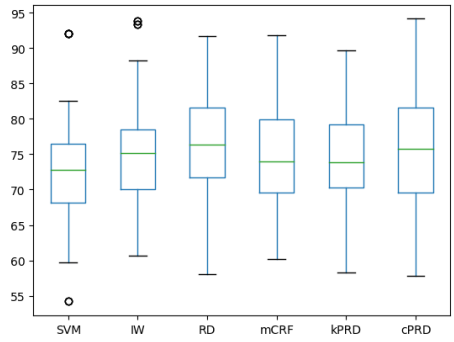


(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods

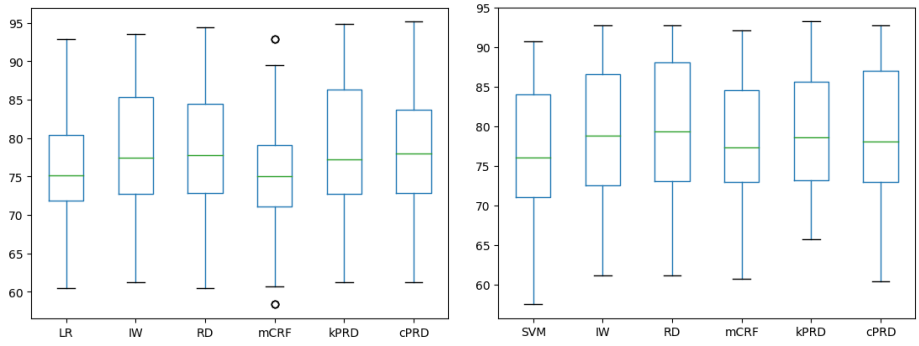


(c) linear logistic-loss-based methods



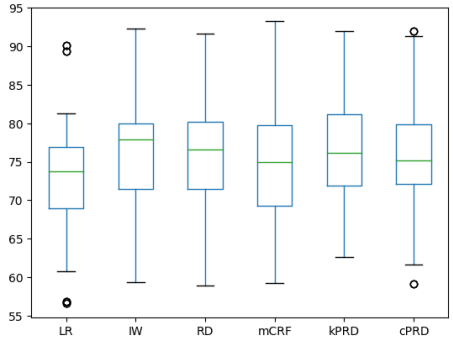
(d) linear hinge-loss-based methods

Figure 12: Box plot results on four surrogate loss functions(kernel width = 2^2)

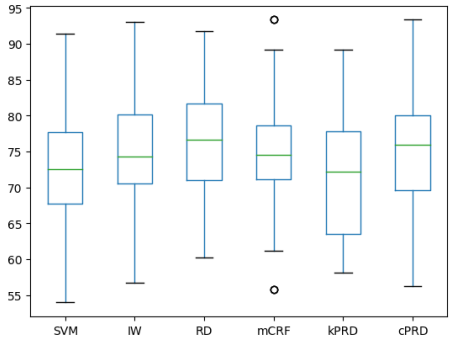


(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods

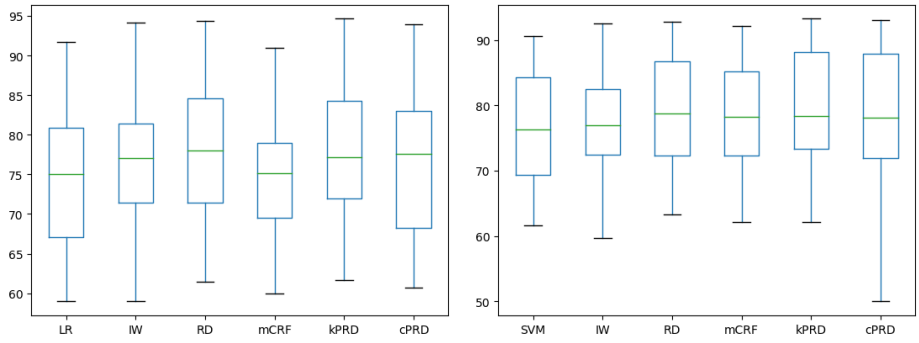


(c) linear logistic-loss-based methods



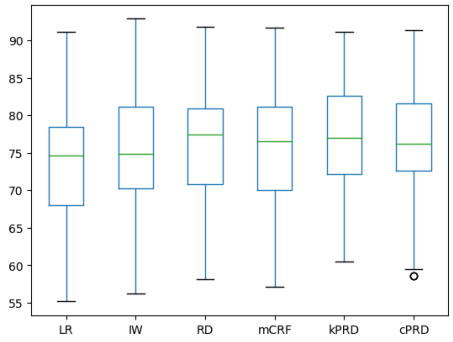
(d) linear hinge-loss-based methods

Figure 13: Box plot results on four surrogate loss functions(kernel width = 2^3)

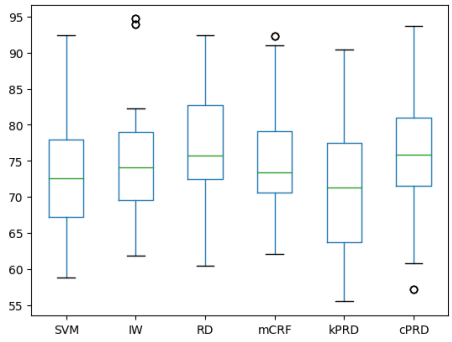


(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods

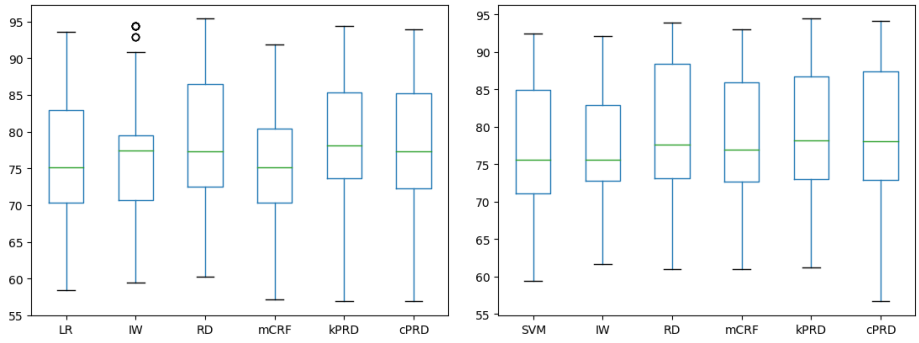


(c) linear logistic-loss-based methods



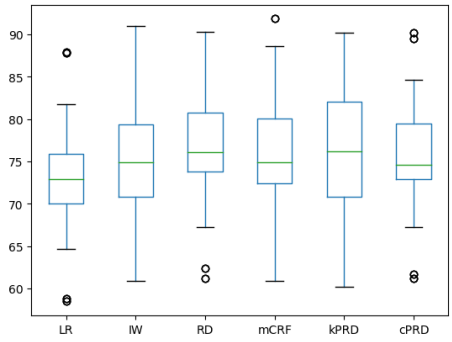
(d) linear hinge-loss-based methods

Figure 14: Box plot results on four surrogate loss functions(kernel width = 2^4)

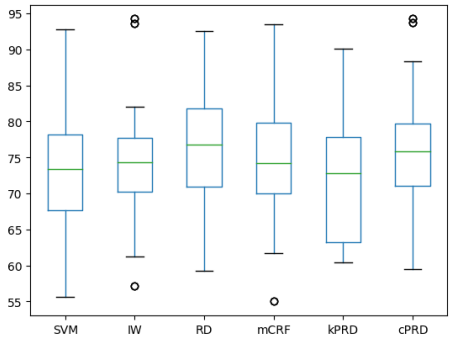


(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods

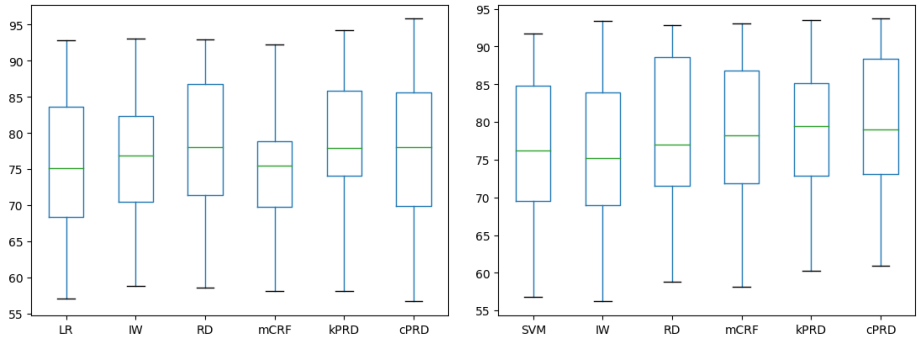


(c) linear logistic-loss-based methods



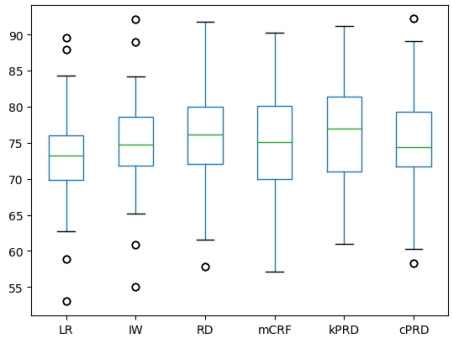
(d) linear hinge-loss-based methods

Figure 15: Box plot results on four surrogate loss functions(kernel width = 2^5)

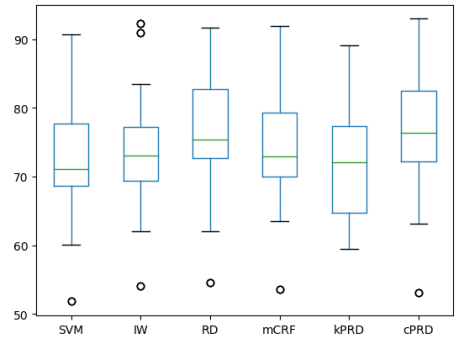


(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods

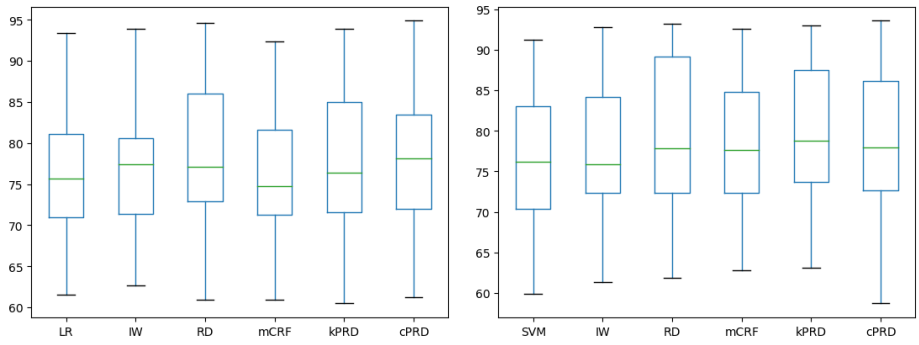


(c) linear logistic-loss-based methods



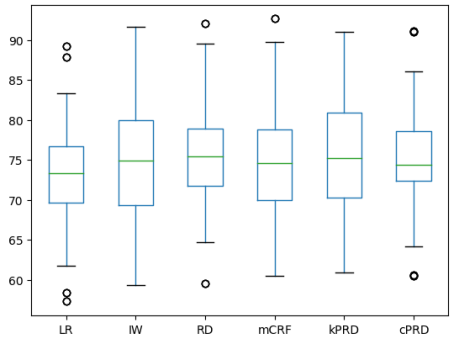
(d) linear hinge-loss-based methods

Figure 16: Box plot results on four surrogate loss functions(kernel width = 2^6)

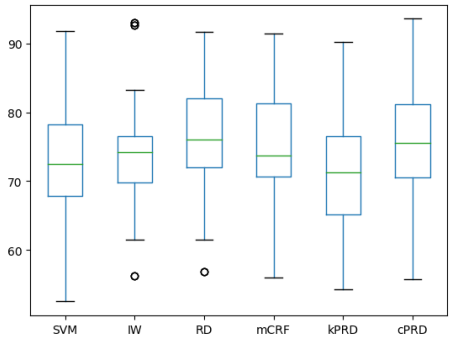


(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods

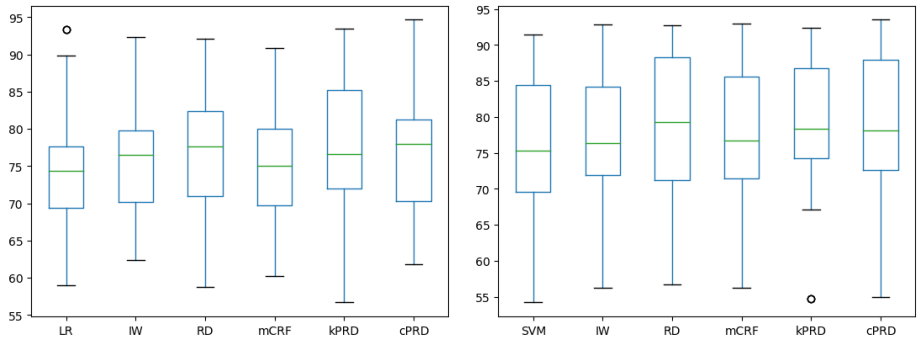


(c) linear logistic-loss-based methods



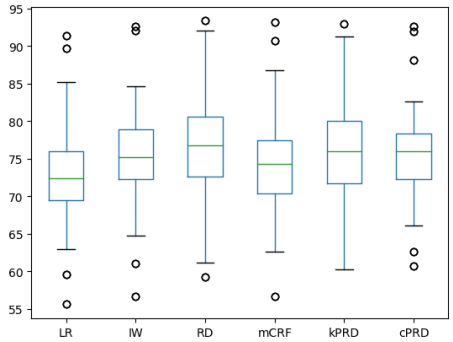
(d) linear hinge-loss-based methods

Figure 17: Box plot results on four surrogate loss functions(kernel width = 2^7)

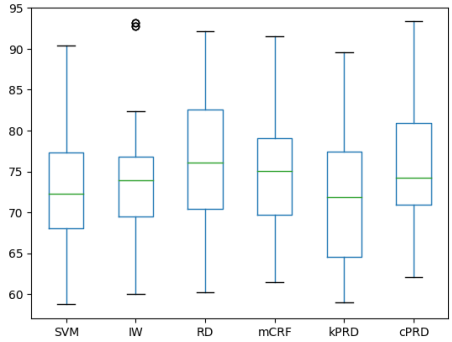


(a) kernel logistic-loss-based methods

(b) kernel hinge-loss-based methods



(c) linear logistic-loss-based methods



(d) linear hinge-loss-based methods

Figure 18: Box plot results on four surrogate loss functions(kernel width = 2^8)

Table 1: Means (percentage) of the classification accuracies of all kernel logistic-loss-based methods(kernel width = 2^0)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	71.44	73.44	72.73	**76.62**	**75.00**	73.31
diabetes	(0.3, 0.1)	70.92	73.25	72.21	72.21	**73.31**	**74.35**
(8, 268, 500)	(0.4, 0.4)	62.55	66.82	64.87	**69.16**	**70.33**	63.96
	(0.2, 0.2)	76.90	**80.06**	78.50	76.36	**79.36**	78.96
German	(0.3, 0.1)	76.61	**79.77**	79.25	77.40	**79.31**	78.79
(20, 300, 700)	(0.4, 0.4)	71.53	**75.15**	73.76	72.89	**77.23**	73.18
	(0.2, 0.2)	70.05	69.85	**72.95**	72.90	**73.25**	71.75
Heart	(0.3, 0.1)	72.10	65.05	**74.05**	71.85	**74.90**	73.70
(13, 120, 150)	(0.4, 0.4)	61.30	66.15	63.30	**68.55**	**68.05**	64.20
	(0.2, 0.2)	79.85	83.15	**83.70**	82.41	**83.70**	82.22
Image	(0.3, 0.1)	76.70	**82.04**	79.63	76.85	**83.52**	79.26
(18, 1188, 898)	(0.4, 0.4)	65.41	69.44	69.63	67.78	**74.45**	**71.11**
	(0.2, 0.2)	87.43	87.10	89.02	80.79	**89.67**	**89.36**
Thyroid	(0.3, 0.1)	84.58	85.02	**88.33**	68.90	**88.47**	86.89
(5, 65, 150)	(0.4, 0.4)	74.63	69.76	**78.23**	73.78	**79.64**	76.20
	(0.2, 0.2)	67.05	**68.81**	68.34	66.43	**70.24**	66.67
Votes	(0.3, 0.1)	66.34	**71.67**	65.00	66.91	**72.14**	68.34
(5, 168, 267)	(0.4, 0.4)	**55.38**	48.33	54.29	54.53	**57.62**	51.43
	(0.2, 0.2)	74.65	57.90	76.65	73.20	**79.85**	**77.45**
Sonar	(0.3, 0.1)	71.65	48.40	73.60	70.00	**74.90**	**74.55**
(60, 97, 111)	(0.4, 0.4)	63.25	55.20	66.15	60.10	**66.55**	**66.70**
	(0.2, 0.2)	77.53	77.32	78.95	**80.39**	78.44	**79.69**
Fourclass	(0.3, 0.1)	74.89	**78.10**	76.15	76.38	77.43	**77.90**
(2, 307, 555)	(0.4, 0.4)	71.70	73.74	74.12	**75.06**	**74.44**	71.94
	(0.2, 0.2)	91.26	89.77	90.47	82.56	**93.02**	**93.26**
Svmguide3	(0.3, 0.1)	89.16	90.70	88.14	79.30	**93.49**	**92.33**
(22, 337, 947)	(0.4, 0.4)	75.91	78.14	**82.09**	71.86	**84.89**	77.91
	(0.2, 0.2)	88.69	90.11	90.46	**91.15**	**90.58**	90.35
Splice	(0.3, 0.1)	89.15	92.07	91.72	91.26	**92.41**	**92.64**
(60, 617, 483)	(0.4, 0.4)	79.96	**87.36**	84.02	84.26	**89.20**	82.76
Average		74.62	74.45	76.68	74.39	**78.85**	**76.70**

