

## Supplementary Materials

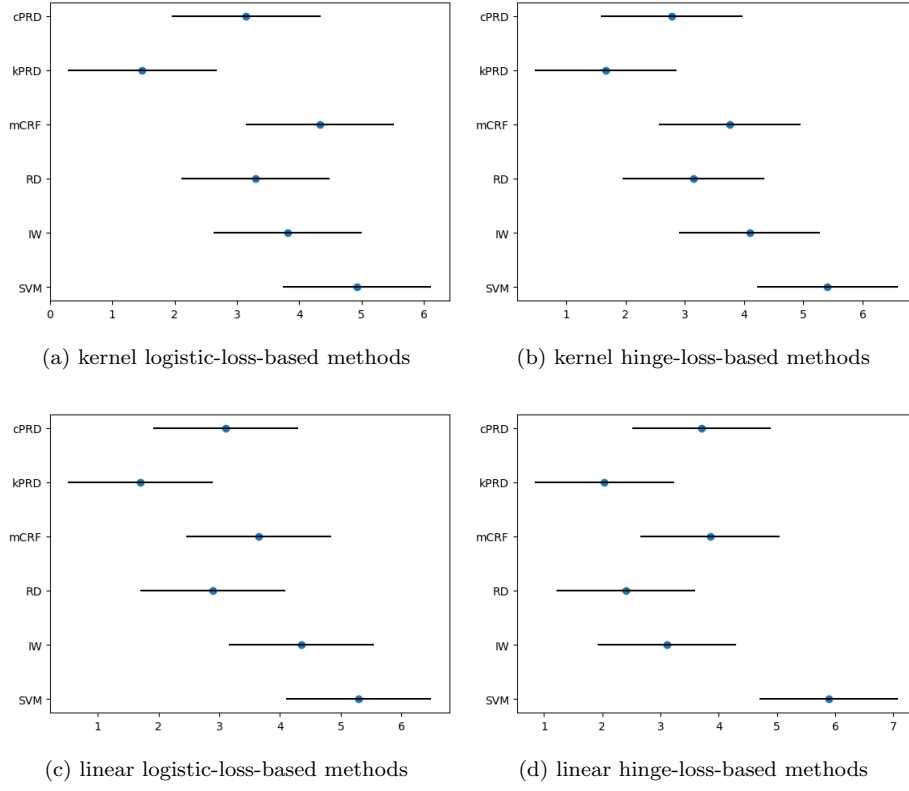


Figure 1: Test results on four surrogate loss functions(kernel width =  $2^0$ )

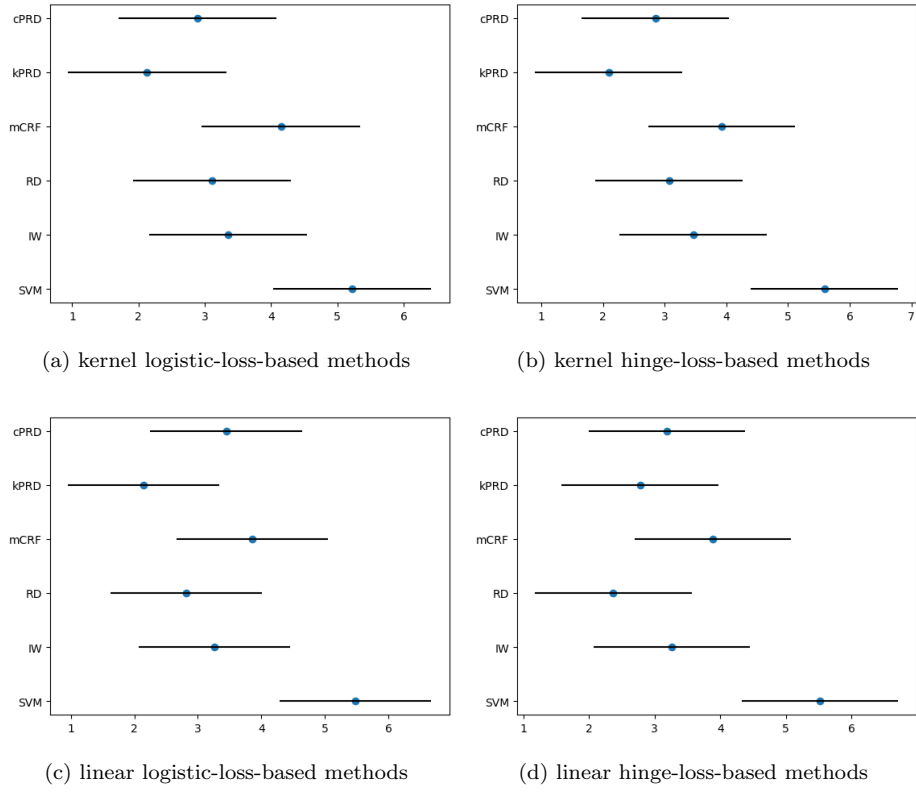


Figure 2: Test results on four surrogate loss functions(kernel width =  $2^1$ )

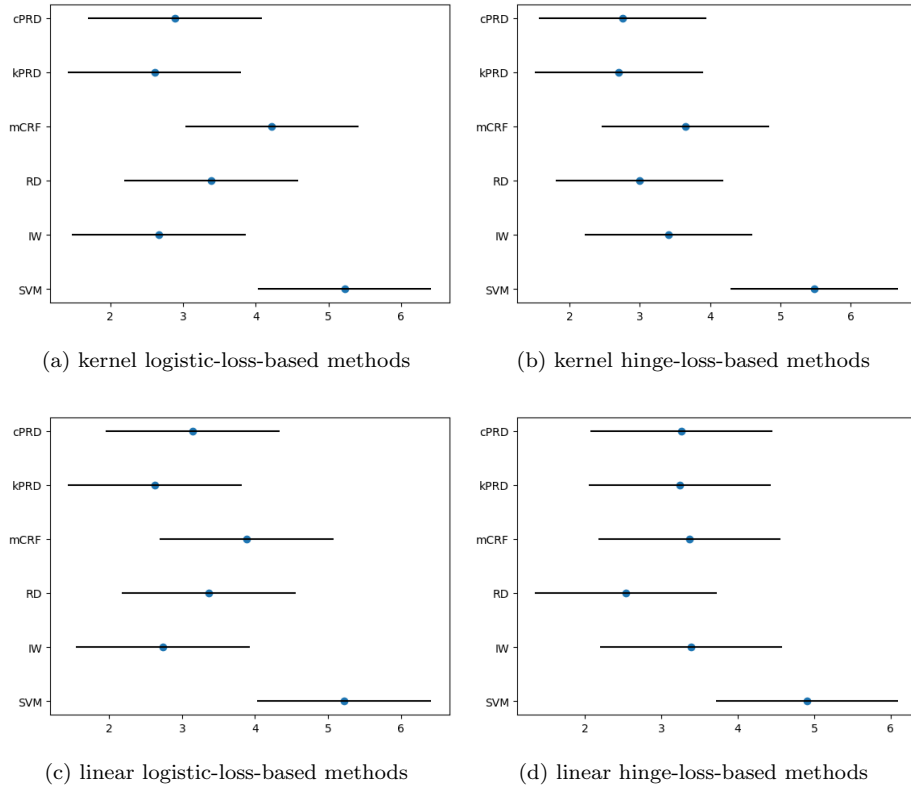


Figure 3: Test results on four surrogate loss functions(kernel width =  $2^2$ )

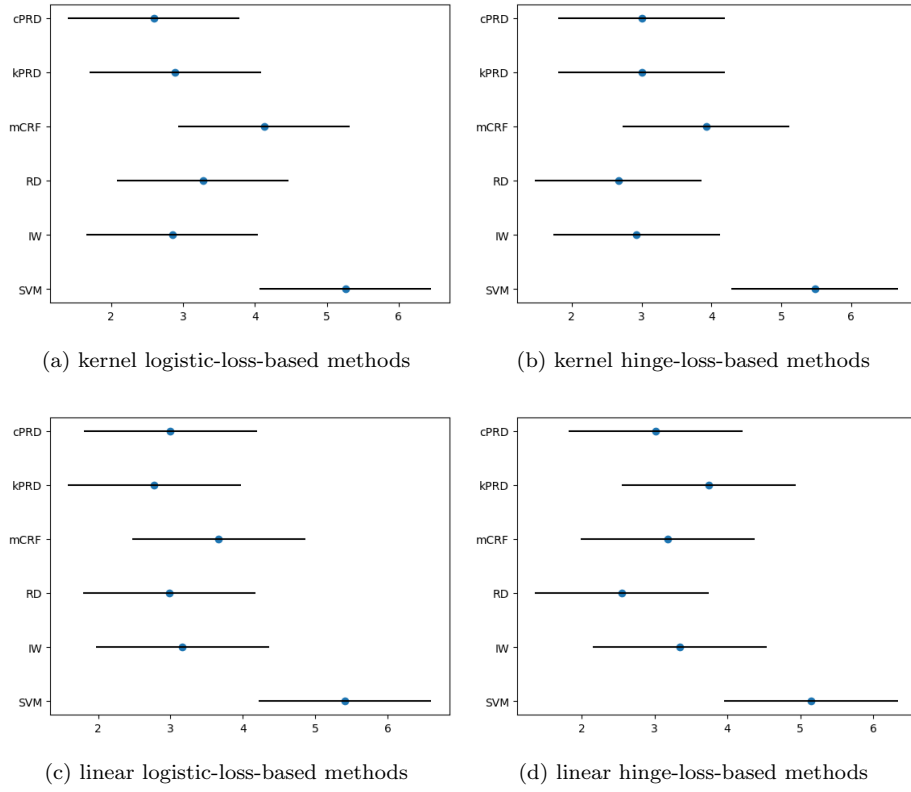


Figure 4: Test results on four surrogate loss functions(kernel width =  $2^3$ )

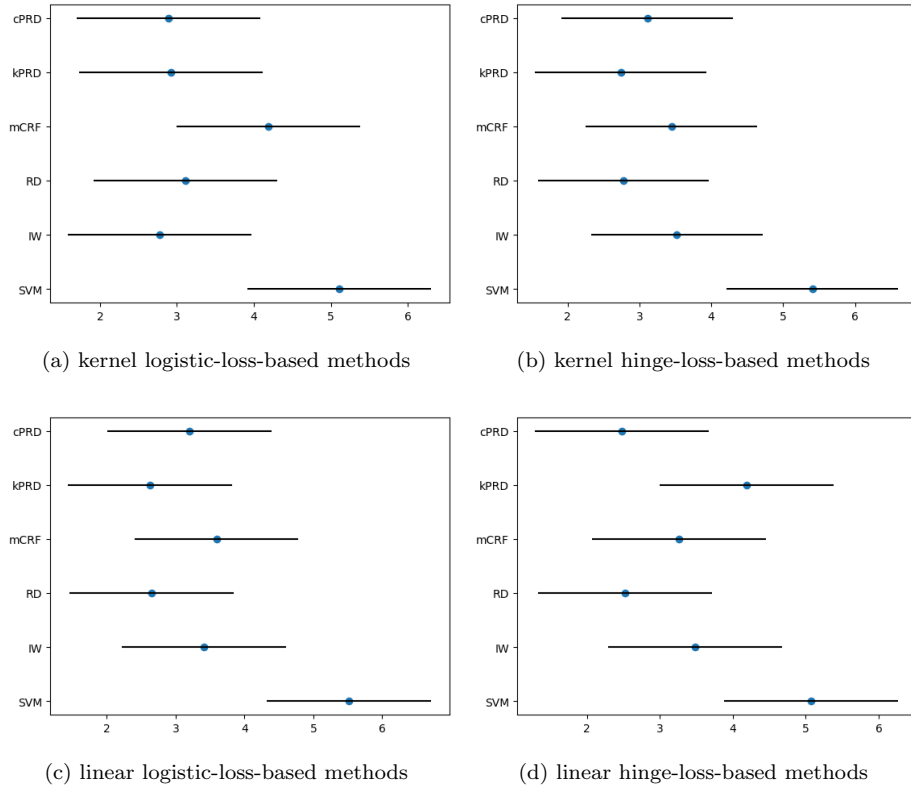


Figure 5: Test results on four surrogate loss functions(kernel width =  $2^4$ )

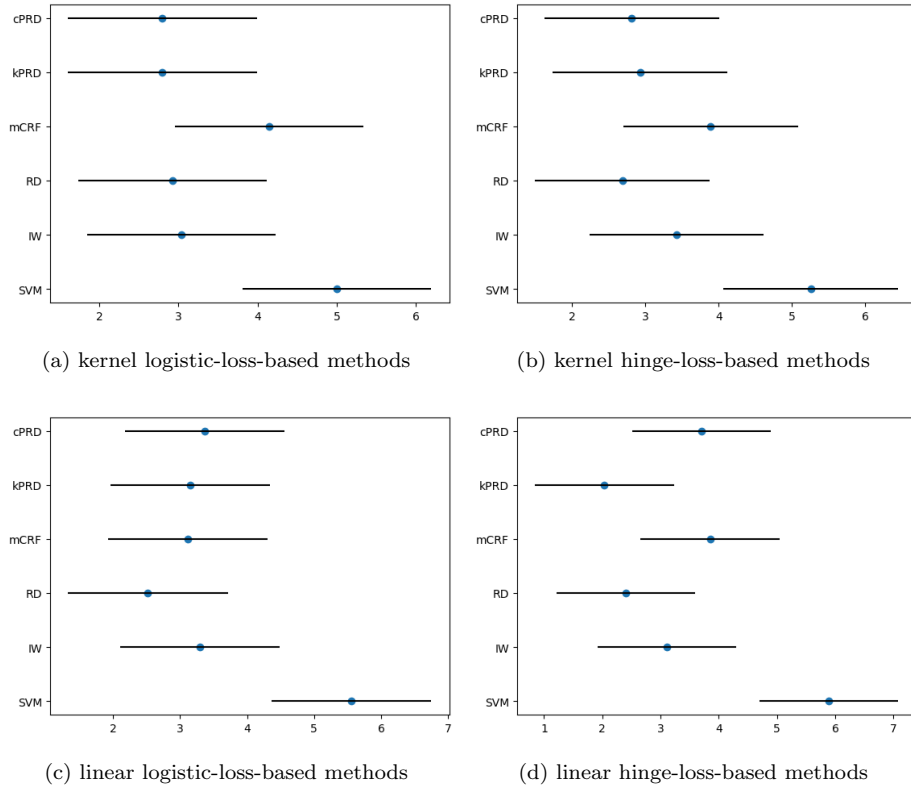


Figure 6: Test results on four surrogate loss functions(kernel width =  $2^5$ )

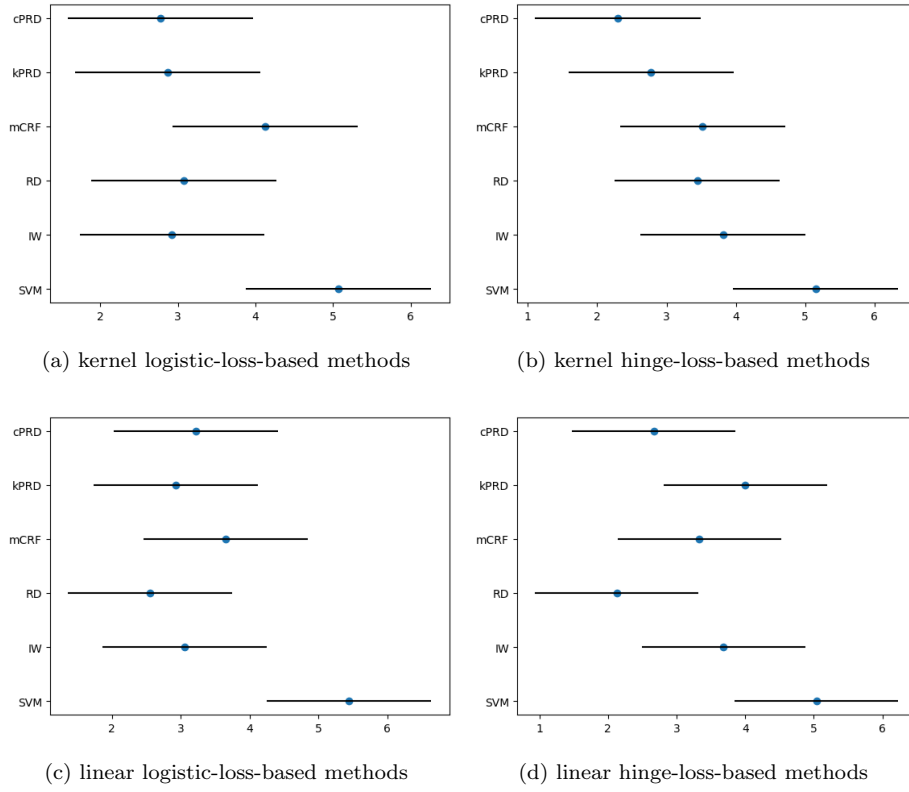


Figure 7: Test results on four surrogate loss functions(kernel width =  $2^6$ )

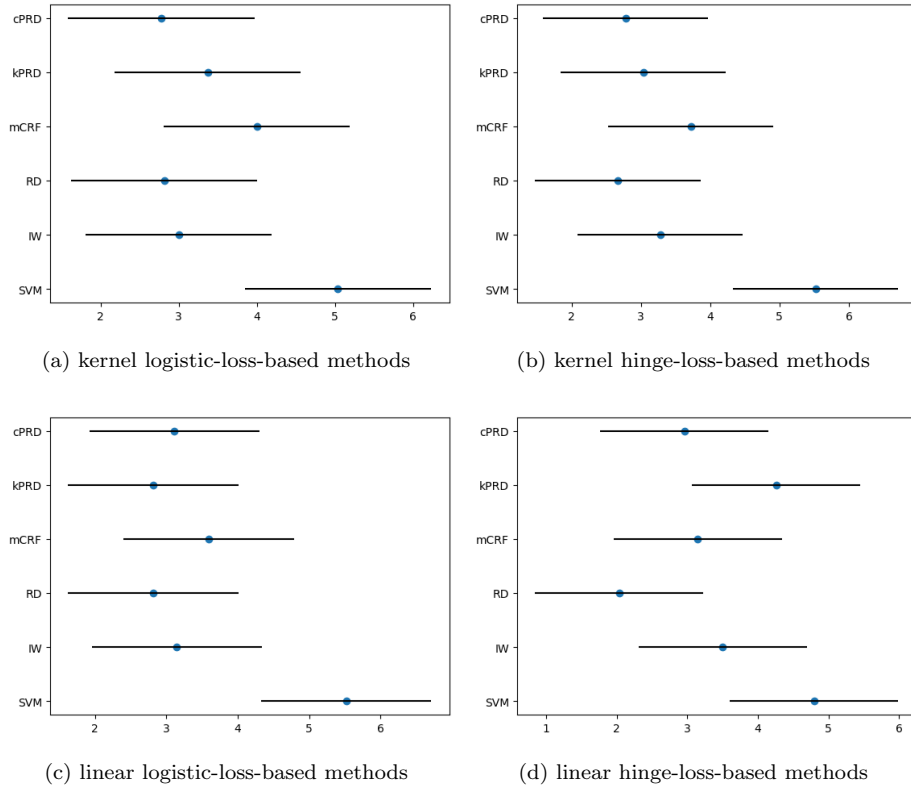


Figure 8: Test results on four surrogate loss functions(kernel width =  $2^7$ )



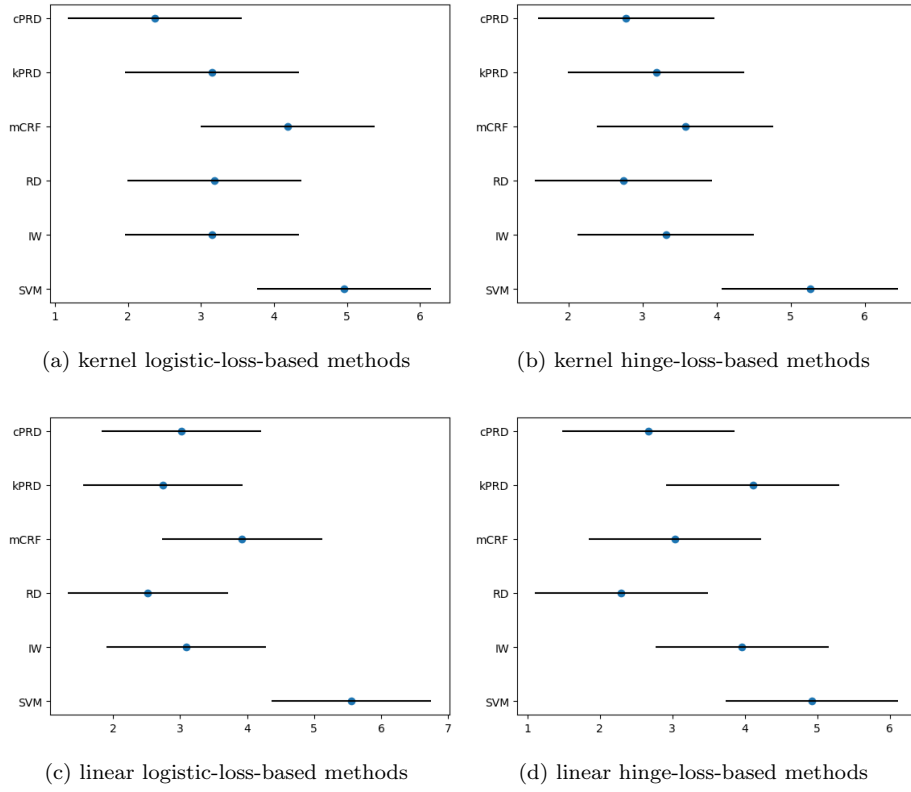


Figure 9: Test results on four surrogate loss functions(kernel width =  $2^8$ )

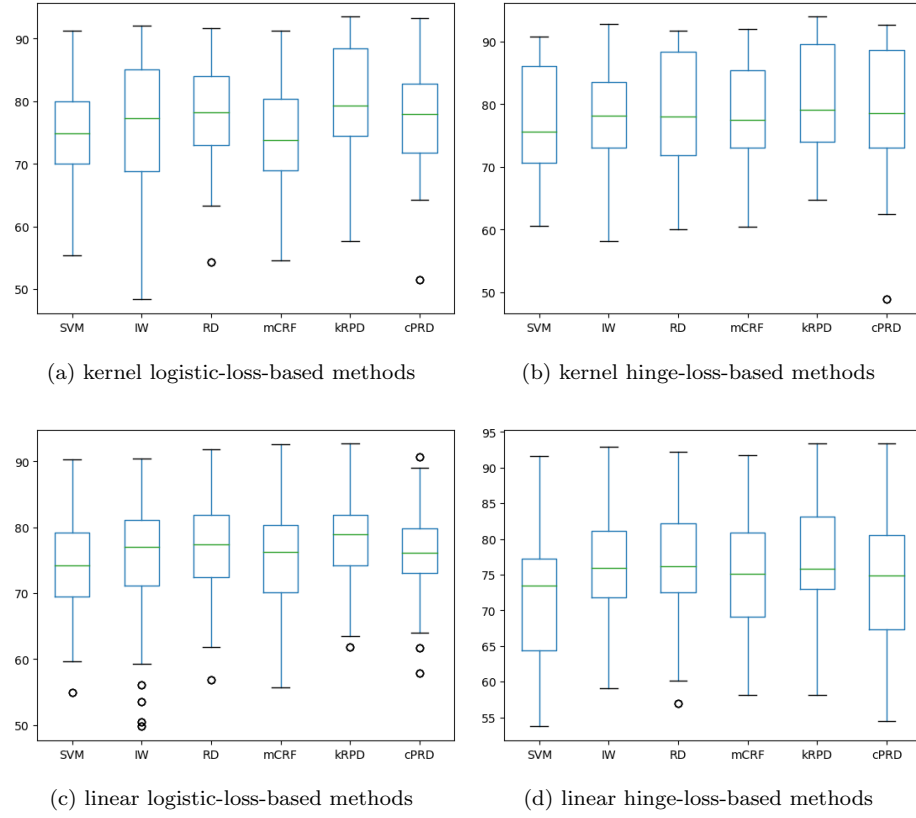


Figure 10: Box plot results on four surrogate loss functions(kernel width =  $2^0$ )

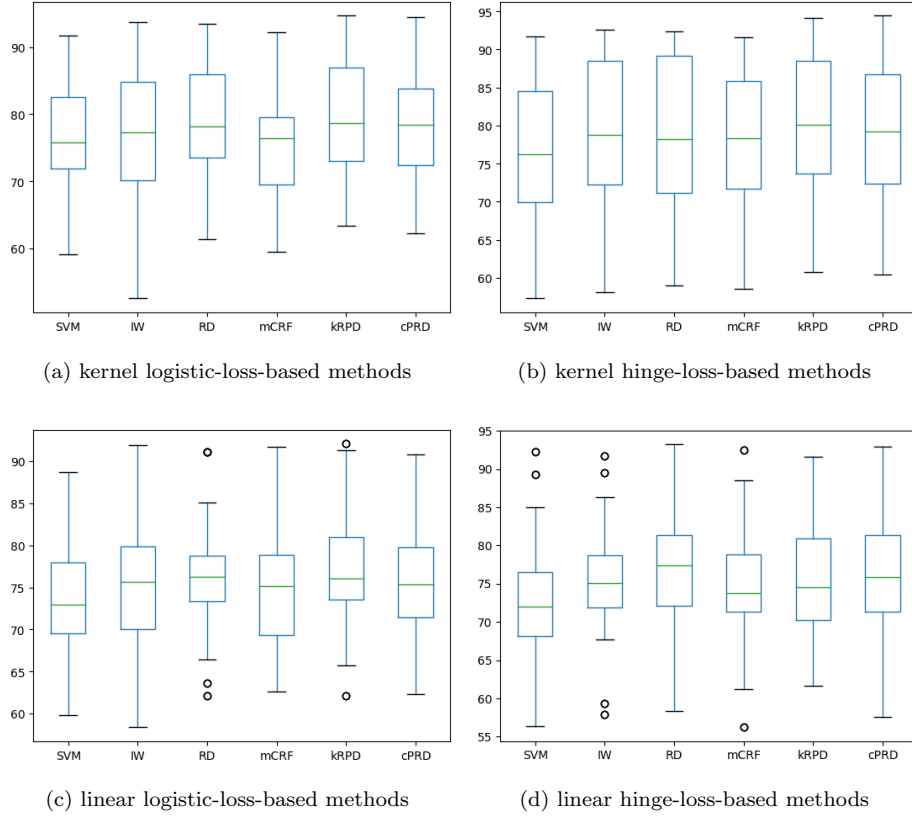


Figure 11: Box plot results on four surrogate loss functions(kernel width =  $2^1$ )

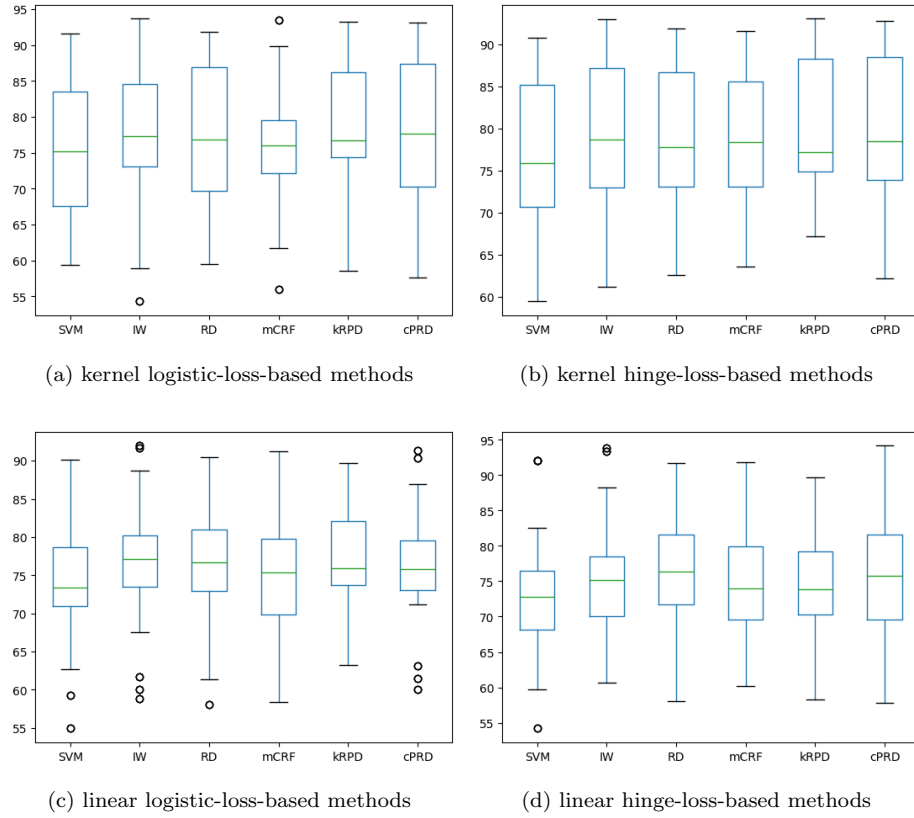


Figure 12: Box plot results on four surrogate loss functions(kernel width =  $2^2$ )

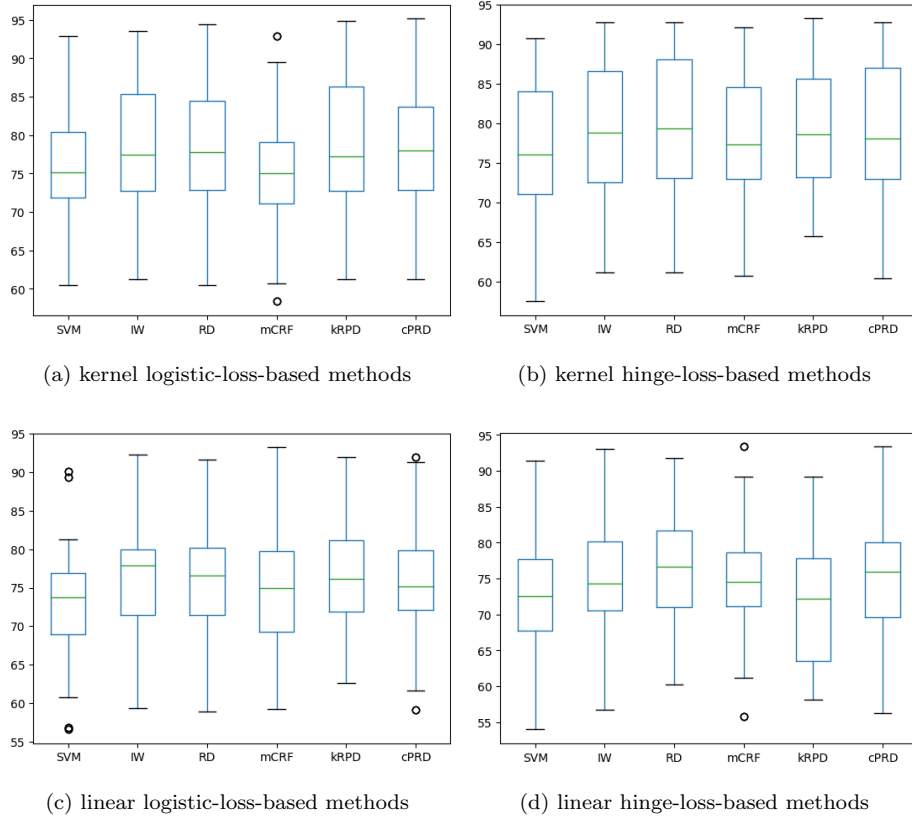


Figure 13: Box plot results on four surrogate loss functions(kernel width =  $2^3$ )

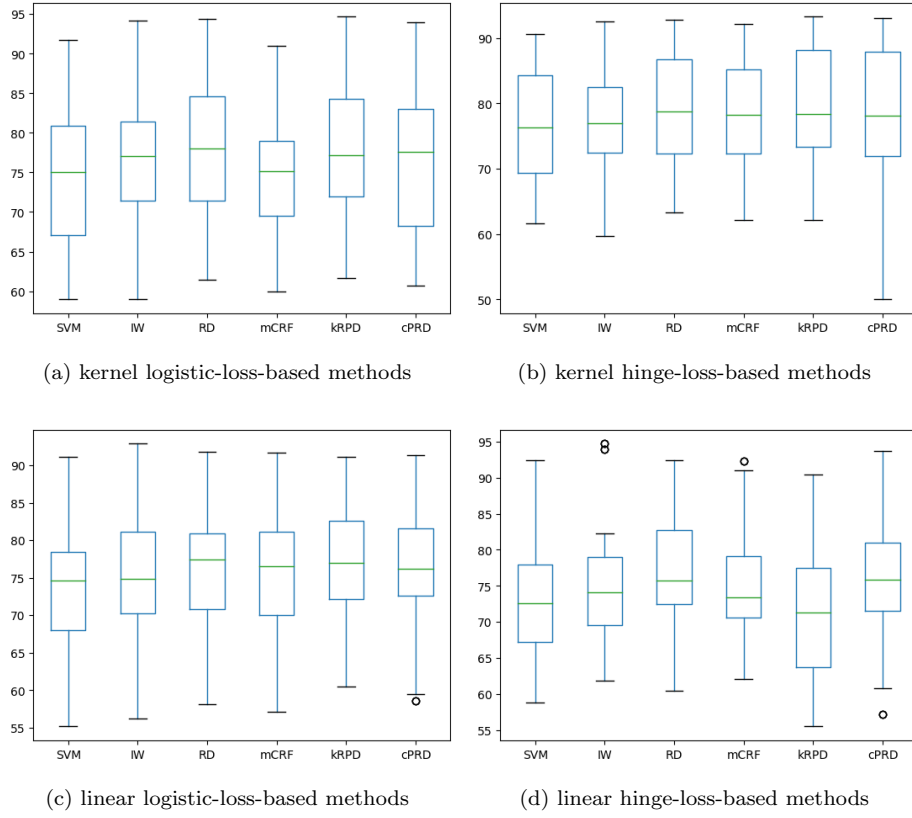


Figure 14: Box plot results on four surrogate loss functions(kernel width =  $2^4$ )