Table 2: Means (percentage) of the classification accuracies of all kernel hinge-loss-based methods(kernel width = 2^0)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	73.00	74.68	74.68	**75.65**	**75.20**	75.13
diabetes	(0.3, 0.1)	68.78	**73.90**	70.39	70.45	**73.83**	72.08
(8, 268, 500)	(0.4, 0.4)	65.08	66.17	67.40	**68.31**	**70.26**	66.62
	(0.2, 0.2)	84.76	82.60	**90.75**	85.43	84.28	**87.80**
German	(0.3, 0.1)	79.21	**83.58**	**86.82**	80.87	81.56	82.31
(20, 300, 700)	(0.4, 0.4)	71.58	74.68	**76.30**	73.06	**75.43**	73.76
	(0.2, 0.2)	71.90	72.05	73.10	**73.80**	**74.05**	73.45
Heart	(0.3, 0.1)	70.10	**73.00**	71.80	70.85	**74.70**	**73.00**
(13, 120, 150)	(0.4, 0.4)	62.65	58.15	65.25	67.20	**68.40**	**68.05**
	(0.2, 0.2)	76.52	78.15	**80.00**	79.45	**80.56**	78.52
Image	(0.3, 0.1)	74.11	**78.33**	77.96	74.44	**79.08**	78.15
(18, 1188, 898)	(0.4, 0.4)	63.93	60.93	65.56	**66.30**	**69.26**	62.41
	(0.2, 0.2)	88.65	89.98	90.43	90.43	**90.74**	**90.46**
Thyroid	(0.3, 0.1)	87.59	89.59	**90.22**	89.23	**90.14**	89.98
(5, 65, 150)	(0.4, 0.4)	80.51	78.92	82.63	81.10	**83.37**	**82.97**
	(0.2, 0.2)	73.71	73.33	74.29	75.24	**76.43**	**76.91**
Votes	(0.3, 0.1)	66.33	**74.05**	66.43	65.00	**72.38**	69.05
(5, 168, 267)	(0.4, 0.4)	**60.62**	60.24	60.00	60.48	**66.43**	48.81
	(0.2, 0.2)	79.15	79.95	**81.20**	81.00	**83.35**	81.05
Sonar	(0.3, 0.1)	75.45	77.15	77.05	77.50	**78.30**	**77.70**
(60, 97, 111)	(0.4, 0.4)	61.50	58.75	62.95	62.90	**64.70**	**63.15**
	(0.2, 0.2)	75.63	76.66	**78.09**	77.35	77.74	**78.60**
Fourclass	(0.3, 0.1)	71.58	**75.06**	73.78	73.19	**76.85**	74.98
(2, 307, 555)	(0.4, 0.4)	70.69	71.67	71.71	**73.77**	71.24	**72.45**
	(0.2, 0.2)	90.09	90.70	90.93	90.70	**93.95**	**92.33**
Svmguide3	(0.3, 0.1)	86.14	88.60	87.44	85.58	**90.47**	**89.30**
(22, 337, 947)	(0.4, 0.4)	86.37	83.02	88.37	85.12	**89.53**	**88.60**
	(0.2, 0.2)	90.76	91.84	91.61	91.95	**92.87**	**92.64**
Splice	(0.3, 0.1)	89.15	**92.76**	91.72	89.77	**92.18**	90.92
(60, 617, 483)	(0.4, 0.4)	78.23	81.38	81.61	**84.94**	**87.01**	79.31
Average		75.79	77.00	**78.02**	77.37	**79.48**	77.68

Table 3: Means (percentage) of the classification accuracies of all linear logistic-loss-based methods(kernel width = 2^0)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	74.30	76.10	76.62	**76.88**	**77.08**	75.52
diabetes	(0.3, 0.1)	70.53	**74.29**	71.62	71.56	**75.39**	74.09
(8, 268, 500)	(0.4, 0.4)	68.00	70.52	69.80	**71.95**	**71.69**	68.05
	(0.2, 0.2)	75.46	77.75	**77.80**	77.34	**79.02**	76.99
German	(0.3, 0.1)	76.50	77.46	77.51	77.92	**79.31**	**78.44**
(20, 300, 700)	(0.4, 0.4)	71.29	**74.86**	73.81	73.99	**75.38**	73.87
	(0.2, 0.2)	71.45	71.35	**74.90**	**74.65**	74.25	72.75
Heart	(0.3, 0.1)	70.25	72.35	72.95	70.15	**74.65**	**74.55**
(13, 120, 150)	(0.4, 0.4)	62.75	59.35	64.75	**69.55**	**67.85**	64.00
	(0.2, 0.2)	79.67	79.63	**83.89**	81.67	**81.67**	79.82
Image	(0.3, 0.1)	77.26	**81.48**	**80.93**	77.22	80.74	79.63
(18, 1188, 898)	(0.4, 0.4)	66.71	**71.11**	70.93	70.93	**72.04**	68.70
	(0.2, 0.2)	80.25	81.12	**82.30**	81.32	81.87	**82.66**
Thyroid	(0.3, 0.1)	70.73	**79.52**	78.49	70.17	**81.17**	75.84
(5, 65, 150)	(0.4, 0.4)	74.10	71.13	**76.27**	75.45	**77.61**	76.15
	(0.2, 0.2)	66.09	64.52	67.62	67.62	**70.95**	**73.33**
Votes	(0.3, 0.1)	68.95	72.38	71.19	67.14	**75.00**	**73.10**
(5, 168, 267)	(0.4, 0.4)	54.91	50.48	56.91	55.71	**61.90**	**57.86**
	(0.2, 0.2)	74.25	56.05	**76.60**	76.30	**77.50**	75.75
Sonar	(0.3, 0.1)	72.55	53.55	**74.30**	74.05	**76.70**	73.25
(60, 97, 111)	(0.4, 0.4)	59.70	49.80	61.80	**62.30**	**63.50**	61.70
	(0.2, 0.2)	79.17	78.95	**80.43**	80.35	80.27	**81.25**
Fourclass	(0.3, 0.1)	75.82	**78.95**	77.55	76.93	78.87	**79.46**
(2, 307, 555)	(0.4, 0.4)	69.56	72.68	72.49	**74.28**	**73.93**	70.35
	(0.2, 0.2)	82.65	81.86	**85.58**	82.33	84.65	**86.28**
Svmguide3	(0.3, 0.1)	79.40	81.86	81.86	78.14	**82.09**	**83.03**
(22, 337, 947)	(0.4, 0.4)	77.77	76.98	77.44	**78.84**	**82.09**	78.37
	(0.2, 0.2)	90.30	90.46	91.84	**92.53**	**91.95**	90.69
Splice	(0.3, 0.1)	87.77	90.46	**91.49**	88.05	**92.64**	88.97
(60, 617, 483)	(0.4, 0.4)	79.15	**88.39**	82.76	84.25	**89.20**	79.54
Average		73.58	73.51	**76.08**	75.32	**77.70**	75.80

Table 4: Means (percentage) of the classification accuracies of all linear hinge-loss-based methods(kernel width = 2^0)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	74.24	76.36	75.84	**76.88**	**76.88**	76.30
diabetes	(0.3, 0.1)	68.26	**75.00**	72.40	72.66	**75.58**	74.09
(8, 268, 500)	(0.4, 0.4)	69.36	70.97	71.23	**72.60**	**71.95**	70.26
	(0.2, 0.2)	72.11	**75.84**	**75.72**	75.09	74.91	73.76
German	(0.3, 0.1)	62.74	**77.57**	77.57	65.90	**77.75**	75.38
(20, 300, 700)	(0.4, 0.4)	68.98	**75.49**	72.60	**74.80**	74.51	63.00
	(0.2, 0.2)	70.75	72.95	**74.15**	73.10	**74.05**	73.45
Heart	(0.3, 0.1)	69.10	71.85	**72.50**	71.95	**72.95**	71.45
(13, 120, 150)	(0.4, 0.4)	61.45	64.20	64.70	**65.05**	**68.65**	64.95
	(0.2, 0.2)	79.67	81.11	**82.41**	80.93	**83.15**	81.30
Image	(0.3, 0.1)	74.11	76.67	**77.41**	74.08	**76.85**	76.85
(18, 1188, 898)	(0.4, 0.4)	60.41	**67.04**	64.81	64.26	**66.67**	61.48
	(0.2, 0.2)	76.88	81.27	**83.11**	82.16	**82.97**	81.77
Thyroid	(0.3, 0.1)	74.68	81.13	**81.60**	75.14	**83.21**	79.14
(5, 65, 150)	(0.4, 0.4)	70.97	**74.14**	73.95	73.76	73.90	**77.80**
	(0.2, 0.2)	63.72	64.76	**70.00**	64.05	64.52	**66.43**
Votes	(0.3, 0.1)	64.43	67.38	**70.00**	69.05	**71.19**	67.38
(5, 168, 267)	(0.4, 0.4)	53.71	**59.05**	56.90	**58.10**	**58.10**	54.52
	(0.2, 0.2)	73.50	**75.95**	75.15	75.35	**75.80**	74.50
Sonar	(0.3, 0.1)	70.80	73.35	**73.50**	72.15	**73.75**	73.00
(60, 97, 111)	(0.4, 0.4)	58.70	**60.80**	60.10	60.00	**60.95**	59.60
	(0.2, 0.2)	77.26	77.43	**80.12**	79.18	77.74	**80.51**
Fourclass	(0.3, 0.1)	73.45	75.91	**76.85**	76.07	**79.49**	74.86
(2, 307, 555)	(0.4, 0.4)	73.99	75.18	**76.19**	**75.56**	74.05	74.63
	(0.2, 0.2)	80.56	83.26	**85.82**	83.26	**86.05**	84.89
Svmguide3	(0.3, 0.1)	81.02	84.42	**87.21**	83.49	84.19	**85.82**
(22, 337, 947)	(0.4, 0.4)	75.91	77.91	**80.23**	77.21	**79.77**	79.30
	(0.2, 0.2)	91.56	92.87	92.18	91.72	**93.33**	**93.33**
Splice	(0.3, 0.1)	88.69	**91.84**	90.00	89.89	**92.64**	90.35
(60, 617, 483)	(0.4, 0.4)	78.80	83.56	82.18	**87.36**	**89.20**	78.62
Average		71.99	75.51	**75.88**	74.69	**76.49**	74.62

Table 5: Means (percentage) of the classification accuracies of all kernel logistic-loss-based methods(kernel width = 2^1)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	71.38	75.33	73.64	**77.01**	**75.72**	73.83
diabetes	(0.3, 0.1)	71.18	74.22	72.14	72.34	**74.61**	**74.55**
(8, 268, 500)	(0.4, 0.4)	60.21	67.08	64.29	**71.43**	**70.97**	63.44
	(0.2, 0.2)	78.23	**80.64**	**80.81**	76.42	78.61	79.71
German	(0.3, 0.1)	75.74	**78.85**	78.50	76.42	**79.02**	78.44
(20, 300, 700)	(0.4, 0.4)	72.16	**76.71**	73.99	75.49	**75.72**	72.43
	(0.2, 0.2)	71.85	74.05	**74.30**	73.55	**74.65**	72.80
Heart	(0.3, 0.1)	72.40	**74.95**	74.55	72.85	**75.20**	74.70
(13, 120, 150)	(0.4, 0.4)	60.00	66.70	64.45	**68.60**	**68.30**	62.30
	(0.2, 0.2)	79.85	**82.78**	**83.52**	78.33	82.22	81.48
Image	(0.3, 0.1)	74.85	**80.56**	77.41	77.22	**81.85**	78.15
(18, 1188, 898)	(0.4, 0.4)	59.11	**70.19**	62.96	65.00	**70.74**	63.33
	(0.2, 0.2)	87.64	87.42	89.40	81.44	**89.62**	**89.55**
Thyroid	(0.3, 0.1)	84.79	84.78	**87.42**	69.19	**86.94**	86.84
(5, 65, 150)	(0.4, 0.4)	77.21	70.24	**79.57**	76.70	**79.57**	78.71
	(0.2, 0.2)	64.43	67.38	**68.81**	**69.53**	65.72	65.48
Votes	(0.3, 0.1)	61.57	62.14	61.43	65.95	**65.96**	**66.67**
(5, 168, 267)	(0.4, 0.4)	61.57	57.86	61.91	60.48	**63.33**	**63.33**
	(0.2, 0.2)	77.65	77.50	79.40	75.65	**79.60**	**79.85**
Sonar	(0.3, 0.1)	73.45	66.65	75.35	72.45	**76.45**	**77.35**
(60, 97, 111)	(0.4, 0.4)	61.60	52.55	64.10	59.55	**66.40**	**65.45**
	(0.2, 0.2)	76.87	77.24	78.21	**79.30**	77.43	**79.07**
Fourclass	(0.3, 0.1)	74.34	**76.81**	75.53	76.07	75.99	**77.04**
(2, 307, 555)	(0.4, 0.4)	72.13	73.15	73.50	**76.42**	73.08	**73.54**
	(0.2, 0.2)	91.72	92.33	93.49	83.72	**94.65**	**93.72**
Svmguide3	(0.3, 0.1)	91.02	**93.72**	90.23	79.54	93.49	**94.42**
(22, 337, 947)	(0.4, 0.4)	80.33	80.47	**80.93**	79.53	**86.51**	80.70
	(0.2, 0.2)	89.61	90.46	**91.15**	**92.18**	90.46	91.03
Splice	(0.3, 0.1)	85.59	**90.92**	88.05	87.70	**90.34**	88.97
(60, 617, 483)	(0.4, 0.4)	82.60	**87.70**	85.98	87.36	**87.47**	83.80
Average		74.70	76.38	76.83	75.25	**78.35**	**77.02**

Table 6: Means (percentage) of the classification accuracies of all kernel hinge-loss-based methods(kernel width = 2^1)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	72.87	74.09	74.22	**74.61**	74.55	**75.06**
diabetes	(0.3, 0.1)	69.43	**73.57**	71.04	70.39	**74.87**	72.27
(8, 268, 500)	(0.4, 0.4)	65.01	67.92	66.82	**68.70**	**71.49**	64.55
	(0.2, 0.2)	83.49	82.25	**89.19**	84.68	83.64	**86.71**
German	(0.3, 0.1)	78.17	**82.95**	**84.74**	78.90	80.11	80.75
(20, 300, 700)	(0.4, 0.4)	76.21	77.17	**78.90**	77.29	**79.60**	75.67
	(0.2, 0.2)	70.45	72.25	**72.70**	72.35	**73.70**	72.45
Heart	(0.3, 0.1)	69.40	**71.75**	71.15	70.75	**73.70**	71.55
(13, 120, 150)	(0.4, 0.4)	62.35	66.20	64.95	**68.55**	**70.40**	68.00
	(0.2, 0.2)	77.07	**80.74**	80.19	79.08	**82.78**	80.37
Image	(0.3, 0.1)	71.89	**81.11**	76.85	72.96	**81.48**	74.44
(18, 1188, 898)	(0.4, 0.4)	68.37	**72.22**	69.44	71.11	**77.78**	65.00
	(0.2, 0.2)	87.52	88.78	**90.14**	89.71	89.71	**89.83**
Thyroid	(0.3, 0.1)	86.42	88.54	**89.26**	88.18	88.52	**88.69**
(5, 65, 150)	(0.4, 0.4)	79.15	78.66	**81.36**	79.83	80.34	**81.89**
	(0.2, 0.2)	69.91	70.00	71.43	71.67	**73.81**	**72.86**
Votes	(0.3, 0.1)	68.00	**74.29**	69.05	68.57	71.19	**72.38**
(5, 168, 267)	(0.4, 0.4)	57.29	58.10	59.05	58.57	**60.72**	**60.48**
	(0.2, 0.2)	78.15	79.35	80.75	**81.00**	**81.60**	80.40
Sonar	(0.3, 0.1)	74.05	**78.80**	76.20	75.90	**78.00**	77.35
(60, 97, 111)	(0.4, 0.4)	61.20	61.50	63.05	**63.55**	**65.75**	61.45
	(0.2, 0.2)	76.06	75.21	78.17	**78.37**	75.95	**79.18**
Fourclass	(0.3, 0.1)	70.96	73.15	73.00	72.53	**73.39**	**73.19**
(2, 307, 555)	(0.4, 0.4)	70.10	**71.95**	69.73	**73.93**	70.00	71.67
	(0.2, 0.2)	91.72	92.09	92.33	91.63	**94.18**	**94.42**
Svmguide3	(0.3, 0.1)	89.16	90.93	90.00	89.77	**92.33**	**91.86**
(22, 337, 947)	(0.4, 0.4)	84.51	84.42	**86.05**	82.33	**88.37**	85.81
	(0.2, 0.2)	89.15	90.92	**91.49**	90.12	90.92	**91.15**
Splice	(0.3, 0.1)	89.38	**92.64**	91.26	90.46	**92.30**	91.38
(60, 617, 483)	(0.4, 0.4)	77.66	**88.85**	77.93	85.87	**89.89**	80.81
Average		75.50	**78.01**	77.68	77.38	**79.37**	77.72