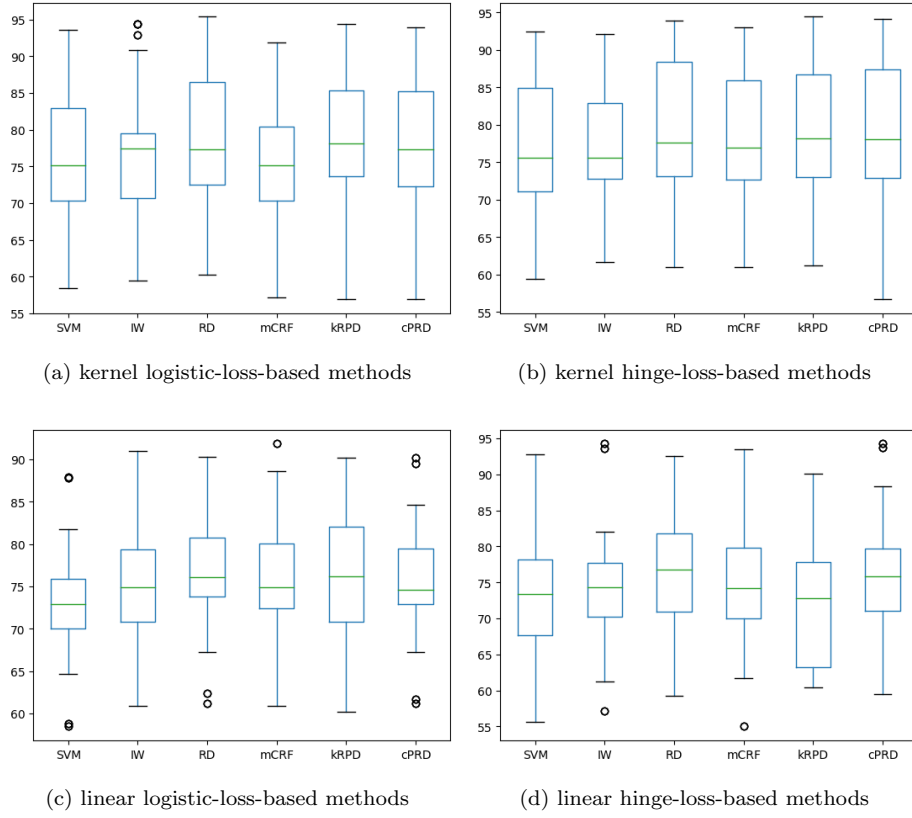


Figure 15: Box plot results on four surrogate loss functions(kernel width =  $2^5$ )

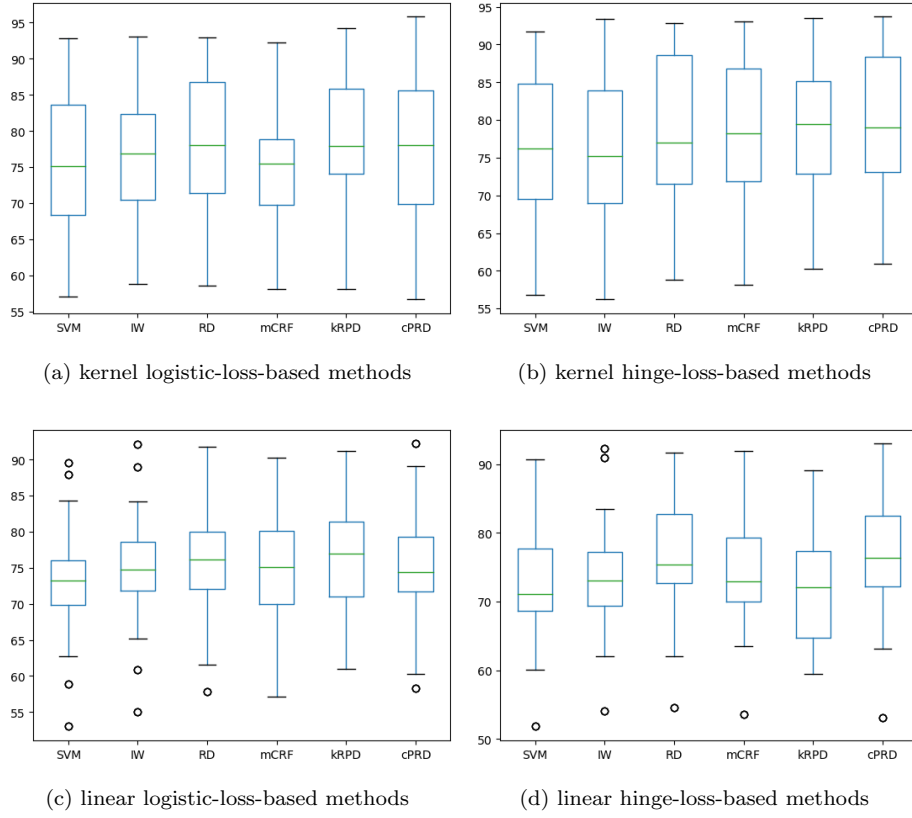


Figure 16: Box plot results on four surrogate loss functions(kernel width =  $2^6$ )



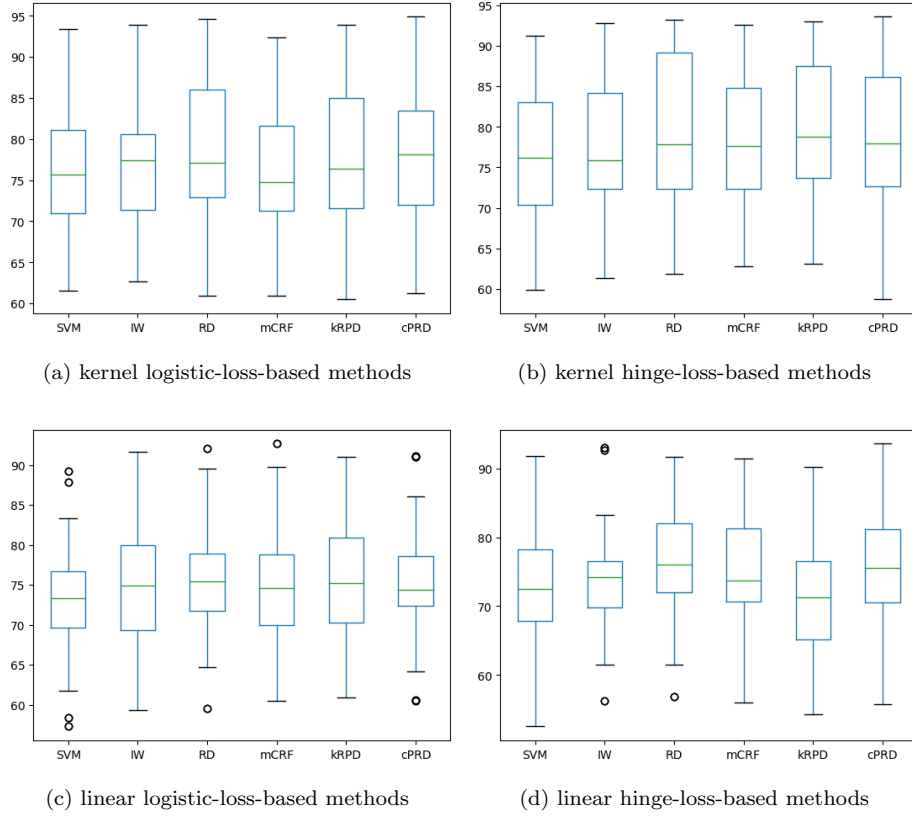


Figure 17: Box plot results on four surrogate loss functions(kernel width =  $2^7$ )

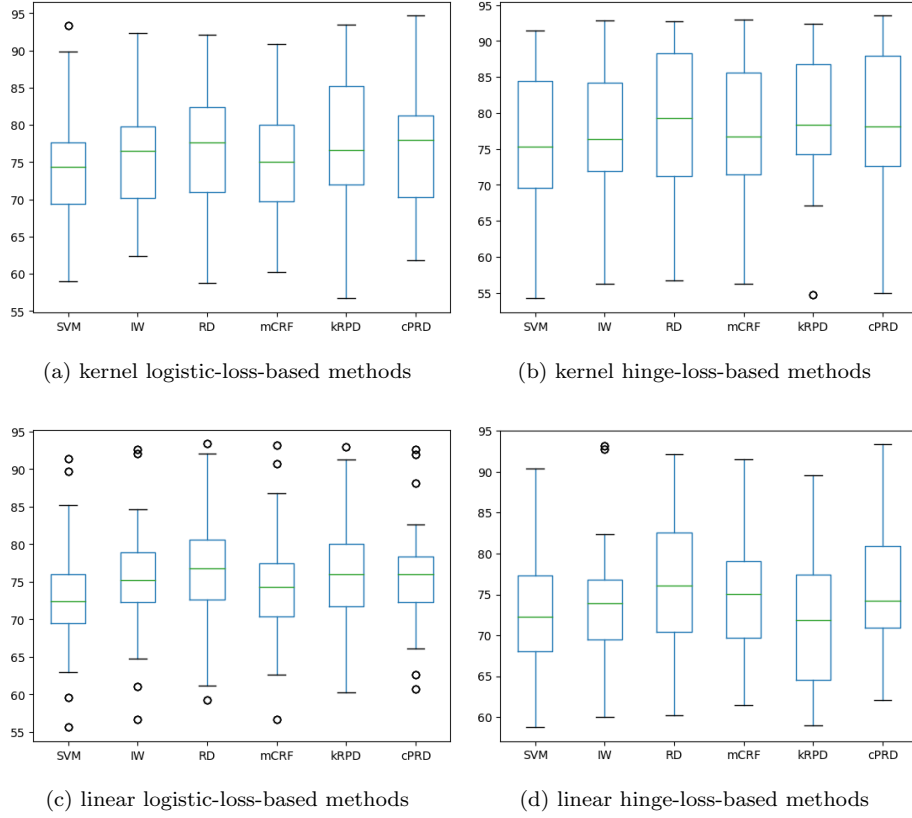


Figure 18: Box plot results on four surrogate loss functions(kernel width =  $2^8$ )

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

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 ( $\rho+1, \rho-1$ )	$\ell_{hinge}$	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRRP\ell_{hinge}$	$cRRP\ell_{hinge}$
diabetes (8, 268, 500)	(0.2, 0.2)	73.00	74.68	74.68	<b>75.65</b>	<b>75.20</b>	75.13
	(0.3, 0.1)	68.78	<b>73.90</b>	70.39	70.45	<b>73.83</b>	72.08
	(0.4, 0.4)	65.08	66.17	67.40	<b>68.31</b>	<b>70.26</b>	66.62
German (20, 300, 700)	(0.2, 0.2)	84.76	82.60	<b>90.75</b>	85.43	84.28	<b>87.80</b>
	(0.3, 0.1)	79.21	<b>83.58</b>	<b>86.82</b>	80.87	81.56	82.31
	(0.4, 0.4)	71.58	74.68	<b>76.30</b>	73.06	<b>75.43</b>	73.76
Heart (13, 120, 150)	(0.2, 0.2)	71.90	72.05	73.10	<b>73.80</b>	<b>74.05</b>	73.45
	(0.3, 0.1)	70.10	<b>73.00</b>	71.80	70.85	<b>74.70</b>	<b>73.00</b>
	(0.4, 0.4)	62.65	58.15	65.25	67.20	<b>68.40</b>	<b>68.05</b>
Image (18, 1188, 898)	(0.2, 0.2)	76.52	78.15	<b>80.00</b>	79.45	<b>80.56</b>	78.52
	(0.3, 0.1)	74.11	<b>78.33</b>	77.96	74.44	<b>79.08</b>	78.15
	(0.4, 0.4)	63.93	60.93	65.56	<b>66.30</b>	<b>69.26</b>	62.41
Thyroid (5, 65, 150)	(0.2, 0.2)	88.65	89.98	90.43	90.43	<b>90.74</b>	<b>90.46</b>
	(0.3, 0.1)	87.59	89.59	<b>90.22</b>	89.23	<b>90.14</b>	89.98
	(0.4, 0.4)	80.51	78.92	82.63	81.10	<b>83.37</b>	<b>82.97</b>
Votes (5, 168, 267)	(0.2, 0.2)	73.71	73.33	74.29	75.24	<b>76.43</b>	<b>76.91</b>
	(0.3, 0.1)	66.33	<b>74.05</b>	66.43	65.00	<b>72.38</b>	69.05
	(0.4, 0.4)	<b>60.62</b>	60.24	60.00	60.48	<b>66.43</b>	48.81
Sonar (60, 97, 111)	(0.2, 0.2)	79.15	79.95	<b>81.20</b>	81.00	<b>83.35</b>	81.05
	(0.3, 0.1)	75.45	77.15	77.05	77.50	<b>78.30</b>	<b>77.70</b>
	(0.4, 0.4)	61.50	58.75	62.95	62.90	<b>64.70</b>	<b>63.15</b>
Fourclass (2, 307, 555)	(0.2, 0.2)	75.63	76.66	<b>78.09</b>	77.35	77.74	<b>78.60</b>
	(0.3, 0.1)	71.58	<b>75.06</b>	73.78	73.19	<b>76.85</b>	74.98
	(0.4, 0.4)	70.69	71.67	71.71	<b>73.77</b>	71.24	<b>72.45</b>
Svmguide3 (22, 337, 947)	(0.2, 0.2)	90.09	90.70	90.93	90.70	<b>93.95</b>	<b>92.33</b>
	(0.3, 0.1)	86.14	88.60	87.44	85.58	<b>90.47</b>	<b>89.30</b>
	(0.4, 0.4)	86.37	83.02	88.37	85.12	<b>89.53</b>	<b>88.60</b>
Splice (60, 617, 483)	(0.2, 0.2)	90.76	91.84	91.61	91.95	<b>92.87</b>	<b>92.64</b>
	(0.3, 0.1)	89.15	<b>92.76</b>	91.72	89.77	<b>92.18</b>	90.92
	(0.4, 0.4)	78.23	81.38	81.61	<b>84.94</b>	<b>87.01</b>	79.31
Average		75.79	77.00	<b>78.02</b>	77.37	<b>79.48</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{log}$	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
diabetes (8, 268, 500)	(0.2, 0.2) (0.3, 0.1) (0.4, 0.4)	74.30 70.53 68.00	76.10 <b>74.29</b> 70.52	76.62 71.62 69.80	<b>76.88</b> 71.56 <b>71.95</b>	<b>77.08</b> <b>75.39</b> <b>71.69</b>	75.52 74.09 68.05
German (20, 300, 700)	(0.2, 0.2) (0.3, 0.1) (0.4, 0.4)	75.46 76.50 71.29	77.75 77.46 <b>74.86</b>	<b>77.80</b> 77.51 73.81	77.34 77.92 73.99	<b>79.02</b> <b>79.31</b> <b>75.38</b>	76.99 <b>78.44</b> 73.87
Heart (13, 120, 150)	(0.2, 0.2) (0.3, 0.1) (0.4, 0.4)	71.45 70.25 62.75	71.35 72.35 59.35	<b>74.90</b> 72.95 64.75	<b>74.65</b> 70.15 <b>69.55</b>	74.25 <b>74.65</b> <b>67.85</b>	72.75 <b>74.55</b> 64.00
Image (18, 1188, 898)	(0.2, 0.2) (0.3, 0.1) (0.4, 0.4)	79.67 77.26 66.71	79.63 <b>81.48</b> <b>71.11</b>	<b>83.89</b> <b>80.93</b> 70.93	81.67 77.22 70.93	<b>81.67</b> 80.74 <b>72.04</b>	79.82 79.63 68.70
Thyroid (5, 65, 150)	(0.2, 0.2) (0.3, 0.1) (0.4, 0.4)	80.25 70.73 74.10	81.12 <b>79.52</b> 71.13	<b>82.30</b> 78.49 <b>76.27</b>	81.32 70.17 75.45	81.87 <b>81.17</b> <b>77.61</b>	<b>82.66</b> 75.84 76.15
Votes (5, 168, 267)	(0.2, 0.2) (0.3, 0.1) (0.4, 0.4)	66.09 68.95 54.91	64.52 72.38 50.48	67.62 71.19 56.91	67.62 67.14 55.71	<b>70.95</b> <b>75.00</b> <b>61.90</b>	<b>73.33</b> <b>73.10</b> <b>57.86</b>
Sonar (60, 97, 111)	(0.2, 0.2) (0.3, 0.1) (0.4, 0.4)	74.25 72.55 59.70	56.05 53.55 49.80	<b>76.60</b> <b>74.30</b> 61.80	76.30 74.05 <b>62.30</b>	<b>77.50</b> <b>76.70</b> <b>63.50</b>	75.75 73.25 61.70
Fourclass (2, 307, 555)	(0.2, 0.2) (0.3, 0.1) (0.4, 0.4)	79.17 75.82 69.56	78.95 <b>78.95</b> 72.68	<b>80.43</b> 77.55 72.49	80.35 76.93 <b>74.28</b>	80.27 78.87 <b>73.93</b>	<b>81.25</b> <b>76.46</b> 70.35
Svmguide3 (22, 337, 947)	(0.2, 0.2) (0.3, 0.1) (0.4, 0.4)	82.65 79.40 77.77	81.86 81.86 76.98	<b>85.58</b> 81.86 77.44	82.33 78.14 <b>78.84</b>	84.65 <b>82.09</b> <b>82.09</b>	<b>86.28</b> <b>83.03</b> 78.37
Splice (60, 617, 483)	(0.2, 0.2) (0.3, 0.1) (0.4, 0.4)	90.30 87.77 79.15	90.46 90.46 <b>88.39</b>	91.84 <b>91.49</b> 82.76	<b>92.53</b> 88.05 84.25	<b>91.95</b> <b>92.64</b> <b>89.20</b>	90.69 88.97 79.54
Average		73.58	73.51	<b>76.08</b>	75.32	<b>77.70</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{hinge}$	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRPF\ell_{hinge}$	$kRRPF\ell_{hinge}$	$cRRPD\ell_{hinge}$
diabetes (8, 268, 500)	(0.2, 0.2)	74.24	76.36	75.84	<b>76.88</b>	<b>76.88</b>	76.30
	(0.3, 0.1)	68.26	<b>75.00</b>	72.40	72.66	<b>75.58</b>	74.09
	(0.4, 0.4)	69.36	70.97	71.23	<b>72.60</b>	<b>71.95</b>	70.26
German (20, 300, 700)	(0.2, 0.2)	72.11	<b>75.84</b>	<b>75.72</b>	75.09	74.91	73.76
	(0.3, 0.1)	62.74	<b>77.57</b>	77.57	65.90	<b>77.75</b>	75.38
	(0.4, 0.4)	68.98	<b>75.49</b>	72.60	<b>74.80</b>	74.51	63.00
Heart (13, 120, 150)	(0.2, 0.2)	70.75	72.95	<b>74.15</b>	73.10	<b>74.05</b>	73.45
	(0.3, 0.1)	69.10	71.85	<b>72.50</b>	71.95	<b>72.95</b>	71.45
	(0.4, 0.4)	61.45	64.20	64.70	<b>65.05</b>	<b>68.65</b>	64.95
Image (18, 1188, 898)	(0.2, 0.2)	79.67	81.11	<b>82.41</b>	80.93	<b>83.15</b>	81.30
	(0.3, 0.1)	74.11	76.67	<b>77.41</b>	74.08	<b>76.85</b>	76.85
	(0.4, 0.4)	60.41	<b>67.04</b>	64.81	64.26	<b>66.67</b>	61.48
Thyroid (5, 65, 150)	(0.2, 0.2)	76.88	81.27	<b>83.11</b>	82.16	<b>82.97</b>	81.77
	(0.3, 0.1)	74.68	81.13	<b>81.60</b>	75.14	<b>83.21</b>	79.14
	(0.4, 0.4)	70.97	<b>74.14</b>	73.95	73.76	73.90	<b>77.80</b>
Votes (5, 168, 267)	(0.2, 0.2)	63.72	64.76	<b>70.00</b>	64.05	64.52	<b>66.43</b>
	(0.3, 0.1)	64.43	67.38	<b>70.00</b>	69.05	<b>71.19</b>	67.38
	(0.4, 0.4)	53.71	<b>59.05</b>	56.90	<b>58.10</b>	<b>58.10</b>	54.52
Sonar (60, 97, 111)	(0.2, 0.2)	73.50	<b>75.95</b>	75.15	75.35	<b>75.80</b>	74.50
	(0.3, 0.1)	70.80	73.35	<b>73.50</b>	72.15	<b>73.75</b>	73.00
	(0.4, 0.4)	58.70	<b>60.80</b>	60.10	60.00	<b>60.95</b>	59.60
Fourclass (2, 307, 555)	(0.2, 0.2)	77.26	77.43	<b>80.12</b>	79.18	77.74	<b>80.51</b>
	(0.3, 0.1)	73.45	75.91	<b>76.85</b>	76.07	<b>79.49</b>	74.86
	(0.4, 0.4)	73.99	75.18	<b>76.19</b>	<b>75.56</b>	74.05	74.63
Svmguide3 (22, 337, 947)	(0.2, 0.2)	80.56	83.26	<b>85.82</b>	83.26	<b>86.05</b>	84.89
	(0.3, 0.1)	81.02	84.42	<b>87.21</b>	83.49	84.19	<b>85.82</b>
	(0.4, 0.4)	75.91	77.91	<b>80.23</b>	77.21	<b>79.77</b>	79.30
Splice (60, 617, 483)	(0.2, 0.2)	91.56	92.87	92.18	91.72	<b>93.33</b>	<b>93.33</b>
	(0.3, 0.1)	88.69	<b>91.84</b>	90.00	89.89	<b>92.64</b>	90.35
	(0.4, 0.4)	78.80	83.56	82.18	<b>87.36</b>	<b>89.20</b>	78.62
Average		71.99	75.51	<b>75.88</b>	74.69	<b>76.49</b>	74.62