Table 7: Means (percentage) of the classification accuracies of all linear logistic-loss-based methods(kernel width = 2^1)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	75.27	77.14	76.95	**77.53**	76.43	**77.60**
diabetes	(0.3, 0.1)	72.16	**74.94**	73.12	73.18	74.61	**75.06**
(8, 268, 500)	(0.4, 0.4)	65.92	68.70	67.47	**69.35**	**71.62**	67.01
	(0.2, 0.2)	73.26	**77.23**	75.72	75.78	**76.18**	74.74
German	(0.3, 0.1)	73.95	75.61	**76.47**	75.20	**77.05**	76.47
(20, 300, 700)	(0.4, 0.4)	72.34	**75.66**	74.57	74.74	**75.26**	73.47
	(0.2, 0.2)	71.65	72.60	**73.30**	72.50	**74.00**	72.40
Heart	(0.3, 0.1)	71.35	**74.05**	73.55	70.35	**74.30**	73.75
(13, 120, 150)	(0.4, 0.4)	60.90	**68.90**	63.60	67.95	**68.85**	62.35
	(0.2, 0.2)	78.37	82.04	**82.22**	81.30	**83.89**	79.82
Image	(0.3, 0.1)	72.63	**77.59**	76.48	72.41	**79.26**	76.30
(18, 1188, 898)	(0.4, 0.4)	61.89	**70.19**	69.08	65.37	**73.33**	63.15
	(0.2, 0.2)	79.56	79.64	**81.89**	80.91	80.93	**82.01**
Thyroid	(0.3, 0.1)	70.37	**79.90**	77.83	68.49	**79.23**	76.40
(5, 65, 150)	(0.4, 0.4)	72.91	66.89	**76.29**	74.57	74.04	**76.05**
	(0.2, 0.2)	68.24	68.81	**73.33**	66.90	68.81	**70.95**
Votes	(0.3, 0.1)	67.05	70.00	**72.14**	71.43	**73.57**	70.48
(5, 168, 267)	(0.4, 0.4)	63.48	60.00	**66.43**	**66.19**	65.71	65.95
	(0.2, 0.2)	73.05	72.45	**75.60**	75.30	**75.70**	75.35
Sonar	(0.3, 0.1)	69.50	69.35	70.95	69.30	**72.00**	**71.70**
(60, 97, 111)	(0.4, 0.4)	59.80	58.35	62.15	**62.65**	62.10	**62.50**
	(0.2, 0.2)	77.92	77.16	**78.68**	78.64	76.07	**79.73**
Fourclass	(0.3, 0.1)	75.16	**77.94**	77.08	76.46	77.74	**78.68**
(2, 307, 555)	(0.4, 0.4)	73.45	74.59	**75.52**	**77.39**	74.16	73.66
	(0.2, 0.2)	81.72	82.79	85.12	82.79	**85.58**	**85.58**
Svmguide3	(0.3, 0.1)	80.09	83.26	83.26	78.84	**86.51**	**84.19**
(22, 337, 947)	(0.4, 0.4)	72.19	78.37	77.68	**78.84**	**78.37**	71.40
	(0.2, 0.2)	88.69	91.38	91.15	**91.72**	**92.07**	90.46
Splice	(0.3, 0.1)	88.46	**91.95**	91.15	89.89	**91.26**	90.80
(60, 617, 483)	(0.4, 0.4)	77.08	**87.13**	78.74	82.88	**88.51**	77.93
Average		72.95	75.49	**75.92**	74.96	**76.91**	75.20

Table 8: Means (percentage) of the classification accuracies of all linear hinge-loss-based methods(kernel width = 2^1)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	75.01	**77.14**	76.88	76.88	**77.14**	**77.21**
diabetes	(0.3, 0.1)	66.12	**77.40**	71.75	72.34	**77.47**	76.36
(8, 268, 500)	(0.4, 0.4)	67.48	69.74	**70.07**	69.81	**70.20**	63.05
	(0.2, 0.2)	73.43	76.65	**77.40**	**77.80**	74.68	75.84
German	(0.3, 0.1)	65.34	**77.11**	**77.86**	71.39	75.43	73.59
(20, 300, 700)	(0.4, 0.4)	67.31	**74.28**	72.14	71.45	**74.16**	60.93
	(0.2, 0.2)	71.55	73.15	**73.35**	72.85	**74.40**	72.55
Heart	(0.3, 0.1)	67.10	**71.85**	70.50	70.20	**72.60**	71.35
(13, 120, 150)	(0.4, 0.4)	63.25	67.75	65.30	**68.50**	**70.10**	68.15
	(0.2, 0.2)	76.52	**78.70**	77.59	77.96	**79.26**	76.85
Image	(0.3, 0.1)	76.33	77.96	**79.26**	75.37	77.96	**79.07**
(18, 1188, 898)	(0.4, 0.4)	68.19	68.52	**71.30**	69.07	**72.96**	69.82
	(0.2, 0.2)	75.78	75.65	**84.19**	82.92	81.34	**83.42**
Thyroid	(0.3, 0.1)	73.24	78.68	**80.93**	72.68	**81.01**	78.40
(5, 65, 150)	(0.4, 0.4)	71.11	73.37	**74.98**	72.73	74.88	**75.92**
	(0.2, 0.2)	69.91	70.95	**72.86**	**73.81**	70.24	70.72
Votes	(0.3, 0.1)	70.38	71.90	**72.14**	71.19	**71.91**	71.43
(5, 168, 267)	(0.4, 0.4)	56.33	57.86	**58.33**	56.19	**61.67**	57.62
	(0.2, 0.2)	71.00	**73.95**	73.50	73.30	**74.50**	72.55
Sonar	(0.3, 0.1)	70.80	**74.30**	72.90	71.75	**74.30**	73.10
(60, 97, 111)	(0.4, 0.4)	58.95	59.30	60.70	**61.20**	**62.80**	59.75
	(0.2, 0.2)	76.21	75.14	**79.54**	78.75	64.59	**79.81**
Fourclass	(0.3, 0.1)	73.41	75.84	**78.13**	**76.65**	63.89	76.27
(2, 307, 555)	(0.4, 0.4)	72.01	73.46	73.00	**75.06**	64.13	**73.89**
	(0.2, 0.2)	84.98	86.28	**90.00**	85.35	85.81	**89.30**
Svmguide3	(0.3, 0.1)	78.93	81.63	**82.56**	80.70	80.93	**82.33**
(22, 337, 947)	(0.4, 0.4)	77.07	80.93	**81.40**	78.84	79.07	**81.40**
	(0.2, 0.2)	92.25	91.72	**93.22**	92.53	91.61	**92.99**
Splice	(0.3, 0.1)	89.26	89.54	88.62	88.51	**90.12**	**90.00**
(60, 617, 483)	(0.4, 0.4)	82.37	**85.86**	85.29	84.71	**88.28**	83.10
Average		72.72	**75.55**	**76.19**	75.02	75.25	75.22

Table 9: Means (percentage) of the classification accuracies of all kernel logistic-loss-based methods(kernel width = 2^2)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	70.01	72.40	**72.47**	**74.09**	72.34	71.88
diabetes	(0.3, 0.1)	67.68	**71.30**	68.64	68.83	**72.34**	70.97
(8, 268, 500)	(0.4, 0.4)	63.20	69.94	64.22	**70.65**	**71.04**	64.94
	(0.2, 0.2)	76.55	**78.96**	78.27	77.40	**78.90**	78.38
German	(0.3, 0.1)	75.17	78.21	**78.38**	76.07	**78.38**	77.63
(20, 300, 700)	(0.4, 0.4)	71.93	74.97	75.67	**76.30**	**76.88**	72.25
	(0.2, 0.2)	72.20	**75.15**	75.10	74.10	**75.60**	73.80
Heart	(0.3, 0.1)	71.50	74.20	73.50	72.30	**75.45**	**74.40**
(13, 120, 150)	(0.4, 0.4)	61.00	**68.15**	63.45	67.45	**69.55**	62.65
	(0.2, 0.2)	78.93	**83.52**	82.78	80.93	**85.19**	82.04
Image	(0.3, 0.1)	77.82	**84.63**	81.30	78.15	**86.11**	80.56
(18, 1188, 898)	(0.4, 0.4)	63.55	**73.70**	68.70	65.74	**75.93**	67.78
	(0.2, 0.2)	87.45	88.11	88.95	81.77	**89.14**	**89.21**
Thyroid	(0.3, 0.1)	84.46	87.25	**87.68**	69.88	86.25	**87.70**
(5, 65, 150)	(0.4, 0.4)	76.92	58.95	**79.86**	74.55	76.58	**78.18**
	(0.2, 0.2)	66.10	66.91	65.00	**69.76**	65.48	**70.24**
Votes	(0.3, 0.1)	61.57	**73.10**	59.52	**73.57**	65.24	69.76
(5, 168, 267)	(0.4, 0.4)	**59.43**	54.29	**59.76**	55.95	58.57	57.62
	(0.2, 0.2)	73.95	**76.25**	75.65	72.55	75.65	**75.85**
Sonar	(0.3, 0.1)	72.30	**77.85**	74.30	72.75	74.35	**74.70**
(60, 97, 111)	(0.4, 0.4)	63.20	66.65	65.60	61.75	**68.35**	**66.90**
	(0.2, 0.2)	76.29	76.69	78.29	**79.14**	74.94	**78.75**
Fourclass	(0.3, 0.1)	75.28	**77.35**	76.85	77.20	76.69	**78.33**
(2, 307, 555)	(0.4, 0.4)	67.53	**71.60**	69.65	**72.18**	67.28	68.06
	(0.2, 0.2)	90.33	91.17	90.93	83.02	**93.26**	**91.63**
Svmguide3	(0.3, 0.1)	89.63	**91.63**	90.70	83.02	**93.02**	91.39
(22, 337, 947)	(0.4, 0.4)	83.58	82.56	86.97	79.30	**87.91**	**87.44**
	(0.2, 0.2)	91.68	**93.68**	91.84	**93.45**	89.89	93.10
Splice	(0.3, 0.1)	87.88	**91.61**	90.35	89.88	90.46	**90.58**
(60, 617, 483)	(0.4, 0.4)	72.83	**84.49**	76.67	79.54	**84.83**	76.32
Average		74.33	**77.17**	76.37	75.04	**77.85**	76.77

Table 10: Means (percentage) of the classification accuracies of all kernel hinge-loss-based methods(kernel width = 2^2)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	72.68	73.83	**74.35**	**74.81**	73.96	74.16
diabetes	(0.3, 0.1)	69.69	72.66	71.23	70.91	**73.12**	**72.99**
(8, 268, 500)	(0.4, 0.4)	64.88	69.87	66.88	**70.52**	**70.13**	63.83
	(0.2, 0.2)	85.17	82.49	**90.52**	86.36	83.99	**88.44**
German	(0.3, 0.1)	79.04	**84.22**	**86.71**	79.71	81.68	81.73
(20, 300, 700)	(0.4, 0.4)	70.66	72.08	**74.68**	74.16	**77.17**	73.93
	(0.2, 0.2)	71.25	72.95	**73.10**	73.05	**74.90**	73.05
Heart	(0.3, 0.1)	70.60	**74.70**	72.30	72.20	**75.05**	73.90
(13, 120, 150)	(0.4, 0.4)	63.35	**69.55**	66.10	69.00	**69.95**	68.25
	(0.2, 0.2)	79.48	80.93	**82.22**	78.89	**83.33**	81.30
Image	(0.3, 0.1)	75.59	**81.30**	77.59	73.89	**83.15**	78.52
(18, 1188, 898)	(0.4, 0.4)	63.93	**72.41**	67.04	68.52	**75.93**	62.96
	(0.2, 0.2)	87.79	88.30	**90.10**	89.88	89.55	**90.03**
Thyroid	(0.3, 0.1)	87.40	87.75	**89.81**	89.16	89.43	**89.55**
(5, 65, 150)	(0.4, 0.4)	79.99	64.40	**82.27**	82.01	75.05	**82.78**
	(0.2, 0.2)	75.86	**78.57**	77.38	**78.33**	77.14	77.62
Votes	(0.3, 0.1)	66.33	**73.81**	67.62	65.48	70.00	**70.48**
(5, 168, 267)	(0.4, 0.4)	59.43	61.19	62.62	**63.57**	**67.86**	62.14
	(0.2, 0.2)	79.20	80.85	81.15	**81.25**	79.75	**81.80**
Sonar	(0.3, 0.1)	73.15	**78.65**	74.95	74.70	**76.30**	75.85
(60, 97, 111)	(0.4, 0.4)	63.20	64.75	65.05	**65.30**	**67.20**	63.30
	(0.2, 0.2)	75.16	74.09	**77.78**	76.97	75.64	**78.13**
Fourclass	(0.3, 0.1)	73.25	75.37	**75.45**	75.10	74.67	**75.68**
(2, 307, 555)	(0.4, 0.4)	73.87	74.40	74.94	**75.95**	72.02	**75.14**
	(0.2, 0.2)	90.79	90.00	91.86	90.47	**93.02**	**92.79**
Svmguide3	(0.3, 0.1)	85.91	87.21	84.42	82.09	**88.84**	**88.84**
(22, 337, 947)	(0.4, 0.4)	84.05	84.19	85.35	85.58	**87.91**	**88.14**
	(0.2, 0.2)	89.61	**91.72**	91.38	**91.61**	91.38	91.61
Splice	(0.3, 0.1)	89.72	**92.99**	91.26	89.88	**91.95**	91.26
(60, 617, 483)	(0.4, 0.4)	81.10	**89.43**	81.72	85.52	**88.28**	85.17
Average		76.07	78.15	78.26	77.83	**79.28**	**78.44**

Table 11: Means (percentage) of the classification accuracies of all linear logistic-loss-based methods(kernel width = 2^2)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	72.35	73.70	**74.16**	73.96	**74.81**	73.83
diabetes	(0.3, 0.1)	71.38	**75.45**	72.79	72.99	**75.52**	75.33
(8, 268, 500)	(0.4, 0.4)	66.90	70.26	68.51	**71.95**	**72.40**	68.12
	(0.2, 0.2)	73.32	**77.17**	75.84	76.70	**76.82**	74.45
German	(0.3, 0.1)	75.17	**77.57**	77.34	76.42	**77.75**	77.28
(20, 300, 700)	(0.4, 0.4)	72.28	72.54	74.34	74.86	**77.34**	**75.26**
	(0.2, 0.2)	72.70	74.35	**75.60**	73.75	**74.60**	73.00
Heart	(0.3, 0.1)	71.00	73.50	72.90	71.30	**73.65**	**73.65**
(13, 120, 150)	(0.4, 0.4)	62.70	**67.50**	65.35	67.05	**68.70**	63.10
	(0.2, 0.2)	77.63	80.00	**80.93**	80.19	**83.15**	79.08
Image	(0.3, 0.1)	75.41	**79.82**	78.15	75.92	**81.11**	78.52
(18, 1188, 898)	(0.4, 0.4)	67.63	**75.19**	71.30	69.82	**75.93**	71.11
	(0.2, 0.2)	80.68	80.21	**82.82**	82.06	79.71	**82.78**
Thyroid	(0.3, 0.1)	71.73	**77.70**	**79.26**	69.23	75.65	76.99
(5, 65, 150)	(0.4, 0.4)	74.24	60.02	**76.72**	75.36	73.66	**76.24**
	(0.2, 0.2)	66.57	69.05	67.86	69.76	**71.19**	**71.43**
Votes	(0.3, 0.1)	69.91	**73.81**	69.05	67.62	70.72	**74.29**
(5, 168, 267)	(0.4, 0.4)	54.91	58.81	58.09	58.33	**64.52**	**60.00**
	(0.2, 0.2)	72.80	**75.05**	74.70	74.80	**75.85**	74.55
Sonar	(0.3, 0.1)	71.80	**75.25**	73.70	71.85	73.90	**74.10**
(60, 97, 111)	(0.4, 0.4)	59.30	**61.70**	61.35	61.55	**63.25**	61.45
	(0.2, 0.2)	78.74	78.29	**80.08**	79.77	75.18	**81.13**
Fourclass	(0.3, 0.1)	76.79	**78.60**	77.82	77.20	76.30	**79.50**
(2, 307, 555)	(0.4, 0.4)	72.24	73.77	**74.28**	**75.10**	70.97	72.22
	(0.2, 0.2)	85.91	85.12	85.81	85.35	**89.07**	**86.98**
Svmguide3	(0.3, 0.1)	78.70	**81.40**	80.93	78.37	**82.09**	80.23
(22, 337, 947)	(0.4, 0.4)	79.86	**80.23**	79.77	79.77	**83.95**	77.68
	(0.2, 0.2)	90.18	**91.95**	90.46	91.26	89.54	**91.38**
Splice	(0.3, 0.1)	88.69	**91.72**	89.43	89.66	89.66	**90.34**
(60, 617, 483)	(0.4, 0.4)	77.43	**88.74**	81.61	85.41	**88.62**	75.75
Average		73.63	**75.95**	75.70	75.24	**76.85**	75.66