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

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

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



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

Benchmark data ( $m, n_+, n_-$ )	Noise rate ( $\rho+1, \rho-1$ )	$\ell_{log}$	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
diabetes (8, 268, 500)	(0.2, 0.2)	75.27	77.14	76.95	<b>77.53</b>	76.43	<b>77.60</b>
	(0.3, 0.1)	72.16	<b>74.94</b>	73.12	73.18	74.61	<b>75.06</b>
	(0.4, 0.4)	65.92	68.70	67.47	<b>69.35</b>	<b>71.62</b>	67.01
German (20, 300, 700)	(0.2, 0.2)	73.26	<b>77.23</b>	75.72	75.78	<b>76.18</b>	74.74
	(0.3, 0.1)	73.95	75.61	<b>76.47</b>	75.20	<b>77.05</b>	76.47
	(0.4, 0.4)	72.34	<b>75.66</b>	74.57	74.74	<b>75.26</b>	73.47
Heart (13, 120, 150)	(0.2, 0.2)	71.65	72.60	<b>73.30</b>	72.50	<b>74.00</b>	72.40
	(0.3, 0.1)	71.35	<b>74.05</b>	73.55	70.35	<b>74.30</b>	73.75
	(0.4, 0.4)	60.90	<b>68.90</b>	63.60	67.95	<b>68.85</b>	62.35
Image (18, 1188, 898)	(0.2, 0.2)	78.37	82.04	<b>82.22</b>	81.30	<b>83.89</b>	79.82
	(0.3, 0.1)	72.63	<b>77.59</b>	76.48	72.41	<b>79.26</b>	76.30
	(0.4, 0.4)	61.89	<b>70.19</b>	69.08	65.37	<b>73.33</b>	63.15
Thyroid (5, 65, 150)	(0.2, 0.2)	79.56	79.64	<b>81.89</b>	80.91	80.93	<b>82.01</b>
	(0.3, 0.1)	70.37	<b>79.90</b>	77.83	68.49	<b>79.23</b>	76.40
	(0.4, 0.4)	72.91	66.89	<b>76.29</b>	74.57	74.04	<b>76.05</b>
Votes (5, 168, 267)	(0.2, 0.2)	68.24	68.81	<b>73.33</b>	66.90	68.81	<b>70.95</b>
	(0.3, 0.1)	67.05	70.00	<b>72.14</b>	71.43	<b>73.57</b>	70.48
	(0.4, 0.4)	63.48	60.00	<b>66.43</b>	<b>66.19</b>	65.71	65.95
Sonar (60, 97, 111)	(0.2, 0.2)	73.05	72.45	<b>75.60</b>	75.30	<b>75.70</b>	75.35
	(0.3, 0.1)	69.50	69.35	70.95	69.30	<b>72.00</b>	<b>71.70</b>
	(0.4, 0.4)	59.80	58.35	62.15	<b>62.65</b>	62.10	<b>62.50</b>
Fourclass (2, 307, 555)	(0.2, 0.2)	77.92	77.16	<b>78.68</b>	78.64	76.07	<b>79.73</b>
	(0.3, 0.1)	75.16	<b>77.94</b>	77.08	76.46	77.74	<b>78.68</b>
	(0.4, 0.4)	73.45	74.59	<b>75.52</b>	<b>77.39</b>	74.16	73.66
Svmguide3 (22, 337, 947)	(0.2, 0.2)	81.72	82.79	85.12	82.79	<b>85.58</b>	<b>85.58</b>
	(0.3, 0.1)	80.09	83.26	83.26	78.84	<b>86.51</b>	<b>84.19</b>
	(0.4, 0.4)	72.19	78.37	77.68	<b>78.84</b>	<b>78.37</b>	71.40
Splice (60, 617, 483)	(0.2, 0.2)	88.69	91.38	91.15	<b>91.72</b>	<b>92.07</b>	90.46
	(0.3, 0.1)	88.46	<b>91.95</b>	91.15	89.89	<b>91.26</b>	90.80
	(0.4, 0.4)	77.08	<b>87.13</b>	78.74	82.88	<b>88.51</b>	77.93
Average		72.95	75.49	<b>75.92</b>	74.96	<b>76.91</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{hinge}$	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRP\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
diabetes (8, 268, 500)	(0.2, 0.2)	75.01	<b>77.14</b>	76.88	76.88	<b>77.14</b>	<b>77.21</b>
	(0.3, 0.1)	66.12	<b>77.40</b>	71.75	72.34	<b>77.47</b>	76.36
	(0.4, 0.4)	67.48	69.74	<b>70.07</b>	69.81	<b>70.20</b>	63.05
German (20, 300, 700)	(0.2, 0.2)	73.43	76.65	<b>77.40</b>	<b>77.80</b>	74.68	75.84
	(0.3, 0.1)	65.34	<b>77.11</b>	<b>77.86</b>	71.39	75.43	73.59
	(0.4, 0.4)	67.31	<b>74.28</b>	72.14	71.45	<b>74.16</b>	60.93
Heart (13, 120, 150)	(0.2, 0.2)	71.55	73.15	<b>73.35</b>	72.85	<b>74.40</b>	72.55
	(0.3, 0.1)	67.10	<b>71.85</b>	70.50	70.20	<b>72.60</b>	71.35
	(0.4, 0.4)	63.25	67.75	65.30	<b>68.50</b>	<b>70.10</b>	68.15
Image (18, 1188, 898)	(0.2, 0.2)	76.52	<b>78.70</b>	77.59	77.96	<b>79.26</b>	76.85
	(0.3, 0.1)	76.33	77.96	<b>79.26</b>	75.37	77.96	<b>79.07</b>
	(0.4, 0.4)	68.19	68.52	<b>71.30</b>	69.07	<b>72.96</b>	69.82
Thyroid (5, 65, 150)	(0.2, 0.2)	75.78	75.65	<b>84.19</b>	82.92	81.34	<b>83.42</b>
	(0.3, 0.1)	73.24	78.68	<b>80.93</b>	72.68	<b>81.01</b>	78.40
	(0.4, 0.4)	71.11	73.37	<b>74.98</b>	72.73	74.88	<b>75.92</b>
Votes (5, 168, 267)	(0.2, 0.2)	69.91	70.95	<b>72.86</b>	<b>73.81</b>	70.24	70.72
	(0.3, 0.1)	70.38	71.90	<b>72.14</b>	71.19	<b>71.91</b>	71.43
	(0.4, 0.4)	56.33	57.86	<b>58.33</b>	56.19	<b>61.67</b>	57.62
Sonar (60, 97, 111)	(0.2, 0.2)	71.00	<b>73.95</b>	73.50	73.30	<b>74.50</b>	72.55
	(0.3, 0.1)	70.80	<b>74.30</b>	72.90	71.75	<b>74.30</b>	73.10
	(0.4, 0.4)	58.95	59.30	60.70	<b>61.20</b>	<b>62.80</b>	59.75
Fourclass (2, 307, 555)	(0.2, 0.2)	76.21	75.14	<b>79.54</b>	78.75	64.59	<b>79.81</b>
	(0.3, 0.1)	73.41	75.84	<b>78.13</b>	<b>76.65</b>	63.89	76.27
	(0.4, 0.4)	72.01	73.46	73.00	<b>75.06</b>	64.13	<b>73.89</b>
Svmguide3 (22, 337, 947)	(0.2, 0.2)	84.98	86.28	<b>90.00</b>	85.35	85.81	<b>89.30</b>
	(0.3, 0.1)	78.93	81.63	<b>82.56</b>	80.70	80.93	<b>82.33</b>
	(0.4, 0.4)	77.07	80.93	<b>81.40</b>	78.84	79.07	<b>81.40</b>
Splice (60, 617, 483)	(0.2, 0.2)	92.25	91.72	<b>93.22</b>	92.53	91.61	<b>92.99</b>
	(0.3, 0.1)	89.26	89.54	88.62	88.51	<b>90.12</b>	<b>90.00</b>
	(0.4, 0.4)	82.37	<b>85.86</b>	85.29	84.71	<b>88.28</b>	83.10
Average		72.72	<b>75.55</b>	<b>76.19</b>	75.02	75.25	75.22