Table 12: Means (percentage) of the classification accuracies of all linear hinge-loss-based methods(kernel width = 2^2)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	73.33	74.42	**74.55**	**75.59**	73.12	73.31
diabetes	(0.3, 0.1)	66.83	**74.61**	71.10	72.15	**75.26**	74.61
(8, 268, 500)	(0.4, 0.4)	67.35	70.00	68.83	**70.07**	**70.78**	68.83
	(0.2, 0.2)	74.42	75.26	**78.84**	77.63	**78.04**	75.90
German	(0.3, 0.1)	68.12	78.32	**80.23**	69.54	78.61	**78.96**
(20, 300, 700)	(0.4, 0.4)	68.35	64.86	**72.83**	69.08	**75.15**	69.25
	(0.2, 0.2)	69.50	70.15	**72.85**	72.65	**73.85**	71.00
Heart	(0.3, 0.1)	68.10	**71.75**	70.45	70.70	**73.50**	70.70
(13, 120, 150)	(0.4, 0.4)	63.50	**69.15**	65.35	68.25	**70.35**	65.50
	(0.2, 0.2)	75.22	78.52	**79.63**	75.18	**79.26**	77.78
Image	(0.3, 0.1)	76.52	**78.70**	74.63	73.33	**80.55**	76.67
(18, 1188, 898)	(0.4, 0.4)	67.44	**75.00**	67.22	68.52	**75.19**	62.04
	(0.2, 0.2)	75.61	74.76	**83.88**	**82.46**	78.54	81.70
Thyroid	(0.3, 0.1)	72.74	75.12	**81.53**	73.97	74.64	**76.87**
(5, 65, 150)	(0.4, 0.4)	70.23	62.03	**73.78**	72.73	70.98	**75.74**
	(0.2, 0.2)	68.00	70.00	**71.67**	71.19	**71.43**	69.29
Votes	(0.3, 0.1)	65.86	68.33	**70.24**	66.43	66.43	**69.53**
(5, 168, 267)	(0.4, 0.4)	54.19	**60.71**	58.10	**60.24**	58.33	57.86
	(0.2, 0.2)	73.95	75.55	**75.90**	**75.90**	73.00	75.55
Sonar	(0.3, 0.1)	70.20	**75.20**	73.00	70.20	73.00	**73.65**
(60, 97, 111)	(0.4, 0.4)	59.70	**62.65**	61.40	62.15	**64.55**	60.40
	(0.2, 0.2)	76.75	76.62	**80.74**	79.88	66.07	**81.56**
Fourclass	(0.3, 0.1)	72.48	74.82	**77.16**	**76.11**	65.18	75.72
(2, 307, 555)	(0.4, 0.4)	75.16	73.39	**76.42**	**75.33**	63.93	75.14
	(0.2, 0.2)	82.19	81.16	**87.44**	83.02	**84.65**	84.42
Svmguide3	(0.3, 0.1)	81.02	83.95	**84.19**	82.33	**86.28**	83.72
(22, 337, 947)	(0.4, 0.4)	74.51	76.05	**78.61**	77.21	71.16	**77.68**
	(0.2, 0.2)	92.02	**93.33**	91.15	91.84	89.66	**93.22**
Splice	(0.3, 0.1)	92.02	**93.79**	91.72	91.15	88.39	**94.14**
(60, 617, 483)	(0.4, 0.4)	82.60	**88.28**	82.41	**86.55**	85.98	82.18
Average		72.60	74.88	**75.86**	74.71	74.53	**75.10**

Table 13: Means (percentage) of the classification accuracies of all kernel logistic-loss-based methods(kernel width = 2^3)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	73.13	**75.84**	75.58	**77.27**	75.65	75.65
diabetes	(0.3, 0.1)	71.70	**74.87**	72.27	73.31	74.35	**76.04**
(8, 268, 500)	(0.4, 0.4)	60.92	69.29	64.09	**70.32**	**71.36**	62.73
	(0.2, 0.2)	75.11	77.57	**77.80**	75.49	77.34	**77.98**
German	(0.3, 0.1)	77.25	**79.77**	**79.77**	77.63	79.54	79.71
(20, 300, 700)	(0.4, 0.4)	72.16	70.00	74.16	**74.97**	74.62	**74.91**
	(0.2, 0.2)	71.85	73.65	**74.40**	73.75	**74.50**	73.20
Heart	(0.3, 0.1)	72.25	74.80	73.85	72.55	**75.20**	**74.95**
(13, 120, 150)	(0.4, 0.4)	60.45	**69.05**	62.20	66.70	**70.80**	61.50
	(0.2, 0.2)	78.74	80.93	82.96	79.08	**84.26**	**82.96**
Image	(0.3, 0.1)	80.41	82.59	**84.45**	77.96	**86.30**	83.71
(18, 1188, 898)	(0.4, 0.4)	64.67	**74.07**	68.89	68.89	**82.04**	68.70
	(0.2, 0.2)	87.28	88.69	**89.04**	81.63	88.71	**89.21**
Thyroid	(0.3, 0.1)	84.12	**88.97**	**87.78**	68.59	85.36	86.01
(5, 65, 150)	(0.4, 0.4)	76.54	72.70	**78.71**	72.85	72.68	**77.75**
	(0.2, 0.2)	72.29	72.14	69.52	**73.33**	68.57	**72.86**
Votes	(0.3, 0.1)	60.86	**67.14**	61.67	**65.24**	62.86	64.29
(5, 168, 267)	(0.4, 0.4)	60.62	**61.19**	60.48	58.33	**61.19**	**61.19**
	(0.2, 0.2)	77.20	**79.30**	78.70	76.20	76.95	**79.95**
Sonar	(0.3, 0.1)	72.25	**77.60**	73.55	71.05	73.60	**74.95**
(60, 97, 111)	(0.4, 0.4)	60.50	63.35	62.55	60.65	**64.90**	**64.60**
	(0.2, 0.2)	75.67	76.31	77.55	**79.14**	73.00	**77.94**
Fourclass	(0.3, 0.1)	74.93	77.08	75.91	76.85	**77.24**	**78.56**
(2, 307, 555)	(0.4, 0.4)	69.95	**74.51**	72.84	**74.28**	67.04	70.74
	(0.2, 0.2)	92.88	93.49	94.42	85.35	**94.88**	**95.12**
Svmguide3	(0.3, 0.1)	89.16	91.16	89.54	78.61	**92.56**	**91.86**
(22, 337, 947)	(0.4, 0.4)	74.98	77.44	**78.14**	74.65	**82.33**	76.74
	(0.2, 0.2)	89.84	**91.95**	91.38	**92.87**	90.57	91.61
Splice	(0.3, 0.1)	88.46	**91.26**	90.46	89.43	89.65	**91.03**
(60, 617, 483)	(0.4, 0.4)	78.00	85.29	81.49	**85.75**	**89.89**	80.57
Average		74.81	**77.73**	76.80	75.09	**77.93**	77.23

Table 14: Means (percentage) of the classification accuracies of all kernel hinge-loss-based methods(kernel width = 2^3)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	71.64	73.96	72.99	**75.45**	**75.59**	73.77
diabetes	(0.3, 0.1)	70.73	**74.54**	72.01	72.15	**74.55**	73.25
(8, 268, 500)	(0.4, 0.4)	66.05	68.38	68.25	**68.96**	**72.01**	62.73
	(0.2, 0.2)	82.16	80.06	**89.02**	83.24	80.87	**86.99**
German	(0.3, 0.1)	79.62	**86.59**	**88.21**	80.52	82.54	83.01
(20, 300, 700)	(0.4, 0.4)	76.09	66.19	**80.06**	77.34	**78.61**	78.15
	(0.2, 0.2)	71.15	71.30	**73.15**	73.05	**73.25**	72.75
Heart	(0.3, 0.1)	69.85	**73.80**	71.85	70.90	**74.10**	73.00
(13, 120, 150)	(0.4, 0.4)	61.00	**70.15**	63.60	65.45	**69.95**	67.15
	(0.2, 0.2)	79.30	81.30	**82.41**	81.48	**83.89**	80.18
Image	(0.3, 0.1)	75.22	**78.89**	77.04	74.07	**81.85**	77.22
(18, 1188, 898)	(0.4, 0.4)	65.96	**72.59**	68.52	67.59	**77.04**	65.74
	(0.2, 0.2)	87.45	89.48	89.47	**89.48**	89.28	**89.50**
Thyroid	(0.3, 0.1)	84.10	**89.42**	**87.25**	85.65	85.69	86.65
(5, 65, 150)	(0.4, 0.4)	80.06	71.72	80.55	**81.27**	76.70	**83.04**
	(0.2, 0.2)	71.10	73.33	**74.76**	74.29	71.67	**74.53**
Votes	(0.3, 0.1)	64.19	**73.81**	64.52	62.14	**69.52**	69.05
(5, 168, 267)	(0.4, 0.4)	57.52	**61.19**	61.19	60.71	**65.72**	60.95
	(0.2, 0.2)	80.00	**82.00**	**81.95**	**81.95**	79.50	81.70
Sonar	(0.3, 0.1)	73.60	**79.30**	75.55	75.00	75.30	**76.80**
(60, 97, 111)	(0.4, 0.4)	61.50	**63.45**	63.40	63.00	**67.45**	60.45
	(0.2, 0.2)	75.55	74.98	**77.78**	77.39	76.30	**77.78**
Fourclass	(0.3, 0.1)	73.33	**75.41**	**75.95**	74.98	73.35	75.25
(2, 307, 555)	(0.4, 0.4)	71.07	**74.09**	**73.66**	72.96	71.67	73.11
	(0.2, 0.2)	90.79	90.46	92.79	91.39	**93.26**	**92.79**
Svmguide3	(0.3, 0.1)	86.61	**90.47**	88.14	86.74	**90.70**	89.30
(22, 337, 947)	(0.4, 0.4)	84.98	81.39	**86.51**	83.72	85.58	**88.61**
	(0.2, 0.2)	90.41	**92.76**	92.41	92.18	91.61	**92.64**
Splice	(0.3, 0.1)	87.89	**90.69**	89.77	89.43	89.42	**90.11**
(60, 617, 483)	(0.4, 0.4)	78.58	81.50	79.43	**84.60**	**85.86**	78.85
Average		75.58	77.77	**78.07**	77.24	**78.76**	77.84

Table 15: Means (percentage) of the classification accuracies of all linear logistic-loss-based methods(kernel width = 2^3)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	73.71	**76.17**	75.97	76.04	**76.17**	76.10
diabetes	(0.3, 0.1)	71.83	**75.20**	73.05	72.99	**75.72**	74.29
(8, 268, 500)	(0.4, 0.4)	67.55	69.35	69.03	**70.71**	**70.84**	69.16
	(0.2, 0.2)	74.59	**78.38**	76.76	76.24	**77.11**	75.49
German	(0.3, 0.1)	76.90	79.60	79.71	78.50	**79.71**	**79.71**
(20, 300, 700)	(0.4, 0.4)	71.93	64.16	**75.55**	73.70	**76.13**	75.43
	(0.2, 0.2)	73.15	74.30	**75.60**	74.95	**75.15**	**75.15**
Heart	(0.3, 0.1)	69.50	72.10	71.45	69.95	**73.45**	**72.70**
(13, 120, 150)	(0.4, 0.4)	60.75	**70.25**	64.35	66.00	**69.00**	63.65
	(0.2, 0.2)	76.52	78.52	**80.37**	79.63	**80.19**	79.81
Image	(0.3, 0.1)	75.96	**80.00**	78.15	75.93	**81.67**	78.70
(18, 1188, 898)	(0.4, 0.4)	63.00	**71.48**	70.19	66.48	**81.11**	65.37
	(0.2, 0.2)	81.16	82.42	**82.92**	82.80	79.81	**83.33**
Thyroid	(0.3, 0.1)	70.92	**80.67**	**77.97**	68.61	75.67	76.51
(5, 65, 150)	(0.4, 0.4)	72.98	71.60	**74.95**	**74.76**	72.08	74.19
	(0.2, 0.2)	67.29	69.76	**72.38**	**72.86**	71.90	71.19
Votes	(0.3, 0.1)	68.00	**70.72**	65.95	67.14	67.86	**72.14**
(5, 168, 267)	(0.4, 0.4)	56.57	61.19	60.24	60.00	**63.81**	**61.67**
	(0.2, 0.2)	73.80	**75.90**	**76.15**	75.00	73.60	74.50
Sonar	(0.3, 0.1)	68.95	**73.70**	70.90	69.30	71.45	**71.50**
(60, 97, 111)	(0.4, 0.4)	56.80	**59.40**	58.95	59.25	**62.60**	59.10
	(0.2, 0.2)	78.66	77.90	**79.65**	79.57	76.03	**80.55**
Fourclass	(0.3, 0.1)	76.17	**78.25**	76.61	76.66	76.50	**78.99**
(2, 307, 555)	(0.4, 0.4)	71.77	**74.75**	74.16	**74.94**	68.25	72.84
	(0.2, 0.2)	81.26	79.77	83.95	81.63	**85.12**	**84.88**
Svmguide3	(0.3, 0.1)	80.79	83.95	83.95	81.63	**85.35**	**84.42**
(22, 337, 947)	(0.4, 0.4)	74.28	79.30	**80.23**	79.77	**80.47**	73.26
	(0.2, 0.2)	90.07	91.72	91.49	**93.22**	91.95	**91.95**
Splice	(0.3, 0.1)	89.38	**92.30**	**91.61**	89.77	90.57	91.26
(60, 617, 483)	(0.4, 0.4)	74.09	81.73	79.20	**84.48**	**87.36**	73.68
Average		72.94	**75.82**	75.72	75.08	**76.55**	75.38

Table 16: Means (percentage) of the classification accuracies of all linear hinge-loss-based methods(kernel width = 2^3)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	74.43	73.38	76.04	**76.17**	74.94	**76.82**
diabetes	(0.3, 0.1)	65.66	71.75	68.70	68.38	**74.61**	**74.55**
(8, 268, 500)	(0.4, 0.4)	69.62	67.66	72.21	**72.27**	**73.57**	66.23
	(0.2, 0.2)	74.30	74.74	**78.44**	77.51	**77.69**	76.30
German	(0.3, 0.1)	66.61	74.16	**77.11**	68.61	**76.30**	74.86
(20, 300, 700)	(0.4, 0.4)	67.65	63.58	**74.80**	71.16	**75.15**	69.36
	(0.2, 0.2)	72.55	70.45	**75.10**	**75.10**	74.90	73.15
Heart	(0.3, 0.1)	68.95	71.40	72.40	71.55	**74.05**	**73.95**
(13, 120, 150)	(0.4, 0.4)	63.95	**69.35**	65.10	66.35	**69.50**	64.00
	(0.2, 0.2)	78.37	81.30	**81.67**	**83.52**	80.74	80.00
Image	(0.3, 0.1)	77.07	80.19	79.07	75.74	**81.11**	**81.30**
(18, 1188, 898)	(0.4, 0.4)	68.19	**73.52**	71.48	71.67	**77.78**	69.63
	(0.2, 0.2)	77.71	75.93	**83.21**	82.56	62.82	**83.02**
Thyroid	(0.3, 0.1)	74.72	77.89	**81.60**	74.55	61.51	**79.52**
(5, 65, 150)	(0.4, 0.4)	71.52	70.55	**75.50**	73.06	65.98	**76.34**
	(0.2, 0.2)	67.29	68.57	**69.05**	**70.95**	61.19	68.57
Votes	(0.3, 0.1)	67.76	**72.14**	70.95	**71.91**	66.19	69.52
(5, 168, 267)	(0.4, 0.4)	53.95	56.67	**60.24**	55.71	**58.10**	56.19
	(0.2, 0.2)	71.30	72.95	72.75	**73.65**	71.90	**73.10**
Sonar	(0.3, 0.1)	69.45	**74.75**	70.65	70.35	**72.15**	71.35
(60, 97, 111)	(0.4, 0.4)	59.70	**62.90**	60.95	61.20	**63.10**	60.15
	(0.2, 0.2)	75.86	74.32	**79.57**	78.60	64.44	**79.96**
Fourclass	(0.3, 0.1)	73.60	75.64	**76.65**	75.84	67.12	**75.88**
(2, 307, 555)	(0.4, 0.4)	71.23	**73.70**	71.01	72.72	61.33	**72.80**
	(0.2, 0.2)	82.89	82.09	**88.61**	84.88	85.12	**86.98**
Svmguide3	(0.3, 0.1)	77.77	**80.93**	**82.09**	78.37	77.44	79.77
(22, 337, 947)	(0.4, 0.4)	77.30	74.42	**80.00**	76.28	63.49	**78.37**
	(0.2, 0.2)	91.45	92.99	91.72	**93.33**	88.51	**93.33**
Splice	(0.3, 0.1)	88.80	**92.07**	89.20	89.20	89.20	**91.15**
(60, 617, 483)	(0.4, 0.4)	81.33	**88.97**	83.33	88.05	**88.39**	81.27
Average		72.70	74.63	**75.97**	74.97	72.61	**75.25**