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

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

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

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

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

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

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

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 ( $\rho+1, \rho-1$ )	$\ell_{log}$	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
diabetes (8, 268, 500)	(0.2, 0.2)	73.13	<b>75.84</b>	75.58	<b>77.27</b>	75.65	75.65
	(0.3, 0.1)	71.70	<b>74.87</b>	72.27	73.31	74.35	<b>76.04</b>
	(0.4, 0.4)	60.92	69.29	64.09	<b>70.32</b>	<b>71.36</b>	62.73
German (20, 300, 700)	(0.2, 0.2)	75.11	77.57	<b>77.80</b>	75.49	77.34	<b>77.98</b>
	(0.3, 0.1)	77.25	<b>79.77</b>	<b>79.77</b>	77.63	79.54	79.71
	(0.4, 0.4)	72.16	70.00	74.16	<b>74.97</b>	74.62	<b>74.91</b>
Heart (13, 120, 150)	(0.2, 0.2)	71.85	73.65	<b>74.40</b>	73.75	<b>74.50</b>	73.20
	(0.3, 0.1)	72.25	74.80	73.85	72.55	<b>75.20</b>	<b>74.95</b>
	(0.4, 0.4)	60.45	<b>69.05</b>	62.20	66.70	<b>70.80</b>	61.50
Image (18, 1188, 898)	(0.2, 0.2)	78.74	80.93	82.96	79.08	<b>84.26</b>	<b>82.96</b>
	(0.3, 0.1)	80.41	82.59	<b>84.45</b>	77.96	<b>86.30</b>	83.71
	(0.4, 0.4)	64.67	<b>74.07</b>	68.89	68.89	<b>82.04</b>	68.70
Thyroid (5, 65, 150)	(0.2, 0.2)	87.28	88.69	<b>89.04</b>	81.63	88.71	<b>89.21</b>
	(0.3, 0.1)	84.12	<b>88.97</b>	<b>87.78</b>	68.59	85.36	86.01
	(0.4, 0.4)	76.54	72.70	<b>78.71</b>	72.85	72.68	<b>77.75</b>
Votes (5, 168, 267)	(0.2, 0.2)	72.29	72.14	69.52	<b>73.33</b>	68.57	<b>72.86</b>
	(0.3, 0.1)	60.86	<b>67.14</b>	61.67	<b>65.24</b>	62.86	64.29
	(0.4, 0.4)	60.62	<b>61.19</b>	60.48	58.33	<b>61.19</b>	<b>61.19</b>
Sonar (60, 97, 111)	(0.2, 0.2)	77.20	<b>79.30</b>	78.70	76.20	76.95	<b>79.95</b>
	(0.3, 0.1)	72.25	<b>77.60</b>	73.55	71.05	73.60	<b>74.95</b>
	(0.4, 0.4)	60.50	63.35	62.55	60.65	<b>64.90</b>	<b>64.60</b>
Fourclass (2, 307, 555)	(0.2, 0.2)	75.67	76.31	77.55	<b>79.14</b>	73.00	<b>77.94</b>
	(0.3, 0.1)	74.93	77.08	75.91	76.85	<b>77.24</b>	<b>78.56</b>
	(0.4, 0.4)	69.95	<b>74.51</b>	72.84	<b>74.28</b>	67.04	70.74
Svmguide3 (22, 337, 947)	(0.2, 0.2)	92.88	93.49	94.42	85.35	<b>94.88</b>	<b>95.12</b>
	(0.3, 0.1)	89.16	91.16	89.54	78.61	<b>92.56</b>	<b>91.86</b>
	(0.4, 0.4)	74.98	77.44	<b>78.14</b>	74.65	<b>82.33</b>	76.74
Splice (60, 617, 483)	(0.2, 0.2)	89.84	<b>91.95</b>	91.38	<b>92.87</b>	90.57	91.61
	(0.3, 0.1)	88.46	<b>91.26</b>	90.46	89.43	89.65	<b>91.03</b>
	(0.4, 0.4)	78.00	85.29	81.49	<b>85.75</b>	<b>89.89</b>	80.57
Average		74.81	<b>77.73</b>	76.80	75.09	<b>77.93</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{hinge}$	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRRF\ell_{hinge}$	$kRRPD\ell_{hinge}$	$cRRPD\ell_{hinge}$
diabetes (8, 268, 500)	(0.2, 0.2)	71.64	73.96	72.99	<b>75.45</b>	<b>75.59</b>	73.77
	(0.3, 0.1)	70.73	<b>74.54</b>	72.01	72.15	<b>74.55</b>	73.25
	(0.4, 0.4)	66.05	68.38	68.25	<b>68.96</b>	<b>72.01</b>	62.73
German (20, 300, 700)	(0.2, 0.2)	82.16	80.06	<b>89.02</b>	83.24	80.87	<b>86.99</b>
	(0.3, 0.1)	79.62	<b>86.59</b>	<b>88.21</b>	80.52	82.54	83.01
	(0.4, 0.4)	76.09	66.19	<b>80.06</b>	77.34	<b>78.61</b>	78.15
Heart (13, 120, 150)	(0.2, 0.2)	71.15	71.30	<b>73.15</b>	73.05	<b>73.25</b>	72.75
	(0.3, 0.1)	69.85	<b>73.80</b>	71.85	70.90	<b>74.10</b>	73.00
	(0.4, 0.4)	61.00	<b>70.15</b>	63.60	65.45	<b>69.95</b>	67.15
Image (18, 1188, 898)	(0.2, 0.2)	79.30	81.30	<b>82.41</b>	81.48	<b>83.89</b>	80.18
	(0.3, 0.1)	75.22	<b>78.89</b>	77.04	74.07	<b>81.85</b>	77.22
	(0.4, 0.4)	65.96	<b>72.59</b>	68.52	67.59	<b>77.04</b>	65.74
Thyroid (5, 65, 150)	(0.2, 0.2)	87.45	89.48	89.47	<b>89.48</b>	89.28	<b>89.50</b>
	(0.3, 0.1)	84.10	<b>89.42</b>	<b>87.25</b>	85.65	85.69	86.65
	(0.4, 0.4)	80.06	71.72	80.55	<b>81.27</b>	76.70	<b>83.04</b>
Votes (5, 168, 267)	(0.2, 0.2)	71.10	73.33	<b>74.76</b>	74.29	71.67	<b>74.53</b>
	(0.3, 0.1)	64.19	<b>73.81</b>	64.52	62.14	<b>69.52</b>	69.05
	(0.4, 0.4)	57.52	<b>61.19</b>	61.19	60.71	<b>65.72</b>	60.95
Sonar (60, 97, 111)	(0.2, 0.2)	80.00	<b>82.00</b>	<b>81.95</b>	<b>81.95</b>	79.50	81.70
	(0.3, 0.1)	73.60	<b>79.30</b>	75.55	75.00	75.30	<b>76.80</b>
	(0.4, 0.4)	61.50	<b>63.45</b>	63.40	63.00	<b>67.45</b>	60.45
Fourclass (2, 307, 555)	(0.2, 0.2)	75.55	74.98	<b>77.78</b>	77.39	76.30	<b>77.78</b>
	(0.3, 0.1)	73.33	<b>75.41</b>	<b>75.95</b>	74.98	73.35	75.25
	(0.4, 0.4)	71.07	<b>74.09</b>	<b>73.66</b>	72.96	71.67	73.11
Svmguide3 (22, 337, 947)	(0.2, 0.2)	90.79	90.46	92.79	91.39	<b>93.26</b>	<b>92.79</b>
	(0.3, 0.1)	86.61	<b>90.47</b>	88.14	86.74	<b>90.70</b>	89.30
	(0.4, 0.4)	84.98	81.39	<b>86.51</b>	83.72	85.58	<b>88.61</b>
Splice (60, 617, 483)	(0.2, 0.2)	90.41	<b>92.76</b>	92.41	92.18	91.61	<b>92.64</b>
	(0.3, 0.1)	87.89	<b>90.69</b>	89.77	89.43	89.42	<b>90.11</b>
	(0.4, 0.4)	78.58	81.50	79.43	<b>84.60</b>	<b>85.86</b>	78.85
Average		75.58	77.77	<b>78.07</b>	77.24	<b>78.76</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{log}$	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
diabetes (8, 268, 500)	(0.2, 0.2)	73.71	<b>76.17</b>	75.97	76.04	<b>76.17</b>	76.10
	(0.3, 0.1)	71.83	<b>75.20</b>	73.05	72.99	<b>75.72</b>	74.29
	(0.4, 0.4)	67.55	69.35	69.03	<b>70.71</b>	<b>70.84</b>	69.16
German (20, 300, 700)	(0.2, 0.2)	74.59	<b>78.38</b>	76.76	76.24	<b>77.11</b>	75.49
	(0.3, 0.1)	76.90	79.60	79.71	78.50	<b>79.71</b>	<b>79.71</b>
	(0.4, 0.4)	71.93	64.16	<b>75.55</b>	73.70	<b>76.13</b>	75.43
Heart (13, 120, 150)	(0.2, 0.2)	73.15	74.30	<b>75.60</b>	74.95	<b>75.15</b>	<b>75.15</b>
	(0.3, 0.1)	69.50	72.10	71.45	69.95	<b>73.45</b>	<b>72.70</b>
	(0.4, 0.4)	60.75	<b>70.25</b>	64.35	66.00	<b>69.00</b>	63.65
Image (18, 1188, 898)	(0.2, 0.2)	76.52	78.52	<b>80.37</b>	79.63	<b>80.19</b>	79.81
	(0.3, 0.1)	75.96	<b>80.00</b>	78.15	75.93	<b>81.67</b>	78.70
	(0.4, 0.4)	63.00	<b>71.48</b>	70.19	66.48	<b>81.11</b>	65.37
Thyroid (5, 65, 150)	(0.2, 0.2)	81.16	82.42	<b>82.92</b>	82.80	79.81	<b>83.33</b>
	(0.3, 0.1)	70.92	<b>80.67</b>	<b>77.97</b>	68.61	75.67	76.51
	(0.4, 0.4)	72.98	71.60	<b>74.95</b>	<b>74.76</b>	72.08	74.19
Votes (5, 168, 267)	(0.2, 0.2)	67.29	69.76	<b>72.38</b>	<b>72.86</b>	71.90	71.19
	(0.3, 0.1)	68.00	<b>70.72</b>	65.95	67.14	67.86	<b>72.14</b>
	(0.4, 0.4)	56.57	61.19	60.24	60.00	<b>63.81</b>	<b>61.67</b>
Sonar (60, 97, 111)	(0.2, 0.2)	73.80	<b>75.90</b>	<b>76.15</b>	75.00	73.60	74.50
	(0.3, 0.1)	68.95	<b>73.70</b>	70.90	69.30	71.45	<b>71.50</b>
	(0.4, 0.4)	56.80	<b>59.40</b>	58.95	59.25	<b>62.60</b>	59.10
Fourclass (2, 307, 555)	(0.2, 0.2)	78.66	77.90	<b>79.65</b>	79.57	76.03	<b>80.55</b>
	(0.3, 0.1)	76.17	<b>78.25</b>	76.61	76.66	76.50	<b>78.99</b>
	(0.4, 0.4)	71.77	<b>74.75</b>	74.16	<b>74.94</b>	68.25	72.84
Svmguide3 (22, 337, 947)	(0.2, 0.2)	81.26	79.77	83.95	81.63	<b>85.12</b>	<b>84.88</b>
	(0.3, 0.1)	80.79	83.95	83.95	81.63	<b>85.35</b>	<b>84.42</b>
	(0.4, 0.4)	74.28	79.30	<b>80.23</b>	79.77	<b>80.47</b>	73.26
Splice (60, 617, 483)	(0.2, 0.2)	90.07	91.72	91.49	<b>93.22</b>	91.95	<b>91.95</b>
	(0.3, 0.1)	89.38	<b>92.30</b>	<b>91.61</b>	89.77	90.57	91.26
	(0.4, 0.4)	74.09	81.73	79.20	<b>84.48</b>	<b>87.36</b>	73.68
Average		72.94	<b>75.82</b>	75.72	75.08	<b>76.55</b>	75.38

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

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

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

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

Benchmark data ( $m, n_+, n_-$ )	Noise rate ( $\rho+1, \rho-1$ )	$\ell_{hinge}$	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRP\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
diabetes (8, 268, 500)	(0.2, 0.2)	71.90	72.79	<b>73.90</b>	73.77	<b>74.48</b>	73.83
	(0.3, 0.1)	67.22	<b>71.49</b>	69.09	69.42	<b>74.48</b>	70.33
	(0.4, 0.4)	66.57	65.00	66.88	<b>69.03</b>	<b>72.14</b>	66.36
German (20, 300, 700)	(0.2, 0.2)	82.74	82.14	<b>88.90</b>	84.45	83.41	<b>86.65</b>
	(0.3, 0.1)	78.17	<b>82.49</b>	<b>84.97</b>	79.02	80.81	81.10
	(0.4, 0.4)	76.32	69.02	<b>80.69</b>	78.26	<b>80.87</b>	71.96
Heart (13, 120, 150)	(0.2, 0.2)	71.50	72.60	72.65	<b>73.55</b>	<b>74.70</b>	73.05
	(0.3, 0.1)	69.35	72.15	71.30	70.10	<b>74.55</b>	<b>72.60</b>
	(0.4, 0.4)	61.70	<b>70.05</b>	63.35	67.15	<b>70.50</b>	66.70
Image (18, 1188, 898)	(0.2, 0.2)	80.22	81.11	<b>82.78</b>	82.78	<b>85.00</b>	80.56
	(0.3, 0.1)	74.67	<b>78.52</b>	75.56	75.00	<b>83.15</b>	77.04
	(0.4, 0.4)	63.74	64.63	64.63	<b>65.93</b>	<b>78.33</b>	62.41
Thyroid (5, 65, 150)	(0.2, 0.2)	87.57	89.23	<b>89.91</b>	<b>89.74</b>	88.11	89.62
	(0.3, 0.1)	86.95	<b>90.12</b>	89.02	88.73	87.94	<b>89.09</b>
	(0.4, 0.4)	79.84	75.38	80.91	<b>82.11</b>	73.92	<b>82.49</b>
Votes (5, 168, 267)	(0.2, 0.2)	72.76	74.76	<b>75.71</b>	74.52	73.33	<b>75.71</b>
	(0.3, 0.1)	68.00	<b>73.10</b>	67.62	64.53	69.29	<b>69.76</b>
	(0.4, 0.4)	<b>62.52</b>	59.76	<b>64.76</b>	62.14	62.14	50.00
Sonar (60, 97, 111)	(0.2, 0.2)	77.10	78.70	<b>78.75</b>	<b>78.80</b>	77.15	78.45
	(0.3, 0.1)	75.70	<b>81.80</b>	77.60	77.65	<b>78.25</b>	78.10
	(0.4, 0.4)	61.95	64.60	64.65	<b>64.80</b>	<b>68.55</b>	62.95
Fourclass (2, 307, 555)	(0.2, 0.2)	75.04	73.89	<b>77.08</b>	76.69	75.45	<b>78.17</b>
	(0.3, 0.1)	70.49	72.49	<b>73.00</b>	72.37	72.57	<b>73.62</b>
	(0.4, 0.4)	69.13	<b>74.32</b>	72.33	<b>72.69</b>	69.42	71.67
Svmguide3 (22, 337, 947)	(0.2, 0.2)	90.56	91.40	92.33	91.63	<b>93.26</b>	<b>93.02</b>
	(0.3, 0.1)	84.51	86.98	86.74	86.28	<b>89.30</b>	<b>87.91</b>
	(0.4, 0.4)	84.28	76.98	86.05	83.49	<b>90.47</b>	<b>88.14</b>
Splice (60, 617, 483)	(0.2, 0.2)	90.07	<b>92.53</b>	<b>92.76</b>	92.18	91.26	92.07
	(0.3, 0.1)	86.85	<b>90.81</b>	89.31	88.74	<b>90.69</b>	89.08
	(0.4, 0.4)	78.00	77.36	80.69	<b>85.17</b>	<b>90.12</b>	82.41
Average		75.51	76.87	<b>77.80</b>	77.36	<b>79.12</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{log}$	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
diabetes (8, 268, 500)	(0.2, 0.2)	73.65	75.59	75.13	<b>76.23</b>	<b>75.71</b>	75.32
	(0.3, 0.1)	71.05	<b>74.94</b>	71.88	72.14	74.03	<b>74.61</b>
	(0.4, 0.4)	67.68	66.49	<b>70.85</b>	69.16	<b>72.92</b>	68.44
German (20, 300, 700)	(0.2, 0.2)	74.71	<b>79.02</b>	76.94	77.51	<b>78.84</b>	76.18
	(0.3, 0.1)	76.09	77.51	<b>78.03</b>	77.92	<b>78.50</b>	77.52
	(0.4, 0.4)	72.16	66.07	74.68	<b>75.72</b>	<b>76.07</b>	72.83
Heart (13, 120, 150)	(0.2, 0.2)	71.65	73.30	<b>73.75</b>	<b>73.80</b>	73.55	72.55
	(0.3, 0.1)	72.20	74.65	<b>74.90</b>	71.70	<b>75.00</b>	74.75
	(0.4, 0.4)	60.30	<b>70.20</b>	62.80	66.15	<b>70.05</b>	62.40
Image (18, 1188, 898)	(0.2, 0.2)	79.11	81.11	80.93	80.55	<b>82.59</b>	<b>82.41</b>
	(0.3, 0.1)	78.37	<b>80.74</b>	80.19	77.04	<b>82.78</b>	79.81
	(0.4, 0.4)	59.30	62.78	<b>66.30</b>	62.78	<b>78.70</b>	61.67
Thyroid (5, 65, 150)	(0.2, 0.2)	80.56	81.63	<b>82.63</b>	81.80	78.13	<b>82.49</b>
	(0.3, 0.1)	70.46	<b>81.46</b>	<b>77.99</b>	70.05	72.73	75.53
	(0.4, 0.4)	74.60	74.38	<b>77.39</b>	76.51	70.93	<b>76.60</b>
Votes (5, 168, 267)	(0.2, 0.2)	66.81	69.05	69.05	69.53	<b>72.14</b>	<b>70.95</b>
	(0.3, 0.1)	66.81	67.62	70.24	69.29	<b>70.71</b>	<b>73.10</b>
	(0.4, 0.4)	55.14	56.19	58.09	57.14	<b>60.48</b>	<b>58.57</b>
Sonar (60, 97, 111)	(0.2, 0.2)	72.55	<b>74.50</b>	<b>74.50</b>	<b>75.10</b>	74.45	73.80
	(0.3, 0.1)	71.15	<b>74.85</b>	73.05	71.40	<b>73.45</b>	73.05
	(0.4, 0.4)	57.55	60.15	60.00	<b>60.20</b>	<b>61.05</b>	59.45
Fourclass (2, 307, 555)	(0.2, 0.2)	78.43	77.82	<b>79.77</b>	79.42	76.97	<b>80.70</b>
	(0.3, 0.1)	76.87	<b>78.91</b>	77.78	77.39	78.56	<b>79.96</b>
	(0.4, 0.4)	68.04	<b>73.08</b>	70.86	<b>72.34</b>	67.90	68.52
Svmguide3 (22, 337, 947)	(0.2, 0.2)	81.95	81.16	<b>85.81</b>	82.56	84.42	<b>86.74</b>
	(0.3, 0.1)	80.56	82.09	<b>83.02</b>	81.40	<b>84.42</b>	82.79
	(0.4, 0.4)	78.00	76.51	<b>83.03</b>	81.16	<b>82.10</b>	81.63
Splice (60, 617, 483)	(0.2, 0.2)	91.10	<b>92.87</b>	<b>91.84</b>	91.72	91.15	91.38
	(0.3, 0.1)	88.11	<b>91.95</b>	<b>91.72</b>	89.66	89.89	90.00
	(0.4, 0.4)	76.51	71.61	80.58	<b>84.26</b>	<b>89.77</b>	77.82
Average		73.05	74.94	<b>75.79</b>	75.05	<b>76.60</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{hinge}$	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRP\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
diabetes (8, 268, 500)	(0.2, 0.2)	73.32	71.23	74.87	<b>75.00</b>	74.09	<b>75.78</b>
	(0.3, 0.1)	64.10	70.97	69.35	69.48	<b>72.47</b>	<b>73.05</b>
	(0.4, 0.4)	69.23	63.31	<b>70.26</b>	69.42	<b>70.46</b>	67.21
German (20, 300, 700)	(0.2, 0.2)	72.86	67.40	<b>75.26</b>	<b>75.66</b>	74.74	74.86
	(0.3, 0.1)	67.02	<b>78.96</b>	<b>78.79</b>	70.06	77.52	78.56
	(0.4, 0.4)	66.85	64.68	<b>74.11</b>	68.33	<b>76.19</b>	69.54
Heart (13, 120, 150)	(0.2, 0.2)	70.30	68.45	<b>74.10</b>	71.90	71.15	<b>72.75</b>
	(0.3, 0.1)	67.25	69.75	69.65	70.60	<b>71.55</b>	<b>71.50</b>
	(0.4, 0.4)	61.90	<b>69.60</b>	65.15	67.35	<b>68.90</b>	66.50
Image (18, 1188, 898)	(0.2, 0.2)	80.22	<b>82.22</b>	79.82	80.56	81.11	<b>81.30</b>
	(0.3, 0.1)	75.41	<b>79.63</b>	77.04	75.56	<b>80.74</b>	78.15
	(0.4, 0.4)	62.63	<b>69.26</b>	65.37	65.00	<b>74.26</b>	57.22
Thyroid (5, 65, 150)	(0.2, 0.2)	78.34	76.94	<b>83.47</b>	<b>83.18</b>	62.11	82.37
	(0.3, 0.1)	72.59	75.34	<b>80.53</b>	72.65	60.77	<b>78.78</b>
	(0.4, 0.4)	70.99	71.87	<b>75.77</b>	72.82	64.33	<b>75.81</b>
Votes (5, 168, 267)	(0.2, 0.2)	69.43	72.38	<b>73.10</b>	72.86	72.86	<b>73.57</b>
	(0.3, 0.1)	71.10	70.95	<b>72.38</b>	71.91	68.10	<b>74.05</b>
	(0.4, 0.4)	59.67	62.14	60.48	<b>63.10</b>	55.48	<b>62.38</b>
Sonar (60, 97, 111)	(0.2, 0.2)	71.95	73.85	<b>74.10</b>	73.45	72.50	<b>74.00</b>
	(0.3, 0.1)	70.20	<b>74.55</b>	<b>72.45</b>	71.00	71.30	71.55
	(0.4, 0.4)	58.75	61.85	60.80	<b>63.10</b>	<b>63.70</b>	60.75
Fourclass (2, 307, 555)	(0.2, 0.2)	74.15	74.01	<b>78.99</b>	78.09	63.46	<b>78.83</b>
	(0.3, 0.1)	73.14	75.29	<b>76.23</b>	75.21	64.24	<b>76.11</b>
	(0.4, 0.4)	72.67	74.05	74.51	<b>75.25</b>	63.54	<b>74.82</b>
Svmguide3 (22, 337, 947)	(0.2, 0.2)	80.33	79.77	<b>85.58</b>	82.09	80.47	<b>82.79</b>
	(0.3, 0.1)	73.81	78.37	<b>83.02</b>	77.21	70.23	<b>80.70</b>
	(0.4, 0.4)	78.00	78.14	<b>82.79</b>	79.07	62.56	<b>80.93</b>
Splice (60, 617, 483)	(0.2, 0.2)	92.48	<b>93.91</b>	92.41	92.30	89.54	<b>93.68</b>
	(0.3, 0.1)	91.45	<b>94.71</b>	92.41	91.03	90.46	<b>92.64</b>
	(0.4, 0.4)	81.91	79.89	82.76	<b>87.59</b>	<b>87.36</b>	83.10
Average		72.40	74.12	<b>75.85</b>	74.66	71.87	<b>75.44</b>

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 ( $\rho+1, \rho-1$ )	$\ell_{log}$	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
diabetes (8, 268, 500)	(0.2, 0.2)	71.77	73.90	74.87	<b>75.71</b>	<b>75.65</b>	73.90
	(0.3, 0.1)	70.21	<b>72.27</b>	71.17	71.50	<b>73.18</b>	72.21
	(0.4, 0.4)	61.90	67.14	64.74	<b>70.91</b>	<b>72.53</b>	63.31
German (20, 300, 700)	(0.2, 0.2)	<b>77.42</b>	78.85	<b>79.42</b>	77.63	<b>79.48</b>	79.13
	(0.3, 0.1)	75.17	77.57	<b>78.09</b>	76.36	<b>78.15</b>	77.28
	(0.4, 0.4)	72.39	66.88	75.09	74.74	<b>78.03</b>	<b>75.26</b>
Heart (13, 120, 150)	(0.2, 0.2)	72.85	72.95	<b>75.30</b>	73.55	<b>75.35</b>	73.80
	(0.3, 0.1)	70.40	72.70	72.50	70.45	<b>73.70</b>	<b>73.30</b>
	(0.4, 0.4)	59.55	<b>69.75</b>	62.45	68.70	<b>69.15</b>	63.00
Image (18, 1188, 898)	(0.2, 0.2)	77.63	79.45	<b>82.59</b>	78.70	<b>82.78</b>	78.15
	(0.3, 0.1)	72.63	<b>77.22</b>	74.26	74.45	<b>80.19</b>	75.37
	(0.4, 0.4)	67.07	67.59	69.81	70.37	<b>82.04</b>	<b>70.56</b>
Thyroid (5, 65, 150)	(0.2, 0.2)	86.54	<b>88.64</b>	<b>88.66</b>	81.13	86.20	88.52
	(0.3, 0.1)	83.12	<b>89.71</b>	<b>87.82</b>	68.25	82.08	85.24
	(0.4, 0.4)	75.87	75.41	<b>78.78</b>	75.19	75.29	<b>77.85</b>
Votes (5, 168, 267)	(0.2, 0.2)	66.33	65.48	65.71	<b>68.33</b>	65.71	<b>67.38</b>
	(0.3, 0.1)	65.86	<b>70.71</b>	65.24	70.24	67.38	<b>71.67</b>
	(0.4, 0.4)	58.48	<b>59.53</b>	<b>60.24</b>	57.14	56.91	56.91
Sonar (60, 97, 111)	(0.2, 0.2)	74.55	<b>76.90</b>	<b>76.70</b>	73.75	75.50	76.50
	(0.3, 0.1)	72.20	<b>77.75</b>	73.85	72.40	74.45	<b>75.15</b>
	(0.4, 0.4)	64.15	66.10	<b>66.30</b>	62.40	<b>67.60</b>	65.50
Fourclass (2, 307, 555)	(0.2, 0.2)	78.00	77.39	78.99	<b>80.93</b>	75.22	<b>80.00</b>
	(0.3, 0.1)	76.09	78.40	77.32	78.21	<b>78.68</b>	<b>79.42</b>
	(0.4, 0.4)	71.15	73.07	<b>73.89</b>	<b>76.03</b>	68.33	72.30
Svmguide3 (22, 337, 947)	(0.2, 0.2)	93.58	<b>94.42</b>	<b>95.35</b>	86.98	94.19	93.26
	(0.3, 0.1)	92.19	<b>94.42</b>	90.70	80.47	<b>94.42</b>	93.95
	(0.4, 0.4)	82.88	78.37	<b>86.51</b>	78.84	85.35	<b>86.51</b>
Splice (60, 617, 483)	(0.2, 0.2)	90.18	<b>92.87</b>	91.72	<b>91.84</b>	89.43	91.49
	(0.3, 0.1)	86.74	<b>90.80</b>	89.31	88.51	89.08	<b>91.03</b>
	(0.4, 0.4)	77.89	78.16	83.34	<b>85.98</b>	<b>88.97</b>	79.77
Average		74.83	76.81	<b>77.02</b>	75.32	<b>77.83</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{hinge}$	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRRP\ell_{hinge}$	$cRRP\ell_{hinge}$
diabetes (8, 268, 500)	(0.2, 0.2)	72.61	74.42	<b>75.07</b>	<b>75.07</b>	74.55	74.16
	(0.3, 0.1)	69.04	<b>73.12</b>	70.39	69.94	<b>74.61</b>	72.47
	(0.4, 0.4)	68.33	67.08	69.35	<b>70.20</b>	<b>72.53</b>	69.74
German (20, 300, 700)	(0.2, 0.2)	84.19	82.95	<b>90.35</b>	85.90	82.66	<b>86.94</b>
	(0.3, 0.1)	77.37	<b>82.54</b>	<b>84.80</b>	78.73	80.17	80.12
	(0.4, 0.4)	74.99	66.71	74.80	76.30	<b>77.92</b>	<b>77.28</b>
Heart (13, 120, 150)	(0.2, 0.2)	71.10	71.00	<b>73.15</b>	72.70	<b>73.00</b>	72.85
	(0.3, 0.1)	70.65	<b>73.30</b>	71.95	71.30	<b>74.40</b>	73.20
	(0.4, 0.4)	61.35	<b>69.65</b>	63.95	67.85	<b>69.95</b>	65.95
Image (18, 1188, 898)	(0.2, 0.2)	77.44	79.07	<b>80.19</b>	76.48	<b>80.19</b>	79.82
	(0.3, 0.1)	72.81	<b>79.45</b>	76.67	73.89	<b>82.78</b>	75.93
	(0.4, 0.4)	63.37	65.93	65.93	<b>66.48</b>	<b>78.15</b>	64.44
Thyroid (5, 65, 150)	(0.2, 0.2)	87.40	89.02	<b>89.59</b>	89.43	88.06	<b>89.52</b>
	(0.3, 0.1)	86.35	<b>89.90</b>	88.40	88.01	85.65	<b>88.71</b>
	(0.4, 0.4)	80.06	72.75	81.20	<b>81.58</b>	75.21	<b>82.25</b>
Votes (5, 168, 267)	(0.2, 0.2)	71.57	73.33	<b>74.52</b>	72.62	69.76	<b>73.33</b>
	(0.3, 0.1)	67.76	<b>76.91</b>	70.00	66.19	<b>71.67</b>	69.53
	(0.4, 0.4)	59.43	<b>61.67</b>	60.95	60.95	<b>61.19</b>	56.67
Sonar (60, 97, 111)	(0.2, 0.2)	79.85	81.60	<b>82.05</b>	81.40	79.00	<b>82.45</b>
	(0.3, 0.1)	75.55	<b>81.75</b>	77.45	76.95	77.55	<b>78.40</b>
	(0.4, 0.4)	60.35	62.65	62.55	62.35	<b>65.95</b>	<b>62.85</b>
Fourclass (2, 307, 555)	(0.2, 0.2)	75.01	73.58	<b>77.59</b>	76.93	76.34	<b>78.02</b>
	(0.3, 0.1)	71.35	73.46	<b>74.24</b>	73.19	<b>74.55</b>	73.97
	(0.4, 0.4)	71.19	<b>74.75</b>	74.32	<b>74.82</b>	67.12	72.76
Svmguide3 (22, 337, 947)	(0.2, 0.2)	92.42	91.86	93.95	93.02	<b>94.42</b>	<b>94.19</b>
	(0.3, 0.1)	87.77	<b>90.46</b>	89.07	87.67	<b>92.56</b>	89.77
	(0.4, 0.4)	84.98	75.35	<b>87.44</b>	84.42	86.74	<b>87.44</b>
Splice (60, 617, 483)	(0.2, 0.2)	90.99	91.84	92.41	<b>92.87</b>	91.38	<b>92.87</b>
	(0.3, 0.1)	89.15	<b>92.07</b>	<b>91.26</b>	90.34	91.04	91.15
	(0.4, 0.4)	77.31	75.63	78.39	<b>85.75</b>	<b>89.66</b>	77.36
Average		75.72	77.13	<b>78.07</b>	77.44	<b>78.62</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{log}$	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
diabetes (8, 268, 500)	(0.2, 0.2)	74.88	<b>77.21</b>	76.43	76.69	<b>77.21</b>	77.21
	(0.3, 0.1)	70.40	<b>74.03</b>	70.98	71.43	<b>75.13</b>	74.03
	(0.4, 0.4)	67.55	66.82	69.61	<b>71.50</b>	<b>72.92</b>	69.29
German (20, 300, 700)	(0.2, 0.2)	74.59	<b>79.42</b>	76.53	77.17	<b>77.57</b>	75.38
	(0.3, 0.1)	75.11	<b>76.59</b>	76.36	<b>76.88</b>	76.18	76.30
	(0.4, 0.4)	72.91	66.47	75.61	<b>76.53</b>	<b>77.46</b>	74.28
Heart (13, 120, 150)	(0.2, 0.2)	73.20	74.35	<b>74.70</b>	74.40	<b>74.75</b>	74.05
	(0.3, 0.1)	71.50	<b>74.15</b>	<b>74.15</b>	72.40	<b>74.55</b>	73.30
	(0.4, 0.4)	64.80	69.45	67.25	<b>71.55</b>	<b>70.80</b>	67.30
Image (18, 1188, 898)	(0.2, 0.2)	75.78	78.15	<b>80.74</b>	77.96	<b>83.52</b>	79.45
	(0.3, 0.1)	73.93	<b>77.04</b>	76.48	73.15	<b>82.04</b>	73.89
	(0.4, 0.4)	64.67	68.70	70.56	<b>70.74</b>	<b>79.26</b>	67.41
Thyroid (5, 65, 150)	(0.2, 0.2)	79.34	80.93	<b>82.15</b>	81.46	76.89	<b>81.92</b>
	(0.3, 0.1)	70.03	<b>81.89</b>	<b>77.49</b>	69.93	73.16	75.38
	(0.4, 0.4)	72.79	74.14	<b>76.08</b>	74.24	68.83	<b>74.64</b>
Votes (5, 168, 267)	(0.2, 0.2)	68.95	72.38	<b>74.76</b>	72.86	68.81	<b>74.05</b>
	(0.3, 0.1)	69.19	70.48	70.24	<b>72.38</b>	69.53	<b>73.10</b>
	(0.4, 0.4)	58.48	<b>62.62</b>	<b>62.38</b>	60.95	60.24	61.67
Sonar (60, 97, 111)	(0.2, 0.2)	71.80	73.30	<b>74.20</b>	<b>74.40</b>	74.05	72.80
	(0.3, 0.1)	72.00	<b>76.95</b>	73.80	74.30	<b>74.50</b>	72.95
	(0.4, 0.4)	58.85	60.90	61.25	<b>61.30</b>	<b>62.20</b>	61.20
Fourclass (2, 307, 555)	(0.2, 0.2)	78.66	78.64	<b>80.78</b>	80.12	76.15	<b>80.86</b>
	(0.3, 0.1)	74.65	<b>76.65</b>	75.22	74.90	74.98	<b>77.78</b>
	(0.4, 0.4)	70.96	<b>74.79</b>	72.65	<b>75.33</b>	68.21	71.17
Svmguide3 (22, 337, 947)	(0.2, 0.2)	81.72	82.33	<b>86.05</b>	82.56	83.95	<b>84.19</b>
	(0.3, 0.1)	80.09	83.02	82.33	80.93	<b>83.26</b>	<b>84.65</b>
	(0.4, 0.4)	75.91	74.88	<b>80.00</b>	78.61	<b>79.30</b>	76.28
Splice (60, 617, 483)	(0.2, 0.2)	87.89	<b>91.03</b>	90.23	<b>91.84</b>	89.20	90.23
	(0.3, 0.1)	87.77	<b>90.35</b>	<b>90.35</b>	88.62	89.77	89.54
	(0.4, 0.4)	72.83	70.80	80.00	<b>82.07</b>	<b>90.23</b>	74.83
Average		73.04	75.28	<b>75.98</b>	75.57	<b>76.15</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{hinge}$	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRP\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
diabetes (8, 268, 500)	(0.2, 0.2)	74.23	74.03	<b>76.69</b>	76.56	74.16	<b>76.56</b>
	(0.3, 0.1)	67.68	<b>75.65</b>	71.56	71.62	74.74	<b>75.46</b>
	(0.4, 0.4)	68.20	65.46	69.61	<b>72.08</b>	<b>69.74</b>	65.33
German (20, 300, 700)	(0.2, 0.2)	73.49	72.31	<b>78.38</b>	77.34	<b>77.80</b>	75.90
	(0.3, 0.1)	66.44	74.86	<b>78.61</b>	68.50	<b>77.75</b>	75.26
	(0.4, 0.4)	69.68	63.82	<b>72.95</b>	72.08	<b>76.13</b>	68.90
Heart (13, 120, 150)	(0.2, 0.2)	69.85	70.80	<b>72.00</b>	<b>72.65</b>	71.15	71.90
	(0.3, 0.1)	67.80	70.25	71.00	70.25	<b>72.15</b>	<b>71.05</b>
	(0.4, 0.4)	62.20	<b>70.75</b>	64.40	<b>68.45</b>	67.35	65.25
Image (18, 1188, 898)	(0.2, 0.2)	78.74	79.26	<b>80.93</b>	<b>81.11</b>	78.89	78.70
	(0.3, 0.1)	78.00	<b>79.82</b>	79.63	76.85	<b>82.59</b>	79.07
	(0.4, 0.4)	67.63	65.93	<b>70.37</b>	68.33	<b>76.11</b>	65.18
Thyroid (5, 65, 150)	(0.2, 0.2)	78.31	77.73	<b>83.71</b>	83.54	63.25	<b>83.69</b>
	(0.3, 0.1)	74.67	76.72	<b>82.49</b>	74.19	60.48	<b>78.64</b>
	(0.4, 0.4)	70.42	70.84	72.99	<b>73.35</b>	60.86	<b>76.96</b>
Votes (5, 168, 267)	(0.2, 0.2)	67.53	69.05	68.81	<b>70.00</b>	65.24	<b>71.43</b>
	(0.3, 0.1)	64.91	66.67	64.53	<b>66.91</b>	61.43	<b>69.05</b>
	(0.4, 0.4)	55.62	57.14	59.29	55.00	<b>60.48</b>	<b>59.52</b>
Sonar (60, 97, 111)	(0.2, 0.2)	73.40	75.30	<b>75.75</b>	75.55	73.95	<b>75.95</b>
	(0.3, 0.1)	71.15	<b>75.80</b>	<b>73.25</b>	71.60	72.90	73.05
	(0.4, 0.4)	59.20	61.25	61.55	<b>61.75</b>	<b>62.55</b>	60.35
Fourclass (2, 307, 555)	(0.2, 0.2)	78.16	75.33	<b>80.66</b>	79.77	65.25	<b>80.82</b>
	(0.3, 0.1)	74.03	76.15	<b>78.72</b>	<b>77.35</b>	66.38	76.58
	(0.4, 0.4)	70.18	72.14	<b>72.69</b>	<b>72.69</b>	63.23	72.34
Svmguide3 (22, 337, 947)	(0.2, 0.2)	82.89	82.09	<b>87.67</b>	82.79	75.58	<b>88.37</b>
	(0.3, 0.1)	75.91	78.14	<b>81.86</b>	77.21	78.14	<b>80.00</b>
	(0.4, 0.4)	75.21	71.40	<b>76.75</b>	<b>76.28</b>	72.79	72.56
Splice (60, 617, 483)	(0.2, 0.2)	92.83	<b>93.56</b>	92.53	93.45	90.12	<b>94.25</b>
	(0.3, 0.1)	91.22	<b>94.25</b>	91.72	91.03	89.77	<b>93.68</b>
	(0.4, 0.4)	78.80	74.37	83.45	<b>86.90</b>	<b>88.16</b>	79.66
Average		72.61	73.69	<b>75.82</b>	74.84	72.30	<b>75.18</b>