Table 17: Means (percentage) of the classification accuracies of all kernel logistic-loss-based methods(kernel width = 2^4)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	71.25	**74.48**	72.92	**74.87**	73.90	73.64
diabetes	(0.3, 0.1)	69.56	73.05	71.43	72.41	**74.81**	**73.31**
(8, 268, 500)	(0.4, 0.4)	62.29	67.21	66.88	**71.56**	**69.61**	64.35
	(0.2, 0.2)	79.33	**81.39**	80.41	77.92	80.17	**80.81**
German	(0.3, 0.1)	75.63	77.98	78.09	77.40	**78.44**	**78.44**
(20, 300, 700)	(0.4, 0.4)	68.81	67.46	71.39	**72.66**	**73.24**	70.69
	(0.2, 0.2)	72.80	**75.70**	**75.25**	74.45	**75.25**	73.70
Heart	(0.3, 0.1)	71.05	73.20	72.90	70.40	**73.45**	**73.95**
(13, 120, 150)	(0.4, 0.4)	58.95	**70.45**	61.75	66.05	**69.65**	60.75
	(0.2, 0.2)	75.04	77.04	**79.63**	77.78	**83.15**	78.89
Image	(0.3, 0.1)	74.85	**79.07**	**79.07**	77.59	**82.59**	77.04
(18, 1188, 898)	(0.4, 0.4)	62.63	69.45	**69.63**	69.26	**80.00**	67.41
	(0.2, 0.2)	87.55	**89.11**	89.07	82.06	88.45	**89.64**
Thyroid	(0.3, 0.1)	83.91	**90.36**	**87.82**	68.99	84.33	86.56
(5, 65, 150)	(0.4, 0.4)	76.64	77.06	**77.97**	75.62	74.28	**77.15**
	(0.2, 0.2)	67.05	66.91	65.48	**69.52**	65.48	**67.38**
Votes	(0.3, 0.1)	61.57	**71.43**	61.43	64.76	66.90	**67.62**
(5, 168, 267)	(0.4, 0.4)	59.91	59.05	**61.67**	60.00	**61.67**	61.19
	(0.2, 0.2)	75.90	**77.85**	**77.65**	74.00	75.85	77.55
Sonar	(0.3, 0.1)	70.55	**76.00**	72.00	70.10	72.35	**74.25**
(60, 97, 111)	(0.4, 0.4)	62.50	**65.10**	64.85	60.85	**66.90**	65.00
	(0.2, 0.2)	76.79	76.38	77.98	**78.95**	71.99	**78.79**
Fourclass	(0.3, 0.1)	75.04	**77.24**	76.19	77.12	77.12	**78.17**
(2, 307, 555)	(0.4, 0.4)	66.80	**73.74**	71.44	**73.39**	66.69	68.25
	(0.2, 0.2)	91.72	94.18	**94.42**	86.05	**94.65**	93.95
Svmguide3	(0.3, 0.1)	90.33	**92.56**	90.93	79.30	**93.02**	90.93
(22, 337, 947)	(0.4, 0.4)	80.33	78.14	**84.65**	75.12	**83.72**	81.16
	(0.2, 0.2)	89.72	**91.03**	90.12	**91.03**	90.80	90.80
Splice	(0.3, 0.1)	88.69	**91.72**	89.54	90.00	88.97	**91.38**
(60, 617, 483)	(0.4, 0.4)	80.87	77.82	84.14	**85.75**	**86.90**	82.99
Average		74.27	**77.07**	76.56	74.83	**77.48**	76.52

Table 18: Means (percentage) of the classification accuracies of all kernel hinge-loss-based methods(kernel width = 2^4)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	71.90	72.79	**73.90**	73.77	**74.48**	73.83
diabetes	(0.3, 0.1)	67.22	**71.49**	69.09	69.42	**74.48**	70.33
(8, 268, 500)	(0.4, 0.4)	66.57	65.00	66.88	**69.03**	**72.14**	66.36
	(0.2, 0.2)	82.74	82.14	**88.90**	84.45	83.41	**86.65**
German	(0.3, 0.1)	78.17	**82.49**	**84.97**	79.02	80.81	81.10
(20, 300, 700)	(0.4, 0.4)	76.32	69.02	**80.69**	78.26	**80.87**	71.96
	(0.2, 0.2)	71.50	72.60	72.65	**73.55**	**74.70**	73.05
Heart	(0.3, 0.1)	69.35	72.15	71.30	70.10	**74.55**	**72.60**
(13, 120, 150)	(0.4, 0.4)	61.70	**70.05**	63.35	67.15	**70.50**	66.70
	(0.2, 0.2)	80.22	81.11	**82.78**	82.78	**85.00**	80.56
Image	(0.3, 0.1)	74.67	**78.52**	75.56	75.00	**83.15**	77.04
(18, 1188, 898)	(0.4, 0.4)	63.74	64.63	64.63	**65.93**	**78.33**	62.41
	(0.2, 0.2)	87.57	89.23	**89.91**	**89.74**	88.11	89.62
Thyroid	(0.3, 0.1)	86.95	**90.12**	89.02	88.73	87.94	**89.09**
(5, 65, 150)	(0.4, 0.4)	79.84	75.38	80.91	**82.11**	73.92	**82.49**
	(0.2, 0.2)	72.76	74.76	**75.71**	74.52	73.33	**75.71**
Votes	(0.3, 0.1)	68.00	**73.10**	67.62	64.53	69.29	**69.76**
(5, 168, 267)	(0.4, 0.4)	**62.52**	59.76	**64.76**	62.14	62.14	50.00
	(0.2, 0.2)	77.10	78.70	**78.75**	**78.80**	77.15	78.45
Sonar	(0.3, 0.1)	75.70	**81.80**	77.60	77.65	**78.25**	78.10
(60, 97, 111)	(0.4, 0.4)	61.95	64.60	64.65	**64.80**	**68.55**	62.95
	(0.2, 0.2)	75.04	73.89	**77.08**	76.69	75.45	**78.17**
Fourclass	(0.3, 0.1)	70.49	72.49	**73.00**	72.37	72.57	**73.62**
(2, 307, 555)	(0.4, 0.4)	69.13	**74.32**	72.33	**72.69**	69.42	71.67
	(0.2, 0.2)	90.56	91.40	92.33	91.63	**93.26**	**93.02**
Svmguide3	(0.3, 0.1)	84.51	86.98	86.74	86.28	**89.30**	**87.91**
(22, 337, 947)	(0.4, 0.4)	84.28	76.98	86.05	83.49	**90.47**	**88.14**
	(0.2, 0.2)	90.07	**92.53**	**92.76**	92.18	91.26	92.07
Splice	(0.3, 0.1)	86.85	**90.81**	89.31	88.74	**90.69**	89.08
(60, 617, 483)	(0.4, 0.4)	78.00	77.36	80.69	**85.17**	**90.12**	82.41
Average		75.51	76.87	**77.80**	77.36	**79.12**	77.16

Table 19: Means (percentage) of the classification accuracies of all linear logistic-loss-based methods(kernel width = 2^4)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	73.65	75.59	75.13	**76.23**	**75.71**	75.32
diabetes	(0.3, 0.1)	71.05	**74.94**	71.88	72.14	74.03	**74.61**
(8, 268, 500)	(0.4, 0.4)	67.68	66.49	**70.85**	69.16	**72.92**	68.44
	(0.2, 0.2)	74.71	**79.02**	76.94	77.51	**78.84**	76.18
German	(0.3, 0.1)	76.09	77.51	**78.03**	77.92	**78.50**	77.52
(20, 300, 700)	(0.4, 0.4)	72.16	66.07	74.68	**75.72**	**76.07**	72.83
	(0.2, 0.2)	71.65	73.30	**73.75**	**73.80**	73.55	72.55
Heart	(0.3, 0.1)	72.20	74.65	**74.90**	71.70	**75.00**	74.75
(13, 120, 150)	(0.4, 0.4)	60.30	**70.20**	62.80	66.15	**70.05**	62.40
	(0.2, 0.2)	79.11	81.11	80.93	80.55	**82.59**	**82.41**
Image	(0.3, 0.1)	78.37	**80.74**	80.19	77.04	**82.78**	79.81
(18, 1188, 898)	(0.4, 0.4)	59.30	62.78	**66.30**	62.78	**78.70**	61.67
	(0.2, 0.2)	80.56	81.63	**82.63**	81.80	78.13	**82.49**
Thyroid	(0.3, 0.1)	70.46	**81.46**	**77.99**	70.05	72.73	75.53
(5, 65, 150)	(0.4, 0.4)	74.60	74.38	**77.39**	76.51	70.93	**76.60**
	(0.2, 0.2)	66.81	69.05	69.05	69.53	**72.14**	**70.95**
Votes	(0.3, 0.1)	66.81	67.62	70.24	69.29	**70.71**	**73.10**
(5, 168, 267)	(0.4, 0.4)	55.14	56.19	58.09	57.14	**60.48**	**58.57**
	(0.2, 0.2)	72.55	**74.50**	**74.50**	**75.10**	74.45	73.80
Sonar	(0.3, 0.1)	71.15	**74.85**	73.05	71.40	**73.45**	73.05
(60, 97, 111)	(0.4, 0.4)	57.55	60.15	60.00	**60.20**	**61.05**	59.45
	(0.2, 0.2)	78.43	77.82	**79.77**	79.42	76.97	**80.70**
Fourclass	(0.3, 0.1)	76.87	**78.91**	77.78	77.39	78.56	**79.96**
(2, 307, 555)	(0.4, 0.4)	68.04	**73.08**	70.86	**72.34**	67.90	68.52
	(0.2, 0.2)	81.95	81.16	**85.81**	82.56	84.42	**86.74**
Svmguide3	(0.3, 0.1)	80.56	82.09	**83.02**	81.40	**84.42**	82.79
(22, 337, 947)	(0.4, 0.4)	78.00	76.51	**83.03**	81.16	**82.10**	81.63
	(0.2, 0.2)	91.10	**92.87**	**91.84**	91.72	91.15	91.38
Splice	(0.3, 0.1)	88.11	**91.95**	**91.72**	89.66	89.89	90.00
(60, 617, 483)	(0.4, 0.4)	76.51	71.61	80.58	**84.26**	**89.77**	77.82
Average		73.05	74.94	**75.79**	75.05	**76.60**	75.39

Table 20: Means (percentage) of the classification accuracies of all linear hinge-loss-based methods(kernel width = 2^4)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	73.32	71.23	74.87	**75.00**	74.09	**75.78**
diabetes	(0.3, 0.1)	64.10	70.97	69.35	69.48	**72.47**	**73.05**
(8, 268, 500)	(0.4, 0.4)	69.23	63.31	**70.26**	69.42	**70.46**	67.21
	(0.2, 0.2)	72.86	67.40	**75.26**	**75.66**	74.74	74.86
German	(0.3, 0.1)	67.02	**78.96**	**78.79**	70.06	77.52	78.56
(20, 300, 700)	(0.4, 0.4)	66.85	64.68	**74.11**	68.33	**76.19**	69.54
	(0.2, 0.2)	70.30	68.45	**74.10**	71.90	71.15	**72.75**
Heart	(0.3, 0.1)	67.25	69.75	69.65	70.60	**71.55**	**71.50**
(13, 120, 150)	(0.4, 0.4)	61.90	**69.60**	65.15	67.35	**68.90**	66.50
	(0.2, 0.2)	80.22	**82.22**	79.82	80.56	81.11	**81.30**
Image	(0.3, 0.1)	75.41	**79.63**	77.04	75.56	**80.74**	78.15
(18, 1188, 898)	(0.4, 0.4)	62.63	**69.26**	65.37	65.00	**74.26**	57.22
	(0.2, 0.2)	78.34	76.94	**83.47**	**83.18**	62.11	82.37
Thyroid	(0.3, 0.1)	72.59	75.34	**80.53**	72.65	60.77	**78.78**
(5, 65, 150)	(0.4, 0.4)	70.99	71.87	**75.77**	72.82	64.33	**75.81**
	(0.2, 0.2)	69.43	72.38	**73.10**	72.86	72.86	**73.57**
Votes	(0.3, 0.1)	71.10	70.95	**72.38**	71.91	68.10	**74.05**
(5, 168, 267)	(0.4, 0.4)	59.67	62.14	60.48	**63.10**	55.48	**62.38**
	(0.2, 0.2)	71.95	73.85	**74.10**	73.45	72.50	**74.00**
Sonar	(0.3, 0.1)	70.20	**74.55**	**72.45**	71.00	71.30	71.55
(60, 97, 111)	(0.4, 0.4)	58.75	61.85	60.80	**62.10**	**63.70**	60.75
	(0.2, 0.2)	74.15	74.01	**78.99**	78.09	63.46	**78.83**
Fourclass	(0.3, 0.1)	73.14	75.29	**76.23**	75.21	64.24	**76.11**
(2, 307, 555)	(0.4, 0.4)	72.67	74.05	74.51	**75.25**	63.54	**74.82**
	(0.2, 0.2)	80.33	79.77	**85.58**	82.09	80.47	**82.79**
Svmguide3	(0.3, 0.1)	73.81	78.37	**83.02**	77.21	70.23	**80.70**
(22, 337, 947)	(0.4, 0.4)	78.00	78.14	**82.79**	79.07	62.56	**80.93**
	(0.2, 0.2)	92.48	**93.91**	92.41	92.30	89.54	**93.68**
Splice	(0.3, 0.1)	91.45	**94.71**	92.41	91.03	90.46	**92.64**
(60, 617, 483)	(0.4, 0.4)	81.91	79.89	82.76	**87.59**	**87.36**	83.10
Average		72.40	74.12	**75.85**	74.66	71.87	**75.44**

Table 21: Means (percentage) of the classification accuracies of all kernel logistic-loss-based methods(kernel width = 2^5)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	71.77	73.90	74.87	**75.71**	**75.65**	73.90
diabetes	(0.3, 0.1)	70.21	**72.27**	71.17	71.50	**73.18**	72.21
(8, 268, 500)	(0.4, 0.4)	61.90	67.14	64.74	**70.91**	**72.53**	63.31
	(0.2, 0.2)	77.42	78.85	**79.42**	77.63	**79.48**	79.13
German	(0.3, 0.1)	75.17	77.57	**78.09**	76.36	**78.15**	77.28
(20, 300, 700)	(0.4, 0.4)	72.39	66.88	75.09	74.74	**78.03**	**75.26**
	(0.2, 0.2)	72.85	72.95	**75.30**	73.55	**75.35**	73.80
Heart	(0.3, 0.1)	70.40	72.70	72.50	70.45	**73.70**	**73.30**
(13, 120, 150)	(0.4, 0.4)	59.55	**69.75**	62.45	68.70	**69.15**	63.00
	(0.2, 0.2)	77.63	79.45	**82.59**	78.70	**82.78**	78.15
Image	(0.3, 0.1)	72.63	**77.22**	74.26	74.45	**80.19**	75.37
(18, 1188, 898)	(0.4, 0.4)	67.07	67.59	69.81	70.37	**82.04**	**70.56**
	(0.2, 0.2)	86.54	**88.64**	**88.66**	81.13	86.20	88.52
Thyroid	(0.3, 0.1)	83.12	**89.71**	**87.82**	68.25	82.08	85.24
(5, 65, 150)	(0.4, 0.4)	75.87	75.41	**78.78**	75.19	75.29	**77.85**
	(0.2, 0.2)	66.33	65.48	65.71	**68.33**	65.71	**67.38**
Votes	(0.3, 0.1)	65.86	**70.71**	65.24	70.24	67.38	**71.67**
(5, 168, 267)	(0.4, 0.4)	58.48	**59.53**	**60.24**	57.14	56.91	56.91
	(0.2, 0.2)	74.55	**76.90**	**76.70**	73.75	75.50	76.50
Sonar	(0.3, 0.1)	72.20	**77.75**	73.85	72.40	74.45	**75.15**
(60, 97, 111)	(0.4, 0.4)	64.15	66.10	**66.30**	62.40	**67.60**	65.50
	(0.2, 0.2)	78.00	77.39	78.99	**80.93**	75.22	**80.00**
Fourclass	(0.3, 0.1)	76.09	78.40	77.32	78.21	**78.68**	**79.42**
(2, 307, 555)	(0.4, 0.4)	71.15	73.07	**73.89**	**76.03**	68.33	72.30
	(0.2, 0.2)	93.58	**94.42**	**95.35**	86.98	94.19	93.26
Svmguide3	(0.3, 0.1)	92.19	**94.42**	90.70	80.47	**94.42**	93.95
(22, 337, 947)	(0.4, 0.4)	82.88	78.37	**86.51**	78.84	85.35	**86.51**
	(0.2, 0.2)	90.18	**92.87**	91.72	**91.84**	89.43	91.49
Splice	(0.3, 0.1)	86.74	**90.80**	89.31	88.51	89.08	**91.03**
(60, 617, 483)	(0.4, 0.4)	77.89	78.16	83.34	**85.98**	**88.97**	79.77
Average		74.83	76.81	**77.02**	75.32	**77.83**	76.92

Table 22: Means (percentage) of the classification accuracies of all kernel hinge-loss-based methods(kernel width = 2^5)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	72.61	74.42	**75.07**	**75.07**	74.55	74.16
diabetes	(0.3, 0.1)	69.04	**73.12**	70.39	69.94	**74.61**	72.47
(8, 268, 500)	(0.4, 0.4)	68.33	67.08	69.35	**70.20**	**72.53**	69.74
	(0.2, 0.2)	84.19	82.95	**90.35**	85.90	82.66	**86.94**
German	(0.3, 0.1)	77.37	**82.54**	**84.80**	78.73	80.17	80.12
(20, 300, 700)	(0.4, 0.4)	74.99	66.71	74.80	76.30	**77.92**	**77.28**
	(0.2, 0.2)	71.10	71.00	**73.15**	72.70	**73.00**	72.85
Heart	(0.3, 0.1)	70.65	**73.30**	71.95	71.30	**74.40**	73.20
(13, 120, 150)	(0.4, 0.4)	61.35	**69.65**	63.95	67.85	**69.95**	65.95
	(0.2, 0.2)	77.44	79.07	**80.19**	76.48	**80.19**	79.82
Image	(0.3, 0.1)	72.81	**79.45**	76.67	73.89	**82.78**	75.93
(18, 1188, 898)	(0.4, 0.4)	63.37	65.93	65.93	**66.48**	**78.15**	64.44
	(0.2, 0.2)	87.40	89.02	**89.59**	89.43	88.06	**89.52**
Thyroid	(0.3, 0.1)	86.35	**89.90**	88.40	88.01	85.65	**88.71**
(5, 65, 150)	(0.4, 0.4)	80.06	72.75	81.20	**81.58**	75.21	**82.25**
	(0.2, 0.2)	71.57	73.33	**74.52**	72.62	69.76	**73.33**
Votes	(0.3, 0.1)	67.76	**76.91**	70.00	66.19	**71.67**	69.53
(5, 168, 267)	(0.4, 0.4)	59.43	**61.67**	60.95	60.95	**61.19**	56.67
	(0.2, 0.2)	79.85	81.60	**82.05**	81.40	79.00	**82.45**
Sonar	(0.3, 0.1)	75.55	**81.75**	77.45	76.95	77.55	**78.40**
(60, 97, 111)	(0.4, 0.4)	60.35	62.65	62.55	62.35	**65.95**	**62.85**
	(0.2, 0.2)	75.01	73.58	**77.59**	76.93	76.34	**78.02**
Fourclass	(0.3, 0.1)	71.35	73.46	**74.24**	73.19	**74.55**	73.97
(2, 307, 555)	(0.4, 0.4)	71.19	**74.75**	74.32	**74.82**	67.12	72.76
	(0.2, 0.2)	92.42	91.86	93.95	93.02	**94.42**	**94.19**
Svmguide3	(0.3, 0.1)	87.77	**90.46**	89.07	87.67	**92.56**	89.77
(22, 337, 947)	(0.4, 0.4)	84.98	75.35	**87.44**	84.42	86.74	**87.44**
	(0.2, 0.2)	90.99	91.84	92.41	**92.87**	91.38	**92.87**
Splice	(0.3, 0.1)	89.15	**92.07**	**91.26**	90.34	91.04	91.15
(60, 617, 483)	(0.4, 0.4)	77.31	75.63	78.39	**85.75**	**89.66**	77.36
Average		75.72	77.13	**78.07**	77.44	**78.62**	77.80

Table 23: Means (percentage) of the classification accuracies of all linear logistic-loss-based methods(kernel width = 2^5)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	74.88	**77.21**	76.43	76.69	**77.21**	77.21
diabetes	(0.3, 0.1)	70.40	**74.03**	70.98	71.43	**75.13**	74.03
(8, 268, 500)	(0.4, 0.4)	67.55	66.82	69.61	**71.50**	**72.92**	69.29
	(0.2, 0.2)	74.59	**79.42**	76.53	77.17	**77.57**	75.38
German	(0.3, 0.1)	75.11	**76.59**	76.36	**76.88**	76.18	76.30
(20, 300, 700)	(0.4, 0.4)	72.91	66.47	75.61	**76.53**	**77.46**	74.28
	(0.2, 0.2)	73.20	74.35	**74.70**	74.40	**74.75**	74.05
Heart	(0.3, 0.1)	71.50	**74.15**	**74.15**	72.40	**74.55**	73.30
(13, 120, 150)	(0.4, 0.4)	64.80	69.45	67.25	**71.55**	**70.80**	67.30
	(0.2, 0.2)	75.78	78.15	**80.74**	77.96	**83.52**	79.45
Image	(0.3, 0.1)	73.93	**77.04**	76.48	73.15	**82.04**	73.89
(18, 1188, 898)	(0.4, 0.4)	64.67	68.70	70.56	**70.74**	**79.26**	67.41
	(0.2, 0.2)	79.34	80.93	**82.15**	81.46	76.89	**81.92**
Thyroid	(0.3, 0.1)	70.03	**81.89**	**77.49**	69.93	73.16	75.38
(5, 65, 150)	(0.4, 0.4)	72.79	74.14	**76.08**	74.24	68.83	**74.64**
	(0.2, 0.2)	68.95	72.38	**74.76**	72.86	68.81	**74.05**
Votes	(0.3, 0.1)	69.19	70.48	70.24	**72.38**	69.53	**73.10**
(5, 168, 267)	(0.4, 0.4)	58.48	**62.62**	**62.38**	60.95	60.24	61.67
	(0.2, 0.2)	71.80	73.30	**74.20**	**74.40**	74.05	72.80
Sonar	(0.3, 0.1)	72.00	**76.95**	73.80	74.30	**74.50**	72.95
(60, 97, 111)	(0.4, 0.4)	58.85	60.90	61.25	**61.30**	**62.20**	61.20
	(0.2, 0.2)	78.66	78.64	**80.78**	80.12	76.15	**80.86**
Fourclass	(0.3, 0.1)	74.65	**76.65**	75.22	74.90	74.98	**77.78**
(2, 307, 555)	(0.4, 0.4)	70.96	**74.79**	72.65	**75.33**	68.21	71.17
	(0.2, 0.2)	81.72	82.33	**86.05**	82.56	83.95	**84.19**
Svmguide3	(0.3, 0.1)	80.09	83.02	82.33	80.93	**83.26**	**84.65**
(22, 337, 947)	(0.4, 0.4)	75.91	74.88	**80.00**	78.61	**79.30**	76.28
	(0.2, 0.2)	87.89	**91.03**	90.23	**91.84**	89.20	90.23
Splice	(0.3, 0.1)	87.77	**90.35**	**90.35**	88.62	89.77	89.54
(60, 617, 483)	(0.4, 0.4)	72.83	70.80	80.00	**82.07**	**90.23**	74.83
Average		73.04	75.28	**75.98**	75.57	**76.15**	75.30

Table 24: Means (percentage) of the classification accuracies of all linear hinge-loss-based methods(kernel width = 2^5)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	74.23	74.03	**76.69**	76.56	74.16	**76.56**
diabetes	(0.3, 0.1)	67.68	**75.65**	71.56	71.62	74.74	**75.46**
(8, 268, 500)	(0.4, 0.4)	68.20	65.46	69.61	**72.08**	**69.74**	65.33
	(0.2, 0.2)	73.49	72.31	**78.38**	77.34	**77.80**	75.90
German	(0.3, 0.1)	66.44	74.86	**78.61**	68.50	**77.75**	75.26
(20, 300, 700)	(0.4, 0.4)	69.68	63.82	**72.95**	72.08	**76.13**	68.90
	(0.2, 0.2)	69.85	70.80	**72.00**	**72.65**	71.15	71.90
Heart	(0.3, 0.1)	67.80	70.25	71.00	70.25	**72.15**	**71.05**
(13, 120, 150)	(0.4, 0.4)	62.20	**70.75**	64.40	**68.45**	67.35	65.25
	(0.2, 0.2)	78.74	79.26	**80.93**	**81.11**	78.89	78.70
Image	(0.3, 0.1)	78.00	**79.82**	79.63	76.85	**82.59**	79.07
(18, 1188, 898)	(0.4, 0.4)	67.63	65.93	**70.37**	68.33	**76.11**	65.18
	(0.2, 0.2)	78.31	77.73	**83.71**	83.54	63.25	**83.69**
Thyroid	(0.3, 0.1)	74.67	76.72	**82.49**	74.19	60.48	**78.64**
(5, 65, 150)	(0.4, 0.4)	70.42	70.84	72.99	**73.35**	60.86	**76.96**
	(0.2, 0.2)	67.53	69.05	68.81	**70.00**	65.24	**71.43**
Votes	(0.3, 0.1)	64.91	66.67	64.53	**66.91**	61.43	**69.05**
(5, 168, 267)	(0.4, 0.4)	55.62	57.14	59.29	55.00	**60.48**	**59.52**
	(0.2, 0.2)	73.40	75.30	**75.75**	75.55	73.95	**75.95**
Sonar	(0.3, 0.1)	71.15	**75.80**	**73.25**	71.60	72.90	73.05
(60, 97, 111)	(0.4, 0.4)	59.20	61.25	61.55	**61.75**	**62.55**	60.35
	(0.2, 0.2)	78.16	75.33	**80.66**	79.77	65.25	**80.82**
Fourclass	(0.3, 0.1)	74.03	76.15	**78.72**	**77.35**	66.38	76.58
(2, 307, 555)	(0.4, 0.4)	70.18	72.14	**72.69**	**72.69**	63.23	72.34
	(0.2, 0.2)	82.89	82.09	**87.67**	82.79	75.58	**88.37**
Svmguide3	(0.3, 0.1)	75.91	78.14	**81.86**	77.21	78.14	**80.00**
(22, 337, 947)	(0.4, 0.4)	75.21	71.40	**76.75**	**76.28**	72.79	72.56
	(0.2, 0.2)	92.83	**93.56**	92.53	93.45	90.12	**94.25**
Splice	(0.3, 0.1)	91.22	**94.25**	91.72	91.03	89.77	**93.68**
(60, 617, 483)	(0.4, 0.4)	78.80	74.37	83.45	**86.90**	**88.16**	79.66
Average		72.61	73.69	**75.82**	74.84	72.30	**75.18**

Table 25: Means (percentage) of the classification accuracies of all kernel logistic-loss-based methods(kernel width = 2^6)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	71.90	73.90	73.96	**76.23**	**75.78**	74.16
diabetes	(0.3, 0.1)	70.92	**73.57**	71.82	72.47	**73.83**	73.31
(8, 268, 500)	(0.4, 0.4)	60.60	66.88	63.05	**71.10**	**70.91**	63.57
	(0.2, 0.2)	76.79	77.98	**79.19**	76.30	78.61	**79.77**
German	(0.3, 0.1)	74.93	78.09	**79.02**	74.80	**78.44**	78.09
(20, 300, 700)	(0.4, 0.4)	72.28	68.96	73.47	**75.49**	**76.99**	74.74
	(0.2, 0.2)	71.50	73.55	**74.10**	**74.60**	**74.10**	72.95
Heart	(0.3, 0.1)	71.40	**73.65**	73.30	71.75	**74.15**	73.55
(13, 120, 150)	(0.4, 0.4)	58.55	**67.80**	61.40	66.75	**66.95**	62.85
	(0.2, 0.2)	77.45	78.89	**81.11**	77.59	**81.85**	79.82
Image	(0.3, 0.1)	71.33	**76.85**	76.11	72.04	**82.04**	75.93
(18, 1188, 898)	(0.4, 0.4)	62.44	65.37	66.11	65.00	**79.08**	**67.59**
	(0.2, 0.2)	87.64	**89.74**	89.47	82.51	88.09	**89.83**
Thyroid	(0.3, 0.1)	84.72	**90.05**	**88.40**	69.81	80.67	86.99
(5, 65, 150)	(0.4, 0.4)	77.64	76.29	**80.26**	76.17	75.17	**79.14**
	(0.2, 0.2)	65.38	**67.86**	66.90	**67.62**	62.86	65.47
Votes	(0.3, 0.1)	62.76	**70.48**	64.29	**68.10**	67.14	67.38
(5, 168, 267)	(0.4, 0.4)	57.05	**58.81**	**58.57**	58.10	58.09	56.67
	(0.2, 0.2)	76.60	**78.35**	78.05	76.10	77.05	**79.10**
Sonar	(0.3, 0.1)	72.90	**78.60**	74.80	71.85	74.10	**76.15**
(60, 97, 111)	(0.4, 0.4)	61.80	64.65	64.05	61.00	**67.65**	**65.75**
	(0.2, 0.2)	77.07	76.07	78.21	**79.42**	74.20	**79.49**
Fourclass	(0.3, 0.1)	75.12	77.28	76.11	76.34	**77.98**	**78.64**
(2, 307, 555)	(0.4, 0.4)	68.43	**75.64**	71.36	**74.05**	66.73	69.92
	(0.2, 0.2)	92.88	92.56	92.56	82.33	**94.19**	**95.81**
Svmguide3	(0.3, 0.1)	90.79	93.02	90.47	78.14	**93.72**	**93.49**
(22, 337, 947)	(0.4, 0.4)	83.58	82.33	**86.74**	78.84	**85.81**	85.58
	(0.2, 0.2)	90.07	**92.41**	**92.99**	91.95	91.95	92.07
Splice	(0.3, 0.1)	89.84	**92.30**	91.26	**92.30**	91.84	91.84
(60, 617, 483)	(0.4, 0.4)	77.20	72.87	80.92	**82.53**	**86.44**	77.82
Average		74.38	76.83	76.60	74.71	**77.55**	**76.92**

Table 26: Means (percentage) of the classification accuracies of all kernel hinge-loss-based methods(kernel width = 2^6)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	72.94	74.29	73.77	**75.20**	74.87	**75.06**
diabetes	(0.3, 0.1)	68.33	**71.69**	69.94	69.68	**72.79**	71.56
(8, 268, 500)	(0.4, 0.4)	66.38	64.03	67.21	**69.42**	**71.75**	66.63
	(0.2, 0.2)	84.82	83.64	**91.22**	86.82	84.97	**89.08**
German	(0.3, 0.1)	78.29	**83.93**	**85.78**	79.42	81.27	80.81
(20, 300, 700)	(0.4, 0.4)	78.17	67.23	80.17	**80.29**	80.06	**80.35**
	(0.2, 0.2)	72.00	71.40	73.70	73.90	**75.20**	**74.80**
Heart	(0.3, 0.1)	70.65	73.05	72.00	72.05	**74.60**	**73.70**
(13, 120, 150)	(0.4, 0.4)	61.90	**69.00**	63.30	67.95	**70.40**	64.80
	(0.2, 0.2)	80.59	82.78	**84.63**	82.04	**85.19**	80.93
Image	(0.3, 0.1)	72.81	**77.78**	75.74	71.85	**82.04**	75.56
(18, 1188, 898)	(0.4, 0.4)	64.30	63.89	65.37	**66.67**	**76.48**	64.07
	(0.2, 0.2)	88.07	89.59	**90.14**	90.02	**90.14**	90.12
Thyroid	(0.3, 0.1)	86.23	**89.14**	**89.00**	87.75	84.62	88.37
(5, 65, 150)	(0.4, 0.4)	79.70	75.76	**81.65**	81.17	72.82	**82.56**
	(0.2, 0.2)	66.57	67.38	65.24	**67.62**	66.43	**68.33**
Votes	(0.3, 0.1)	64.91	**70.48**	63.10	63.81	66.43	**67.86**
(5, 168, 267)	(0.4, 0.4)	56.81	56.19	58.81	58.09	**60.24**	**60.95**
	(0.2, 0.2)	79.25	81.15	81.10	**81.45**	79.50	**81.30**
Sonar	(0.3, 0.1)	72.80	**80.05**	75.35	74.40	**76.20**	75.85
(60, 97, 111)	(0.4, 0.4)	64.30	66.05	66.70	66.30	**68.50**	**66.95**
	(0.2, 0.2)	76.17	74.98	**78.45**	78.17	75.06	**78.95**
Fourclass	(0.3, 0.1)	72.98	75.18	75.56	74.98	**75.95**	**76.11**
(2, 307, 555)	(0.4, 0.4)	69.52	72.92	71.48	**73.81**	67.08	**73.08**
	(0.2, 0.2)	91.49	90.93	92.09	91.86	**93.49**	**92.79**
Svmguide3	(0.3, 0.1)	88.47	90.93	88.60	88.84	**91.63**	**90.93**
(22, 337, 947)	(0.4, 0.4)	78.47	73.49	76.98	77.68	**81.63**	**81.86**
	(0.2, 0.2)	91.68	**93.45**	92.87	93.10	92.41	**93.68**
Splice	(0.3, 0.1)	89.61	**92.87**	91.72	90.69	91.26	**91.72**
(60, 617, 483)	(0.4, 0.4)	76.16	68.97	74.02	**82.42**	**88.28**	76.67
Average		75.48	76.41	77.19	77.25	**78.38**	**77.85**