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

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

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 ( $\rho+1, \rho-1$ )	$\ell_{log}$	$IW\ell_{log}$	$RD\ell_{log}$	$mCRRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
diabetes (8, 268, 500)	(0.2, 0.2)	75.99	77.34	77.53	<b>77.86</b>	76.49	<b>78.31</b>
	(0.3, 0.1)	72.03	<b>75.07</b>	73.25	73.18	74.48	<b>74.94</b>
	(0.4, 0.4)	64.04	66.88	66.75	<b>69.09</b>	<b>69.94</b>	65.59
German (20, 300, 700)	(0.2, 0.2)	73.26	<b>78.21</b>	75.72	75.84	<b>77.00</b>	74.45
	(0.3, 0.1)	74.36	<b>76.30</b>	76.13	76.01	<b>77.69</b>	76.07
	(0.4, 0.4)	72.28	65.90	74.45	74.16	<b>75.90</b>	<b>74.45</b>
Heart (13, 120, 150)	(0.2, 0.2)	69.90	<b>71.85</b>	<b>72.05</b>	71.45	71.55	70.30
	(0.3, 0.1)	70.80	73.20	<b>73.25</b>	70.50	<b>73.60</b>	73.20
	(0.4, 0.4)	63.60	<b>69.65</b>	66.50	68.65	<b>69.90</b>	63.65
Image (18, 1188, 898)	(0.2, 0.2)	75.22	76.67	<b>79.26</b>	76.48	<b>81.11</b>	76.48
	(0.3, 0.1)	74.85	78.33	<b>78.52</b>	74.26	<b>81.85</b>	77.22
	(0.4, 0.4)	64.30	66.11	<b>69.63</b>	68.52	<b>78.71</b>	65.56
Thyroid (5, 65, 150)	(0.2, 0.2)	81.40	83.14	<b>84.64</b>	83.13	78.54	<b>83.90</b>
	(0.3, 0.1)	71.71	<b>81.20</b>	<b>78.37</b>	70.00	73.52	76.91
	(0.4, 0.4)	74.56	73.11	<b>76.96</b>	75.86	71.05	<b>75.88</b>
Votes (5, 168, 267)	(0.2, 0.2)	62.76	65.24	<b>67.62</b>	65.00	63.57	<b>71.67</b>
	(0.3, 0.1)	69.19	<b>74.28</b>	70.48	66.19	69.76	<b>74.05</b>
	(0.4, 0.4)	53.00	55.00	57.86	57.14	<b>60.95</b>	<b>58.33</b>
Sonar (60, 97, 111)	(0.2, 0.2)	72.80	74.80	<b>75.05</b>	<b>75.10</b>	74.75	74.40
	(0.3, 0.1)	70.80	<b>74.75</b>	72.90	72.20	<b>73.75</b>	72.70
	(0.4, 0.4)	58.85	60.90	61.55	<b>62.25</b>	<b>64.50</b>	60.30
Fourclass (2, 307, 555)	(0.2, 0.2)	78.39	78.60	<b>80.55</b>	80.16	77.47	<b>80.43</b>
	(0.3, 0.1)	76.01	<b>78.21</b>	76.85	77.12	76.93	<b>79.30</b>
	(0.4, 0.4)	70.99	<b>74.75</b>	72.76	<b>74.67</b>	70.04	71.29
Svmguide3 (22, 337, 947)	(0.2, 0.2)	84.28	84.19	<b>88.14</b>	84.88	86.28	<b>89.07</b>
	(0.3, 0.1)	77.30	80.23	79.30	76.98	<b>81.40</b>	<b>80.23</b>
	(0.4, 0.4)	75.68	76.05	<b>81.86</b>	<b>82.33</b>	81.40	74.42
Splice (60, 617, 483)	(0.2, 0.2)	87.89	<b>88.97</b>	88.85	<b>90.23</b>	87.13	88.28
	(0.3, 0.1)	89.61	<b>92.07</b>	91.72	89.66	91.15	<b>92.18</b>
	(0.4, 0.4)	75.24	73.91	80.00	<b>83.45</b>	<b>87.82</b>	75.98
Average		72.70	74.83	<b>75.62</b>	74.74	<b>75.94</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{hinge}$	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRP\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
diabetes (8, 268, 500)	(0.2, 0.2)	72.74	71.82	<b>74.61</b>	<b>74.67</b>	73.18	74.35
	(0.3, 0.1)	63.59	71.75	69.87	68.83	<b>74.03</b>	<b>73.57</b>
	(0.4, 0.4)	69.89	66.23	<b>72.40</b>	<b>72.66</b>	71.75	72.14
German (20, 300, 700)	(0.2, 0.2)	70.31	68.50	<b>75.44</b>	72.72	<b>74.62</b>	73.41
	(0.3, 0.1)	66.84	73.53	<b>78.15</b>	69.31	<b>76.76</b>	76.42
	(0.4, 0.4)	68.52	63.70	<b>74.11</b>	71.85	<b>76.70</b>	72.20
Heart (13, 120, 150)	(0.2, 0.2)	71.20	69.35	<b>74.05</b>	<b>72.90</b>	71.35	72.65
	(0.3, 0.1)	68.90	71.40	<b>72.65</b>	71.50	<b>72.70</b>	71.00
	(0.4, 0.4)	64.70	<b>69.70</b>	67.75	<b>69.45</b>	69.25	65.95
Image (18, 1188, 898)	(0.2, 0.2)	76.15	78.33	78.89	<b>79.45</b>	<b>79.81</b>	79.08
	(0.3, 0.1)	78.19	<b>82.22</b>	<b>82.78</b>	78.52	82.04	81.48
	(0.4, 0.4)	68.74	70.00	<b>71.11</b>	70.00	<b>77.41</b>	66.67
Thyroid (5, 65, 150)	(0.2, 0.2)	77.67	76.94	<b>84.14</b>	83.66	61.34	<b>84.12</b>
	(0.3, 0.1)	71.01	<b>78.69</b>	<b>80.07</b>	70.43	60.96	76.44
	(0.4, 0.4)	70.51	69.14	<b>75.21</b>	72.34	60.29	<b>78.21</b>
Votes (5, 168, 267)	(0.2, 0.2)	66.57	68.10	<b>70.95</b>	<b>69.53</b>	64.76	69.05
	(0.3, 0.1)	68.72	<b>71.43</b>	68.57	68.33	64.52	<b>72.86</b>
	(0.4, 0.4)	51.81	54.05	<b>54.52</b>	53.57	<b>59.52</b>	53.10
Sonar (60, 97, 111)	(0.2, 0.2)	73.60	75.25	75.05	<b>75.45</b>	72.45	<b>75.55</b>
	(0.3, 0.1)	70.90	<b>75.75</b>	72.90	71.70	72.85	<b>73.65</b>
	(0.4, 0.4)	60.05	62.05	62.05	<b>63.45</b>	<b>66.00</b>	63.20
Fourclass (2, 307, 555)	(0.2, 0.2)	75.59	74.01	<b>79.10</b>	78.13	68.21	<b>80.23</b>
	(0.3, 0.1)	73.91	75.91	<b>77.36</b>	76.07	64.86	<b>76.62</b>
	(0.4, 0.4)	71.07	72.84	<b>73.54</b>	73.19	64.16	<b>74.55</b>
Svmguide3 (22, 337, 947)	(0.2, 0.2)	82.42	83.49	<b>89.30</b>	84.89	80.23	<b>89.54</b>
	(0.3, 0.1)	74.51	77.21	<b>81.40</b>	76.28	72.09	<b>83.02</b>
	(0.4, 0.4)	79.63	73.02	<b>83.72</b>	79.30	66.28	<b>82.56</b>
Splice (60, 617, 483)	(0.2, 0.2)	90.76	<b>92.30</b>	91.72	91.95	88.97	<b>92.99</b>
	(0.3, 0.1)	88.34	<b>90.92</b>	<b>90.58</b>	89.89	89.08	89.89
	(0.4, 0.4)	80.07	72.64	84.14	<b>85.75</b>	<b>87.47</b>	82.53
Average		72.23	73.34	<b>76.20</b>	74.53	72.12	<b>75.90</b>