Table 27: Means (percentage) of the classification accuracies of all linear logistic-loss-based methods(kernel width = 2^6)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	75.99	77.34	77.53	**77.86**	76.49	**78.31**
diabetes	(0.3, 0.1)	72.03	**75.07**	73.25	73.18	74.48	**74.94**
(8, 268, 500)	(0.4, 0.4)	64.04	66.88	66.75	**69.09**	**69.94**	65.59
	(0.2, 0.2)	73.26	**78.21**	75.72	75.84	**77.00**	74.45
German	(0.3, 0.1)	74.36	**76.30**	76.13	76.01	**77.69**	76.07
(20, 300, 700)	(0.4, 0.4)	72.28	65.90	74.45	74.16	**75.90**	**74.45**
	(0.2, 0.2)	69.90	**71.85**	**72.05**	71.45	71.55	70.30
Heart	(0.3, 0.1)	70.80	73.20	**73.25**	70.50	**73.60**	73.20
(13, 120, 150)	(0.4, 0.4)	63.60	**69.65**	66.50	68.65	**69.90**	63.65
	(0.2, 0.2)	75.22	76.67	**79.26**	76.48	**81.11**	76.48
Image	(0.3, 0.1)	74.85	78.33	**78.52**	74.26	**81.85**	77.22
(18, 1188, 898)	(0.4, 0.4)	64.30	66.11	**69.63**	68.52	**78.71**	65.56
	(0.2, 0.2)	81.40	83.14	**84.64**	83.13	78.54	**83.90**
Thyroid	(0.3, 0.1)	71.71	**81.20**	**78.37**	70.00	73.52	76.91
(5, 65, 150)	(0.4, 0.4)	74.56	73.11	**76.96**	75.86	71.05	**75.88**
	(0.2, 0.2)	62.76	65.24	**67.62**	65.00	63.57	**71.67**
Votes	(0.3, 0.1)	69.19	**74.28**	70.48	66.19	69.76	**74.05**
(5, 168, 267)	(0.4, 0.4)	53.00	55.00	57.86	57.14	**60.95**	**58.33**
	(0.2, 0.2)	72.80	74.80	**75.05**	**75.10**	74.75	74.40
Sonar	(0.3, 0.1)	70.80	**74.75**	72.90	72.20	**73.75**	72.70
(60, 97, 111)	(0.4, 0.4)	58.85	60.90	61.55	**62.25**	**64.50**	60.30
	(0.2, 0.2)	78.39	78.60	**80.55**	80.16	77.47	**80.43**
Fourclass	(0.3, 0.1)	76.01	**78.21**	76.85	77.12	76.93	**79.30**
(2, 307, 555)	(0.4, 0.4)	70.99	**74.75**	72.76	**74.67**	70.04	71.29
	(0.2, 0.2)	84.28	84.19	**88.14**	84.88	86.28	**89.07**
Svmguide3	(0.3, 0.1)	77.30	80.23	79.30	76.98	**81.40**	**80.23**
(22, 337, 947)	(0.4, 0.4)	75.68	76.05	**81.86**	**82.33**	81.40	74.42
	(0.2, 0.2)	87.89	**88.97**	88.85	**90.23**	87.13	88.28
Splice	(0.3, 0.1)	89.61	**92.07**	91.72	89.66	91.15	**92.18**
(60, 617, 483)	(0.4, 0.4)	75.24	73.91	80.00	**83.45**	**87.82**	75.98
Average		72.70	74.83	**75.62**	74.74	**75.94**	74.98

Table 28: Means (percentage) of the classification accuracies of all linear hinge-loss-based methods(kernel width = 2^6)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	72.74	71.82	**74.61**	**74.67**	73.18	74.35
diabetes	(0.3, 0.1)	63.59	71.75	69.87	68.83	**74.03**	**73.57**
(8, 268, 500)	(0.4, 0.4)	69.89	66.23	**72.40**	**72.66**	71.75	72.14
	(0.2, 0.2)	70.31	68.50	**75.44**	72.72	**74.62**	73.41
German	(0.3, 0.1)	66.84	73.53	**78.15**	69.31	**76.76**	76.42
(20, 300, 700)	(0.4, 0.4)	68.52	63.70	**74.11**	71.85	**76.70**	72.20
	(0.2, 0.2)	71.20	69.35	**74.05**	**72.90**	71.35	72.65
Heart	(0.3, 0.1)	68.90	71.40	**72.65**	71.50	**72.70**	71.00
(13, 120, 150)	(0.4, 0.4)	64.70	**69.70**	67.75	**69.45**	69.25	65.95
	(0.2, 0.2)	76.15	78.33	78.89	**79.45**	**79.81**	79.08
Image	(0.3, 0.1)	78.19	**82.22**	**82.78**	78.52	82.04	81.48
(18, 1188, 898)	(0.4, 0.4)	68.74	70.00	**71.11**	70.00	**77.41**	66.67
	(0.2, 0.2)	77.67	76.94	**84.14**	83.66	61.34	**84.12**
Thyroid	(0.3, 0.1)	71.01	**78.69**	**80.07**	70.43	60.96	76.44
(5, 65, 150)	(0.4, 0.4)	70.51	69.14	**75.21**	72.34	60.29	**78.21**
	(0.2, 0.2)	66.57	68.10	**70.95**	**69.53**	64.76	69.05
Votes	(0.3, 0.1)	68.72	**71.43**	68.57	68.33	64.52	**72.86**
(5, 168, 267)	(0.4, 0.4)	51.81	54.05	**54.52**	53.57	**59.52**	53.10
	(0.2, 0.2)	73.60	75.25	75.05	**75.45**	72.45	**75.55**
Sonar	(0.3, 0.1)	70.90	**75.75**	72.90	71.70	72.85	**73.65**
(60, 97, 111)	(0.4, 0.4)	60.05	62.05	62.05	**63.45**	**66.00**	63.20
	(0.2, 0.2)	75.59	74.01	**79.10**	78.13	68.21	**80.23**
Fourclass	(0.3, 0.1)	73.91	75.91	**77.36**	76.07	64.86	**76.62**
(2, 307, 555)	(0.4, 0.4)	71.07	72.84	**73.54**	73.19	64.16	**74.55**
	(0.2, 0.2)	82.42	83.49	**89.30**	84.89	80.23	**89.54**
Svmguide3	(0.3, 0.1)	74.51	77.21	**81.40**	76.28	72.09	**83.02**
(22, 337, 947)	(0.4, 0.4)	79.63	73.02	**83.72**	79.30	66.28	**82.56**
	(0.2, 0.2)	90.76	**92.30**	91.72	91.95	88.97	**92.99**
Splice	(0.3, 0.1)	88.34	**90.92**	**90.58**	89.89	89.08	89.89
(60, 617, 483)	(0.4, 0.4)	80.07	72.64	84.14	**85.75**	**87.47**	82.53
Average		72.23	73.34	**76.20**	74.53	72.12	**75.90**

Table 29: Means (percentage) of the classification accuracies of all kernel logistic-loss-based methods(kernel width = 2^7)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	73.20	73.57	**75.39**	74.87	74.35	**75.20**
diabetes	(0.3, 0.1)	69.63	**73.38**	71.43	72.14	**74.55**	72.73
(8, 268, 500)	(0.4, 0.4)	65.60	68.38	68.12	**73.31**	**73.90**	68.57
	(0.2, 0.2)	76.38	**79.30**	77.75	76.01	77.69	**78.96**
German	(0.3, 0.1)	76.21	79.02	79.02	77.63	**79.94**	**79.42**
(20, 300, 700)	(0.4, 0.4)	72.45	66.70	**75.84**	73.58	**75.14**	72.31
	(0.2, 0.2)	72.30	73.30	**74.55**	74.35	74.50	**74.60**
Heart	(0.3, 0.1)	71.35	**73.75**	72.95	70.40	**74.55**	72.70
(13, 120, 150)	(0.4, 0.4)	61.55	**70.30**	65.35	69.25	**70.25**	64.65
	(0.2, 0.2)	78.00	80.56	**82.04**	81.67	**83.33**	80.37
Image	(0.3, 0.1)	70.96	**77.96**	75.56	73.33	**80.93**	77.04
(18, 1188, 898)	(0.4, 0.4)	65.04	67.41	**72.04**	68.89	**78.15**	68.15
	(0.2, 0.2)	88.43	89.93	**90.17**	82.27	89.69	**91.03**
Thyroid	(0.3, 0.1)	84.53	**90.14**	**88.57**	71.29	85.02	87.75
(5, 65, 150)	(0.4, 0.4)	76.81	76.32	**80.41**	74.79	71.48	**78.16**
	(0.2, 0.2)	69.67	**70.24**	69.76	**72.14**	65.48	68.57
Votes	(0.3, 0.1)	62.52	**71.43**	60.95	**69.05**	64.76	66.43
(5, 168, 267)	(0.4, 0.4)	62.76	**64.76**	63.57	**66.19**	60.48	61.19
	(0.2, 0.2)	75.65	77.45	**77.70**	75.25	75.50	**78.05**
Sonar	(0.3, 0.1)	72.45	**77.80**	74.25	73.15	73.60	**75.40**
(60, 97, 111)	(0.4, 0.4)	61.55	62.65	**63.25**	60.95	**66.75**	**63.25**
	(0.2, 0.2)	75.70	74.51	77.08	**78.99**	74.40	**78.37**
Fourclass	(0.3, 0.1)	75.28	**77.39**	76.58	77.12	76.42	**78.29**
(2, 307, 555)	(0.4, 0.4)	71.77	**74.67**	73.04	**75.92**	71.56	71.95
	(0.2, 0.2)	93.35	93.95	**94.65**	84.88	93.95	**94.88**
Svmguide3	(0.3, 0.1)	89.63	92.09	90.70	83.49	**92.79**	**93.72**
(22, 337, 947)	(0.4, 0.4)	80.79	73.26	**86.05**	73.95	81.86	**83.49**
	(0.2, 0.2)	89.72	**91.38**	91.26	**92.41**	88.85	90.92
Splice	(0.3, 0.1)	89.15	**92.41**	90.34	89.54	91.38	**92.18**
(60, 617, 483)	(0.4, 0.4)	81.11	79.31	**85.06**	82.41	**87.24**	83.22
Average		75.12	77.11	**77.45**	75.64	**77.62**	77.38

Table 30: Means (percentage) of the classification accuracies of all kernel hinge-loss-based methods(kernel width = 2^7)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	71.18	72.14	72.47	**73.90**	**74.61**	72.73
diabetes	(0.3, 0.1)	67.55	**71.88**	69.94	69.03	**72.53**	71.43
(8, 268, 500)	(0.4, 0.4)	64.49	66.62	65.59	67.86	**69.68**	**67.86**
	(0.2, 0.2)	83.03	83.01	**90.87**	84.28	82.60	**86.13**
German	(0.3, 0.1)	79.73	**84.22**	**85.90**	81.45	80.87	82.43
(20, 300, 700)	(0.4, 0.4)	76.15	67.69	**78.90**	77.63	**78.73**	77.57
	(0.2, 0.2)	70.20	**72.35**	72.25	**72.35**	72.20	71.85
Heart	(0.3, 0.1)	70.40	72.55	72.35	70.95	**73.65**	**72.70**
(13, 120, 150)	(0.4, 0.4)	61.90	**70.20**	64.70	65.90	**70.10**	66.55
	(0.2, 0.2)	76.15	78.52	78.70	78.71	**80.74**	**79.07**
Image	(0.3, 0.1)	73.19	76.85	**77.22**	75.93	**81.48**	75.56
(18, 1188, 898)	(0.4, 0.4)	59.85	61.30	61.85	**62.78**	**76.48**	58.70
	(0.2, 0.2)	86.90	88.06	**89.12**	89.04	87.54	**89.09**
Thyroid	(0.3, 0.1)	87.16	89.38	**89.91**	88.83	88.95	**89.38**
(5, 65, 150)	(0.4, 0.4)	81.02	76.82	**83.57**	82.90	75.38	**84.26**
	(0.2, 0.2)	73.00	75.00	**75.71**	75.71	73.81	**76.43**
Votes	(0.3, 0.1)	65.62	**71.67**	67.86	66.67	67.62	**69.76**
(5, 168, 267)	(0.4, 0.4)	62.52	**66.90**	**65.71**	64.52	63.09	64.05
	(0.2, 0.2)	78.75	**80.75**	**80.80**	80.70	79.25	**80.75**
Sonar	(0.3, 0.1)	73.15	**81.10**	75.15	74.75	**77.35**	76.35
(60, 97, 111)	(0.4, 0.4)	62.45	64.75	64.70	64.75	**67.05**	**65.30**
	(0.2, 0.2)	75.04	73.81	**77.16**	76.89	73.77	**77.98**
Fourclass	(0.3, 0.1)	72.71	74.67	**74.86**	74.40	**75.45**	74.44
(2, 307, 555)	(0.4, 0.4)	72.01	**74.24**	73.97	74.20	68.91	**74.20**
	(0.2, 0.2)	88.93	89.30	**91.40**	89.07	**91.63**	91.16
Svmguide3	(0.3, 0.1)	90.32	**92.79**	90.23	87.44	**92.79**	92.56
(22, 337, 947)	(0.4, 0.4)	81.02	75.12	**83.26**	81.63	**86.05**	82.56
	(0.2, 0.2)	91.22	92.64	**93.22**	92.53	92.99	**93.56**
Splice	(0.3, 0.1)	88.92	**92.41**	91.15	90.23	**91.38**	91.04
(60, 617, 483)	(0.4, 0.4)	76.62	75.86	77.82	**84.83**	**88.28**	80.81
Average		75.37	77.09	**77.88**	77.33	**78.50**	77.87

Table 31: Means (percentage) of the classification accuracies of all linear logistic-loss-based methods(kernel width = 2^7)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	73.13	75.32	75.00	**76.49**	75.19	**75.58**
diabetes	(0.3, 0.1)	71.31	**74.81**	72.66	72.60	74.48	**75.65**
(8, 268, 500)	(0.4, 0.4)	68.59	69.16	70.45	**71.69**	**73.25**	70.07
	(0.2, 0.2)	73.43	**77.00**	75.49	75.55	**75.90**	74.51
German	(0.3, 0.1)	76.44	78.15	78.38	78.09	**78.90**	**78.56**
(20, 300, 700)	(0.4, 0.4)	73.32	66.01	74.80	**75.95**	**76.71**	73.99
	(0.2, 0.2)	71.25	73.70	**73.75**	73.70	**73.95**	72.75
Heart	(0.3, 0.1)	71.55	**74.10**	73.85	70.80	**74.05**	**74.05**
(13, 120, 150)	(0.4, 0.4)	63.00	**69.30**	65.30	67.50	**69.35**	65.00
	(0.2, 0.2)	74.67	76.48	**78.33**	77.04	**79.26**	76.48
Image	(0.3, 0.1)	76.70	**80.00**	77.41	76.11	**82.04**	77.41
(18, 1188, 898)	(0.4, 0.4)	58.37	62.78	**65.74**	64.82	**75.18**	60.56
	(0.2, 0.2)	80.11	**82.34**	**82.82**	81.96	78.21	82.25
Thyroid	(0.3, 0.1)	72.07	**82.18**	**78.06**	71.15	74.24	76.22
(5, 65, 150)	(0.4, 0.4)	72.04	70.65	**74.88**	**73.83**	70.31	73.59
	(0.2, 0.2)	67.05	68.57	**70.95**	70.00	67.62	**72.38**
Votes	(0.3, 0.1)	66.81	68.81	**70.24**	69.52	65.72	**73.57**
(5, 168, 267)	(0.4, 0.4)	57.29	59.29	59.52	**60.48**	**60.95**	60.48
	(0.2, 0.2)	70.60	**72.50**	71.80	71.85	71.20	**72.85**
Sonar	(0.3, 0.1)	69.60	**73.70**	71.75	69.85	**72.45**	71.60
(60, 97, 111)	(0.4, 0.4)	61.80	64.00	**64.75**	63.90	**67.35**	64.15
	(0.2, 0.2)	77.88	77.98	**78.95**	78.83	74.75	**80.19**
Fourclass	(0.3, 0.1)	74.38	76.69	75.49	74.51	**76.73**	**77.90**
(2, 307, 555)	(0.4, 0.4)	70.65	**74.90**	74.32	**74.59**	69.46	71.87
	(0.2, 0.2)	83.35	83.49	85.35	84.42	**88.14**	**86.05**
Svmguide3	(0.3, 0.1)	79.40	81.86	81.40	79.30	**84.65**	**83.72**
(22, 337, 947)	(0.4, 0.4)	75.21	**78.14**	**78.14**	**78.14**	**80.93**	74.42
	(0.2, 0.2)	89.27	91.38	**92.07**	**92.64**	91.04	91.15
Splice	(0.3, 0.1)	87.89	**91.61**	89.54	89.77	89.54	**91.04**
(60, 617, 483)	(0.4, 0.4)	74.67	70.69	81.38	**83.10**	**89.54**	75.75
Average		72.73	74.85	**75.42**	74.94	**76.04**	75.13

Table 32: Means (percentage) of the classification accuracies of all linear hinge-loss-based methods(kernel width = 2^7)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	75.66	71.23	**77.40**	76.82	73.83	**76.82**
diabetes	(0.3, 0.1)	68.65	74.42	73.31	72.53	**75.32**	**75.65**
(8, 268, 500)	(0.4, 0.4)	66.31	65.06	66.88	**67.47**	**69.48**	66.30
	(0.2, 0.2)	71.87	71.10	**76.01**	74.45	**76.47**	73.93
German	(0.3, 0.1)	61.93	73.53	**76.07**	66.24	**75.49**	71.85
(20, 300, 700)	(0.4, 0.4)	68.29	62.83	**74.22**	70.00	**74.28**	66.24
	(0.2, 0.2)	69.75	69.75	**72.50**	**72.50**	71.25	71.55
Heart	(0.3, 0.1)	67.50	69.35	**72.05**	**71.15**	69.95	70.50
(13, 120, 150)	(0.4, 0.4)	61.70	**69.80**	64.55	66.35	**69.25**	65.20
	(0.2, 0.2)	78.19	80.56	**82.04**	**81.30**	80.19	81.11
Image	(0.3, 0.1)	72.26	**76.30**	74.08	73.70	**79.26**	75.74
(18, 1188, 898)	(0.4, 0.4)	67.82	65.37	**71.30**	71.11	**76.11**	65.93
	(0.2, 0.2)	78.22	77.58	**83.83**	83.25	64.00	**83.45**
Thyroid	(0.3, 0.1)	74.15	76.56	**81.05**	72.78	59.14	**77.73**
(5, 65, 150)	(0.4, 0.4)	72.83	71.77	**76.05**	75.84	63.54	**78.78**
	(0.2, 0.2)	66.81	69.76	**70.00**	**70.71**	58.81	66.91
Votes	(0.3, 0.1)	68.72	**73.10**	71.67	71.67	67.86	**72.14**
(5, 168, 267)	(0.4, 0.4)	52.52	**56.19**	**56.90**	55.95	54.29	55.71
	(0.2, 0.2)	72.45	**74.40**	**74.05**	73.30	72.55	73.75
Sonar	(0.3, 0.1)	71.75	**75.85**	**73.75**	70.70	71.80	73.35
(60, 97, 111)	(0.4, 0.4)	59.70	**61.45**	**61.45**	61.05	**64.75**	60.05
	(0.2, 0.2)	76.45	75.72	**79.69**	78.91	67.59	**80.12**
Fourclass	(0.3, 0.1)	72.55	74.51	**75.88**	75.14	67.63	**75.56**
(2, 307, 555)	(0.4, 0.4)	75.35	74.63	**77.82**	**77.12**	65.21	76.54
	(0.2, 0.2)	84.51	83.26	**89.54**	85.35	70.47	**88.61**
Svmguide3	(0.3, 0.1)	80.33	83.26	**86.51**	81.40	80.93	**85.12**
(22, 337, 947)	(0.4, 0.4)	77.31	74.19	**80.70**	**80.46**	73.72	79.54
	(0.2, 0.2)	91.79	**92.64**	90.92	91.03	87.13	**93.56**
Splice	(0.3, 0.1)	90.87	**92.99**	91.61	91.38	90.23	**92.64**
(60, 617, 483)	(0.4, 0.4)	85.82	72.41	88.16	**91.26**	**88.28**	87.01
Average		72.73	73.65	**76.33**	75.03	71.96	**75.38**

Table 33: Means (percentage) of the classification accuracies of all kernel logistic-loss-based methods(kernel width = 2^8)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	70.34	73.64	**74.03**	**75.06**	72.92	72.79
diabetes	(0.3, 0.1)	71.51	74.09	72.99	74.29	**74.48**	**74.42**
(8, 268, 500)	(0.4, 0.4)	61.64	67.14	64.68	**73.31**	**72.01**	62.21
	(0.2, 0.2)	77.59	**79.19**	78.84	76.94	77.34	**79.65**
German	(0.3, 0.1)	75.34	78.15	**78.73**	76.13	**80.11**	77.98
(20, 300, 700)	(0.4, 0.4)	69.33	67.98	70.06	**74.39**	**75.14**	70.52
	(0.2, 0.2)	71.65	74.15	74.60	**75.05**	**75.85**	73.05
Heart	(0.3, 0.1)	70.40	**73.10**	72.55	71.35	72.70	**73.55**
(13, 120, 150)	(0.4, 0.4)	58.95	**70.20**	61.65	67.85	**70.45**	61.75
	(0.2, 0.2)	77.45	79.82	**81.48**	80.00	80.37	**81.30**
Image	(0.3, 0.1)	73.93	78.89	76.85	71.30	**85.19**	**80.37**
(18, 1188, 898)	(0.4, 0.4)	66.34	67.22	**70.93**	68.70	**78.52**	69.63
	(0.2, 0.2)	87.40	88.54	**88.83**	80.93	87.61	**89.38**
Thyroid	(0.3, 0.1)	83.96	**89.79**	**87.80**	69.50	82.66	86.44
(5, 65, 150)	(0.4, 0.4)	75.30	74.50	**77.59**	72.49	72.03	**76.39**
	(0.2, 0.2)	**69.67**	68.57	68.33	**72.14**	65.24	67.86
Votes	(0.3, 0.1)	59.91	**68.33**	58.81	64.76	62.62	**65.95**
(5, 168, 267)	(0.4, 0.4)	62.05	**62.38**	61.43	61.19	56.67	**62.86**
	(0.2, 0.2)	75.65	**77.70**	77.65	76.15	76.60	**78.00**
Sonar	(0.3, 0.1)	71.10	**78.10**	72.85	69.75	72.90	**75.10**
(60, 97, 111)	(0.4, 0.4)	61.45	63.30	63.60	60.25	**65.25**	**63.95**
	(0.2, 0.2)	76.56	75.56	78.09	**79.38**	75.91	**78.91**
Fourclass	(0.3, 0.1)	74.26	**76.34**	75.45	75.49	75.80	**77.59**
(2, 307, 555)	(0.4, 0.4)	68.16	**73.04**	71.75	**74.82**	67.67	70.31
	(0.2, 0.2)	93.35	91.86	92.09	83.72	**93.49**	**94.65**
Svmguide3	(0.3, 0.1)	89.63	**92.33**	90.23	80.47	91.86	**93.49**
(22, 337, 947)	(0.4, 0.4)	77.54	79.30	**82.33**	76.98	**84.42**	81.17
	(0.2, 0.2)	89.84	90.23	90.46	**90.80**	90.46	**91.15**
Splice	(0.3, 0.1)	87.54	**91.15**	**90.92**	89.43	89.54	90.11
(60, 617, 483)	(0.4, 0.4)	74.32	76.55	81.04	**83.68**	**88.16**	80.00
Average		74.07	**76.70**	76.22	74.88	**77.13**	76.68

Table 34: Means (percentage) of the classification accuracies of all kernel hinge-loss-based methods(kernel width = 2^8)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	71.96	72.73	73.90	73.64	**74.35**	**74.16**
diabetes	(0.3, 0.1)	70.92	**75.13**	73.51	72.73	**75.97**	73.77
(8, 268, 500)	(0.4, 0.4)	64.62	65.52	66.69	**67.53**	**69.87**	59.67
	(0.2, 0.2)	84.42	82.20	**90.29**	85.49	83.12	**88.27**
German	(0.3, 0.1)	78.98	**84.16**	**86.36**	79.65	80.87	82.26
(20, 300, 700)	(0.4, 0.4)	75.28	67.11	**79.30**	76.70	77.11	**77.57**
	(0.2, 0.2)	72.90	71.95	74.35	73.50	**75.15**	**75.10**
Heart	(0.3, 0.1)	69.30	71.65	71.25	70.30	**72.10**	**72.55**
(13, 120, 150)	(0.4, 0.4)	62.70	**71.10**	65.35	69.95	**70.95**	67.25
	(0.2, 0.2)	77.08	78.70	**80.19**	78.70	**82.41**	79.63
Image	(0.3, 0.1)	73.00	**77.04**	76.11	71.48	**81.48**	75.56
(18, 1188, 898)	(0.4, 0.4)	67.63	67.59	69.82	**70.37**	**80.56**	62.41
	(0.2, 0.2)	87.62	89.14	**90.02**	**89.64**	87.27	89.62
Thyroid	(0.3, 0.1)	85.85	**89.86**	**88.33**	87.44	85.72	87.97
(5, 65, 150)	(0.4, 0.4)	81.09	76.32	**82.70**	82.70	76.08	**83.25**
	(0.2, 0.2)	74.43	76.67	**77.14**	76.19	74.29	**76.90**
Votes	(0.3, 0.1)	64.90	**74.76**	66.19	65.24	68.57	**70.48**
(5, 168, 267)	(0.4, 0.4)	54.19	**56.19**	**56.67**	**56.19**	54.76	55.00
	(0.2, 0.2)	77.40	79.25	**79.60**	**79.40**	78.30	79.10
Sonar	(0.3, 0.1)	73.30	**79.95**	75.25	74.90	76.00	**76.30**
(60, 97, 111)	(0.4, 0.4)	64.90	**67.45**	**67.40**	66.50	67.15	62.95
	(0.2, 0.2)	74.97	74.48	77.28	76.50	**77.98**	**78.09**
Fourclass	(0.3, 0.1)	72.94	75.25	**75.49**	74.79	**75.99**	75.33
(2, 307, 555)	(0.4, 0.4)	69.60	**74.20**	70.86	**72.37**	67.47	71.99
	(0.2, 0.2)	91.49	90.70	91.86	92.09	**92.33**	**93.49**
Svmguide3	(0.3, 0.1)	88.93	**91.86**	88.60	89.07	91.63	**93.02**
(22, 337, 947)	(0.4, 0.4)	84.05	73.72	**86.05**	79.54	**86.74**	**86.05**
	(0.2, 0.2)	90.87	**92.87**	92.76	**92.99**	91.72	92.64
Splice	(0.3, 0.1)	88.46	**91.26**	90.69	89.89	**90.81**	90.69
(60, 617, 483)	(0.4, 0.4)	77.77	74.94	79.43	**85.63**	**89.20**	81.72
Average		75.72	77.12	**78.11**	77.37	**78.53**	77.76

Table 35: Means (percentage) of the classification accuracies of all linear logistic-loss-based methods(kernel width = 2^8)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{log}	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
	(0.2, 0.2)	73.65	75.00	75.65	75.39	**75.84**	**75.71**
diabetes	(0.3, 0.1)	71.70	**75.78**	72.92	72.99	75.71	**77.01**
(8, 268, 500)	(0.4, 0.4)	70.60	68.31	73.38	**74.87**	**75.07**	72.86
	(0.2, 0.2)	74.24	**78.84**	76.94	77.22	**78.67**	74.91
German	(0.3, 0.1)	75.40	**77.34**	76.76	76.18	**77.22**	77.17
(20, 300, 700)	(0.4, 0.4)	70.54	65.03	74.80	73.59	**76.36**	**74.97**
	(0.2, 0.2)	72.45	74.10	**74.70**	73.95	**74.35**	72.65
Heart	(0.3, 0.1)	70.65	73.10	72.35	70.40	**73.15**	**73.15**
(13, 120, 150)	(0.4, 0.4)	63.00	**70.00**	66.40	69.05	**69.35**	66.10
	(0.2, 0.2)	76.15	78.89	**80.56**	77.41	**83.15**	77.04
Image	(0.3, 0.1)	75.96	78.89	**80.93**	77.41	**82.04**	78.33
(18, 1188, 898)	(0.4, 0.4)	64.85	64.81	68.71	**69.26**	**75.56**	67.78
	(0.2, 0.2)	80.03	81.82	**82.61**	81.63	77.82	**82.11**
Thyroid	(0.3, 0.1)	70.99	**81.99**	**76.92**	70.41	73.30	75.98
(5, 65, 150)	(0.4, 0.4)	72.86	72.92	**75.65**	74.28	68.37	**76.05**
	(0.2, 0.2)	68.72	70.95	**74.52**	69.76	68.81	**72.62**
Votes	(0.3, 0.1)	69.43	**74.53**	70.95	70.48	71.67	**77.38**
(5, 168, 267)	(0.4, 0.4)	55.62	56.67	59.28	56.67	**60.24**	**62.62**
	(0.2, 0.2)	70.65	**72.75**	72.65	72.20	**72.80**	72.30
Sonar	(0.3, 0.1)	71.35	**75.75**	73.50	71.90	**74.20**	72.15
(60, 97, 111)	(0.4, 0.4)	59.60	61.05	61.20	**62.65**	**61.80**	60.75
	(0.2, 0.2)	78.62	77.67	**79.49**	78.99	75.96	**80.55**
Fourclass	(0.3, 0.1)	75.78	**77.90**	77.24	76.42	77.36	**78.17**
(2, 307, 555)	(0.4, 0.4)	72.32	**75.26**	74.13	**76.93**	70.55	72.73
	(0.2, 0.2)	85.21	84.65	**88.60**	84.42	**88.14**	88.14
Svmguide3	(0.3, 0.1)	75.68	79.07	79.54	76.28	**80.00**	**82.56**
(22, 337, 947)	(0.4, 0.4)	69.16	72.33	**79.53**	71.86	**78.84**	70.93
	(0.2, 0.2)	91.33	92.64	**93.33**	**93.22**	92.99	92.64
Splice	(0.3, 0.1)	89.72	**92.07**	**92.07**	90.69	91.27	91.95
(60, 617, 483)	(0.4, 0.4)	75.93	74.83	80.69	**86.78**	**88.16**	77.01
Average		73.07	75.16	**76.20**	75.11	**76.29**	75.81

Table 36: Means (percentage) of the classification accuracies of all linear hinge-loss-based methods(kernel width = 2^8)

Benchmark data (m, n_+, n_-)	Noise rate (ρ_{+1}, ρ_{-1})	ℓ_{hinge}	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
	(0.2, 0.2)	74.43	72.99	**76.04**	**76.43**	73.38	75.97
diabetes	(0.3, 0.1)	65.73	72.99	68.70	70.33	**73.25**	**74.22**
(8, 268, 500)	(0.4, 0.4)	68.39	64.09	**71.56**	70.39	**70.52**	70.13
	(0.2, 0.2)	70.66	69.83	**74.51**	**73.81**	73.53	73.06
German	(0.3, 0.1)	62.91	75.03	**77.11**	67.86	**75.66**	75.09
(20, 300, 700)	(0.4, 0.4)	68.58	64.45	**70.06**	69.71	**74.91**	69.65
	(0.2, 0.2)	70.10	69.25	**72.45**	**72.05**	71.25	71.90
Heart	(0.3, 0.1)	68.10	70.10	70.35	**71.05**	**71.80**	70.95
(13, 120, 150)	(0.4, 0.4)	63.20	**70.45**	65.15	67.15	**68.95**	64.40
	(0.2, 0.2)	72.26	73.89	**76.67**	75.74	**81.11**	74.26
Image	(0.3, 0.1)	75.59	**79.81**	76.67	74.26	**79.63**	78.70
(18, 1188, 898)	(0.4, 0.4)	67.44	67.78	67.78	**69.63**	**77.59**	66.48
	(0.2, 0.2)	77.57	76.20	**83.73**	83.09	61.20	**83.92**
Thyroid	(0.3, 0.1)	74.44	76.80	**81.65**	75.46	59.35	**78.92**
(5, 65, 150)	(0.4, 0.4)	73.14	68.18	**76.13**	75.07	61.41	**77.30**
	(0.2, 0.2)	67.53	69.53	**73.33**	**71.19**	69.76	70.95
Votes	(0.3, 0.1)	68.48	**70.95**	70.48	68.57	65.48	**71.91**
(5, 168, 267)	(0.4, 0.4)	60.86	60.00	**61.91**	61.90	59.05	**62.38**
	(0.2, 0.2)	73.50	75.35	**75.60**	**75.60**	71.85	74.25
Sonar	(0.3, 0.1)	71.90	**76.20**	73.65	70.20	73.20	**73.75**
(60, 97, 111)	(0.4, 0.4)	58.75	60.20	60.25	61.45	**64.55**	**62.10**
	(0.2, 0.2)	75.90	75.53	**80.16**	79.07	63.31	**79.92**
Fourclass	(0.3, 0.1)	72.75	74.75	**76.30**	**75.68**	66.30	75.56
(2, 307, 555)	(0.4, 0.4)	71.77	73.54	**75.64**	**75.64**	60.23	74.09
	(0.2, 0.2)	83.12	82.33	**87.21**	84.65	75.81	**86.75**
Svmguide3	(0.3, 0.1)	77.30	80.00	**82.56**	79.54	77.44	**83.26**
(22, 337, 947)	(0.4, 0.4)	77.54	73.26	**85.12**	79.07	77.44	**80.93**
	(0.2, 0.2)	90.41	**92.76**	92.18	91.49	89.54	**93.33**
Splice	(0.3, 0.1)	90.18	**93.22**	90.69	90.35	89.43	**92.30**
(60, 617, 483)	(0.4, 0.4)	**86.04**	76.90	83.79	**90.11**	85.98	85.17
Average		72.62	73.54	**75.91**	74.88	72.10	**75.72**