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 ( $\rho+1, \rho-1$ )	$\ell_{log}$	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
diabetes (8, 268, 500)	(0.2, 0.2)	73.20	73.57	<b>75.39</b>	74.87	74.35	<b>75.20</b>
	(0.3, 0.1)	69.63	<b>73.38</b>	71.43	72.14	<b>74.55</b>	72.73
	(0.4, 0.4)	65.60	68.38	68.12	<b>73.31</b>	<b>73.90</b>	68.57
German (20, 300, 700)	(0.2, 0.2)	76.38	<b>79.30</b>	77.75	76.01	77.69	<b>78.96</b>
	(0.3, 0.1)	76.21	79.02	79.02	77.63	<b>79.94</b>	<b>79.42</b>
	(0.4, 0.4)	72.45	66.70	<b>75.84</b>	73.58	<b>75.14</b>	72.31
Heart (13, 120, 150)	(0.2, 0.2)	72.30	73.30	<b>74.55</b>	74.35	74.50	<b>74.60</b>
	(0.3, 0.1)	71.35	<b>73.75</b>	72.95	70.40	<b>74.55</b>	72.70
	(0.4, 0.4)	61.55	<b>70.30</b>	65.35	69.25	<b>70.25</b>	64.65
Image (18, 1188, 898)	(0.2, 0.2)	78.00	80.56	<b>82.04</b>	81.67	<b>83.33</b>	80.37
	(0.3, 0.1)	70.96	<b>77.96</b>	75.56	73.33	<b>80.93</b>	77.04
	(0.4, 0.4)	65.04	67.41	<b>72.04</b>	68.89	<b>78.15</b>	68.15
Thyroid (5, 65, 150)	(0.2, 0.2)	88.43	89.93	<b>90.17</b>	82.27	89.69	<b>91.03</b>
	(0.3, 0.1)	84.53	<b>90.14</b>	<b>88.57</b>	71.29	85.02	87.75
	(0.4, 0.4)	76.81	76.32	<b>80.41</b>	74.79	71.48	<b>78.16</b>
Votes (5, 168, 267)	(0.2, 0.2)	69.67	<b>70.24</b>	69.76	<b>72.14</b>	65.48	68.57
	(0.3, 0.1)	62.52	<b>71.43</b>	60.95	<b>69.05</b>	64.76	66.43
	(0.4, 0.4)	62.76	<b>64.76</b>	63.57	<b>66.19</b>	60.48	61.19
Sonar (60, 97, 111)	(0.2, 0.2)	75.65	77.45	<b>77.70</b>	75.25	75.50	<b>78.05</b>
	(0.3, 0.1)	72.45	<b>77.80</b>	74.25	73.15	73.60	<b>75.40</b>
	(0.4, 0.4)	61.55	62.65	<b>63.25</b>	60.95	<b>66.75</b>	<b>63.25</b>
Fourclass (2, 307, 555)	(0.2, 0.2)	75.70	74.51	77.08	<b>78.99</b>	74.40	<b>78.37</b>
	(0.3, 0.1)	75.28	<b>77.39</b>	76.58	77.12	76.42	<b>78.29</b>
	(0.4, 0.4)	71.77	<b>74.87</b>	73.04	<b>75.92</b>	71.56	71.95
Svmguide3 (22, 337, 947)	(0.2, 0.2)	93.35	93.95	<b>94.65</b>	84.88	93.95	<b>94.88</b>
	(0.3, 0.1)	89.63	92.09	90.70	83.49	<b>92.79</b>	<b>93.72</b>
	(0.4, 0.4)	80.79	73.26	<b>86.05</b>	73.95	81.86	<b>83.49</b>
Splice (60, 617, 483)	(0.2, 0.2)	89.72	<b>91.38</b>	91.26	<b>92.41</b>	88.85	90.92
	(0.3, 0.1)	89.15	<b>92.41</b>	90.34	89.54	91.38	<b>92.18</b>
	(0.4, 0.4)	81.11	79.31	<b>85.06</b>	82.41	<b>87.24</b>	83.22
Average		75.12	77.11	<b>77.45</b>	75.64	<b>77.62</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{hinge}$	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRP\ell_{hinge}$	$kRPD\ell_{hinge}$	$cRPD\ell_{hinge}$
diabetes (8, 268, 500)	(0.2, 0.2)	71.18	72.14	72.47	<b>73.90</b>	<b>74.61</b>	72.73
	(0.3, 0.1)	67.55	<b>71.88</b>	69.94	69.03	<b>72.53</b>	71.43
	(0.4, 0.4)	64.49	66.62	65.59	67.86	<b>69.68</b>	<b>67.86</b>
German (20, 300, 700)	(0.2, 0.2)	83.03	83.01	<b>90.87</b>	84.28	82.60	<b>86.13</b>
	(0.3, 0.1)	79.73	<b>84.22</b>	<b>85.90</b>	81.45	80.87	82.43
	(0.4, 0.4)	76.15	67.69	<b>78.90</b>	<b>77.63</b>	<b>78.73</b>	77.57
Heart (13, 120, 150)	(0.2, 0.2)	70.20	<b>72.35</b>	72.25	<b>72.35</b>	72.20	71.85
	(0.3, 0.1)	70.40	72.55	72.35	70.95	<b>73.65</b>	<b>72.70</b>
	(0.4, 0.4)	61.90	<b>70.20</b>	64.70	65.90	<b>70.10</b>	66.55
Image (18, 1188, 898)	(0.2, 0.2)	76.15	78.52	78.70	78.71	<b>80.74</b>	<b>79.07</b>
	(0.3, 0.1)	73.19	76.85	<b>77.22</b>	75.93	<b>81.48</b>	75.56
	(0.4, 0.4)	59.85	61.30	61.85	<b>62.78</b>	<b>76.48</b>	58.70
Thyroid (5, 65, 150)	(0.2, 0.2)	86.90	88.06	<b>89.12</b>	89.04	87.54	<b>89.09</b>
	(0.3, 0.1)	87.16	89.38	<b>89.91</b>	88.83	88.95	<b>89.38</b>
	(0.4, 0.4)	81.02	76.82	<b>83.57</b>	82.90	75.38	<b>84.26</b>
Votes (5, 168, 267)	(0.2, 0.2)	73.00	75.00	<b>75.71</b>	75.71	73.81	<b>76.43</b>
	(0.3, 0.1)	65.62	<b>71.67</b>	67.86	66.67	67.62	<b>69.76</b>
	(0.4, 0.4)	62.52	<b>66.90</b>	<b>65.71</b>	64.52	63.09	64.05
Sonar (60, 97, 111)	(0.2, 0.2)	78.75	<b>80.75</b>	<b>80.80</b>	80.70	79.25	<b>80.75</b>
	(0.3, 0.1)	73.15	<b>81.10</b>	75.15	74.75	<b>77.35</b>	76.35
	(0.4, 0.4)	62.45	64.75	64.70	64.75	<b>67.05</b>	<b>65.30</b>
Fourclass (2, 307, 555)	(0.2, 0.2)	75.04	73.81	<b>77.16</b>	76.89	73.77	<b>77.98</b>
	(0.3, 0.1)	72.71	74.67	<b>74.86</b>	74.40	<b>75.45</b>	74.44
	(0.4, 0.4)	72.01	<b>74.24</b>	73.97	74.20	68.91	<b>74.20</b>
Svmguide3 (22, 337, 947)	(0.2, 0.2)	88.93	89.30	<b>91.40</b>	89.07	<b>91.63</b>	91.16
	(0.3, 0.1)	90.32	<b>92.79</b>	90.23	87.44	<b>92.79</b>	92.56
	(0.4, 0.4)	81.02	75.12	<b>83.26</b>	81.63	<b>86.05</b>	82.56
Splice (60, 617, 483)	(0.2, 0.2)	91.22	92.64	<b>93.22</b>	92.53	92.99	<b>93.56</b>
	(0.3, 0.1)	88.92	<b>92.41</b>	91.15	90.23	<b>91.38</b>	91.04
	(0.4, 0.4)	76.62	75.86	77.82	<b>84.83</b>	<b>88.28</b>	80.81
Average		75.37	77.09	<b>77.88</b>	77.33	<b>78.50</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{log}$	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
diabetes (8, 268, 500)	(0.2, 0.2)	73.13	75.32	75.00	<b>76.49</b>	75.19	<b>75.58</b>
	(0.3, 0.1)	71.31	<b>74.81</b>	72.66	72.60	74.48	<b>75.65</b>
	(0.4, 0.4)	68.59	69.16	70.45	<b>71.69</b>	<b>73.25</b>	70.07
German (20, 300, 700)	(0.2, 0.2)	73.43	<b>77.00</b>	75.49	75.55	<b>75.90</b>	74.51
	(0.3, 0.1)	76.44	78.15	78.38	78.09	<b>78.90</b>	<b>78.56</b>
	(0.4, 0.4)	73.32	66.01	74.80	<b>75.95</b>	<b>76.71</b>	73.99
Heart (13, 120, 150)	(0.2, 0.2)	71.25	73.70	<b>73.75</b>	73.70	<b>73.95</b>	72.75
	(0.3, 0.1)	71.55	<b>74.10</b>	73.85	70.80	<b>74.05</b>	<b>74.05</b>
	(0.4, 0.4)	63.00	<b>69.30</b>	65.30	67.50	<b>69.35</b>	65.00
Image (18, 1188, 898)	(0.2, 0.2)	74.67	76.48	<b>78.33</b>	77.04	<b>79.26</b>	76.48
	(0.3, 0.1)	76.70	<b>80.00</b>	77.41	76.11	<b>82.04</b>	77.41
	(0.4, 0.4)	58.37	62.78	<b>65.74</b>	64.82	<b>75.18</b>	60.56
Thyroid (5, 65, 150)	(0.2, 0.2)	80.11	<b>82.34</b>	<b>82.82</b>	81.96	78.21	82.25
	(0.3, 0.1)	72.07	<b>82.18</b>	<b>78.06</b>	71.15	74.24	76.22
	(0.4, 0.4)	72.04	70.65	<b>74.88</b>	<b>73.83</b>	70.31	73.59
Votes (5, 168, 267)	(0.2, 0.2)	67.05	68.57	<b>70.95</b>	70.00	67.62	<b>72.38</b>
	(0.3, 0.1)	66.81	68.81	<b>70.24</b>	69.52	65.72	<b>73.57</b>
	(0.4, 0.4)	57.29	59.29	59.52	<b>60.48</b>	<b>60.95</b>	60.48
Sonar (60, 97, 111)	(0.2, 0.2)	70.60	<b>72.50</b>	71.80	71.85	71.20	<b>72.85</b>
	(0.3, 0.1)	69.60	<b>73.70</b>	71.75	69.85	<b>72.45</b>	71.60
	(0.4, 0.4)	61.80	64.00	<b>64.75</b>	63.90	<b>67.35</b>	64.15
Fourclass (2, 307, 555)	(0.2, 0.2)	77.88	77.98	<b>78.95</b>	78.83	74.75	<b>80.19</b>
	(0.3, 0.1)	74.38	76.69	75.49	74.51	<b>76.73</b>	<b>77.90</b>
	(0.4, 0.4)	70.65	<b>74.90</b>	74.32	<b>74.59</b>	69.46	71.87
Svmguide3 (22, 337, 947)	(0.2, 0.2)	83.35	83.49	85.35	84.42	<b>88.14</b>	<b>86.05</b>
	(0.3, 0.1)	79.40	81.86	81.40	79.30	<b>84.65</b>	<b>83.72</b>
	(0.4, 0.4)	75.21	<b>78.14</b>	<b>78.14</b>	<b>78.14</b>	<b>80.93</b>	74.42
Splice (60, 617, 483)	(0.2, 0.2)	89.27	91.38	<b>92.07</b>	<b>92.64</b>	91.04	91.15
	(0.3, 0.1)	87.89	<b>91.61</b>	89.54	89.77	89.54	<b>91.04</b>
	(0.4, 0.4)	74.67	70.69	81.38	<b>83.10</b>	<b>89.54</b>	75.75
Average		72.73	74.85	<b>75.42</b>	74.94	<b>76.04</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{hinge}$	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRP\ell_{hinge}$	$kRRP\ell_{hinge}$	$cRRP\ell_{hinge}$
diabetes (8, 268, 500)	(0.2, 0.2)	75.66	71.23	<b>77.40</b>	76.82	73.83	<b>76.82</b>
	(0.3, 0.1)	68.65	74.42	73.31	72.53	<b>75.32</b>	<b>75.65</b>
	(0.4, 0.4)	66.31	65.06	66.88	<b>67.47</b>	<b>69.48</b>	66.30
German (20, 300, 700)	(0.2, 0.2)	71.87	71.10	<b>76.01</b>	74.45	<b>76.47</b>	73.93
	(0.3, 0.1)	61.93	73.53	<b>76.07</b>	66.24	<b>75.49</b>	71.85
	(0.4, 0.4)	68.29	62.83	<b>74.22</b>	70.00	<b>74.28</b>	66.24
Heart (13, 120, 150)	(0.2, 0.2)	69.75	69.75	<b>72.50</b>	<b>72.50</b>	71.25	71.55
	(0.3, 0.1)	67.50	69.35	<b>72.05</b>	<b>71.15</b>	69.95	70.50
	(0.4, 0.4)	61.70	<b>69.80</b>	64.55	66.35	<b>69.25</b>	65.20
Image (18, 1188, 898)	(0.2, 0.2)	78.19	80.56	<b>82.04</b>	<b>81.30</b>	80.19	81.11
	(0.3, 0.1)	72.26	<b>76.30</b>	74.08	73.70	<b>79.26</b>	75.74
	(0.4, 0.4)	67.82	65.37	<b>71.30</b>	71.11	<b>76.11</b>	65.93
Thyroid (5, 65, 150)	(0.2, 0.2)	78.22	77.58	<b>83.83</b>	83.25	64.00	<b>83.45</b>
	(0.3, 0.1)	74.15	76.56	<b>81.05</b>	72.78	59.14	<b>77.73</b>
	(0.4, 0.4)	72.83	71.77	<b>76.05</b>	75.84	63.54	<b>78.78</b>
Votes (5, 168, 267)	(0.2, 0.2)	66.81	69.76	<b>70.00</b>	<b>70.71</b>	58.81	66.91
	(0.3, 0.1)	68.72	<b>73.10</b>	71.67	71.67	67.86	<b>72.14</b>
	(0.4, 0.4)	52.52	<b>56.19</b>	<b>56.90</b>	55.95	54.29	55.71
Sonar (60, 97, 111)	(0.2, 0.2)	72.45	<b>74.40</b>	<b>74.05</b>	73.30	72.55	73.75
	(0.3, 0.1)	71.75	<b>75.85</b>	<b>73.75</b>	70.70	71.80	73.35
	(0.4, 0.4)	59.70	<b>61.45</b>	<b>61.45</b>	61.05	<b>64.75</b>	60.05
Fourclass (2, 307, 555)	(0.2, 0.2)	76.45	75.72	<b>79.69</b>	78.91	67.59	<b>80.12</b>
	(0.3, 0.1)	72.55	74.51	<b>75.88</b>	75.14	67.63	<b>75.56</b>
	(0.4, 0.4)	75.35	74.63	<b>77.82</b>	<b>77.12</b>	65.21	76.54
Svmguide3 (22, 337, 947)	(0.2, 0.2)	84.51	83.26	<b>89.54</b>	85.35	70.47	<b>88.61</b>
	(0.3, 0.1)	80.33	83.26	<b>86.51</b>	81.40	80.93	<b>85.12</b>
	(0.4, 0.4)	77.31	74.19	<b>80.70</b>	<b>80.46</b>	73.72	79.54
Splice (60, 617, 483)	(0.2, 0.2)	91.79	<b>92.64</b>	90.92	91.03	87.13	<b>93.56</b>
	(0.3, 0.1)	90.87	<b>92.99</b>	91.61	91.38	90.23	<b>92.64</b>
	(0.4, 0.4)	85.82	72.41	88.16	<b>91.26</b>	<b>88.28</b>	87.01
Average		72.73	73.65	<b>76.33</b>	75.03	71.96	<b>75.38</b>

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 ( $\rho+1, \rho-1$ )	$\ell_{log}$	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
diabetes (8, 268, 500)	(0.2, 0.2)	70.34	73.64	<b>74.03</b>	<b>75.06</b>	72.92	72.79
	(0.3, 0.1)	71.51	74.09	72.99	74.29	<b>74.48</b>	<b>74.42</b>
	(0.4, 0.4)	61.64	67.14	64.68	<b>73.31</b>	<b>72.01</b>	62.21
German (20, 300, 700)	(0.2, 0.2)	77.59	<b>79.19</b>	78.84	76.94	77.34	<b>79.65</b>
	(0.3, 0.1)	75.34	78.15	<b>78.73</b>	76.13	<b>80.11</b>	77.98
	(0.4, 0.4)	69.33	67.98	70.06	<b>74.39</b>	<b>75.14</b>	70.52
Heart (13, 120, 150)	(0.2, 0.2)	71.65	74.15	74.60	<b>75.05</b>	<b>75.85</b>	73.05
	(0.3, 0.1)	70.40	<b>73.10</b>	72.55	71.35	72.70	<b>73.55</b>
	(0.4, 0.4)	58.95	<b>70.20</b>	61.65	67.85	<b>70.45</b>	61.75
Image (18, 1188, 898)	(0.2, 0.2)	77.45	79.82	<b>81.48</b>	80.00	80.37	<b>81.30</b>
	(0.3, 0.1)	73.93	78.89	76.85	71.30	<b>85.19</b>	<b>80.37</b>
	(0.4, 0.4)	66.34	67.22	<b>70.93</b>	68.70	<b>78.52</b>	69.63
Thyroid (5, 65, 150)	(0.2, 0.2)	87.40	88.54	<b>88.83</b>	80.93	87.61	<b>89.38</b>
	(0.3, 0.1)	83.96	<b>89.79</b>	<b>87.80</b>	69.50	82.66	86.44
	(0.4, 0.4)	75.30	74.50	<b>77.59</b>	72.49	72.03	<b>76.39</b>
Votes (5, 168, 267)	(0.2, 0.2)	<b>69.67</b>	68.57	68.33	<b>72.14</b>	65.24	67.86
	(0.3, 0.1)	59.91	<b>68.33</b>	58.81	64.76	62.62	<b>65.95</b>
	(0.4, 0.4)	62.05	<b>62.38</b>	61.43	61.19	56.67	<b>62.86</b>
Sonar (60, 97, 111)	(0.2, 0.2)	75.65	<b>77.70</b>	77.65	76.15	76.60	<b>78.00</b>
	(0.3, 0.1)	71.10	<b>78.10</b>	72.85	69.75	72.90	<b>75.10</b>
	(0.4, 0.4)	61.45	63.30	63.60	60.25	<b>65.25</b>	<b>63.95</b>
Fourclass (2, 307, 555)	(0.2, 0.2)	76.56	75.56	78.09	<b>79.38</b>	75.91	<b>78.91</b>
	(0.3, 0.1)	74.26	<b>76.34</b>	75.45	75.49	75.80	<b>77.59</b>
	(0.4, 0.4)	68.16	<b>73.04</b>	71.75	<b>74.82</b>	67.67	70.31
Svmguide3 (22, 337, 947)	(0.2, 0.2)	93.35	91.86	92.09	83.72	<b>93.49</b>	<b>94.65</b>
	(0.3, 0.1)	89.63	<b>92.33</b>	90.23	80.47	91.86	<b>93.49</b>
	(0.4, 0.4)	77.54	79.30	<b>82.33</b>	76.98	<b>84.42</b>	81.17
Splice (60, 617, 483)	(0.2, 0.2)	89.84	90.23	90.46	<b>90.80</b>	90.46	<b>91.15</b>
	(0.3, 0.1)	87.54	<b>91.15</b>	<b>90.92</b>	89.43	89.54	90.11
	(0.4, 0.4)	74.32	76.55	81.04	<b>83.68</b>	<b>88.16</b>	80.00
Average		74.07	<b>76.70</b>	76.22	74.88	<b>77.13</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{hinge}$	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRRF\ell_{hinge}$	$kRRPD\ell_{hinge}$	$cRRPD\ell_{hinge}$
diabetes (8, 268, 500)	(0.2, 0.2)	71.96	72.73	73.90	73.64	<b>74.35</b>	<b>74.16</b>
	(0.3, 0.1)	70.92	<b>75.13</b>	73.51	72.73	<b>75.97</b>	73.77
	(0.4, 0.4)	64.62	65.52	66.69	<b>67.53</b>	<b>69.87</b>	59.67
German (20, 300, 700)	(0.2, 0.2)	84.42	82.20	<b>90.29</b>	85.49	83.12	<b>88.27</b>
	(0.3, 0.1)	78.98	<b>84.16</b>	<b>86.36</b>	79.65	80.87	82.26
	(0.4, 0.4)	75.28	67.11	<b>79.30</b>	76.70	77.11	<b>77.57</b>
Heart (13, 120, 150)	(0.2, 0.2)	72.90	71.95	74.35	73.50	<b>75.15</b>	<b>75.10</b>
	(0.3, 0.1)	69.30	71.65	71.25	70.30	<b>72.10</b>	<b>72.55</b>
	(0.4, 0.4)	62.70	<b>71.10</b>	65.35	69.95	<b>70.95</b>	67.25
Image (18, 1188, 898)	(0.2, 0.2)	77.08	78.70	<b>80.19</b>	78.70	<b>82.41</b>	79.63
	(0.3, 0.1)	73.00	<b>77.04</b>	76.11	71.48	<b>81.48</b>	75.56
	(0.4, 0.4)	67.63	67.59	69.82	<b>70.37</b>	<b>80.56</b>	62.41
Thyroid (5, 65, 150)	(0.2, 0.2)	87.62	89.14	<b>90.02</b>	<b>89.64</b>	87.27	89.62
	(0.3, 0.1)	85.85	<b>89.86</b>	<b>88.33</b>	87.44	85.72	87.97
	(0.4, 0.4)	81.09	76.32	<b>82.70</b>	82.70	76.08	<b>83.25</b>
Votes (5, 168, 267)	(0.2, 0.2)	74.43	76.67	<b>77.14</b>	76.19	74.29	<b>76.90</b>
	(0.3, 0.1)	64.90	<b>74.76</b>	66.19	65.24	68.57	<b>70.48</b>
	(0.4, 0.4)	54.19	<b>56.19</b>	<b>56.67</b>	<b>56.19</b>	54.76	55.00
Sonar (60, 97, 111)	(0.2, 0.2)	77.40	79.25	<b>79.60</b>	<b>79.40</b>	78.30	79.10
	(0.3, 0.1)	73.30	<b>79.95</b>	75.25	74.90	76.00	<b>76.30</b>
	(0.4, 0.4)	64.90	<b>67.45</b>	<b>67.40</b>	66.50	67.15	62.95
Fourclass (2, 307, 555)	(0.2, 0.2)	74.97	74.48	77.28	76.50	<b>77.98</b>	<b>78.09</b>
	(0.3, 0.1)	72.94	75.25	<b>75.49</b>	74.79	<b>75.99</b>	75.33
	(0.4, 0.4)	69.60	<b>74.20</b>	70.86	<b>72.37</b>	67.47	71.99
Svmguide3 (22, 337, 947)	(0.2, 0.2)	91.49	90.70	91.86	92.09	<b>92.33</b>	<b>93.49</b>
	(0.3, 0.1)	88.93	<b>91.86</b>	88.60	89.07	91.63	<b>93.02</b>
	(0.4, 0.4)	84.05	73.72	<b>86.05</b>	79.54	<b>86.74</b>	<b>86.05</b>
Splice (60, 617, 483)	(0.2, 0.2)	90.87	<b>92.87</b>	92.76	<b>92.99</b>	91.72	92.64
	(0.3, 0.1)	88.46	<b>91.26</b>	90.69	89.89	<b>90.81</b>	90.69
	(0.4, 0.4)	77.77	74.94	79.43	<b>85.63</b>	<b>89.20</b>	81.72
Average		75.72	77.12	<b>78.11</b>	77.37	<b>78.53</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{log}$	$IW\ell_{log}$	$RD\ell_{log}$	$mCRF\ell_{log}$	$kRPD\ell_{log}$	$cRPD\ell_{log}$
diabetes (8, 268, 500)	(0.2, 0.2)	73.65	75.00	75.65	75.39	<b>75.84</b>	<b>75.71</b>
	(0.3, 0.1)	71.70	<b>75.78</b>	72.92	72.99	75.71	<b>77.01</b>
	(0.4, 0.4)	70.60	68.31	73.38	<b>74.87</b>	<b>75.07</b>	72.86
German (20, 300, 700)	(0.2, 0.2)	74.24	<b>78.84</b>	76.94	77.22	<b>78.67</b>	74.91
	(0.3, 0.1)	75.40	<b>77.34</b>	76.76	76.18	<b>77.22</b>	77.17
	(0.4, 0.4)	70.54	65.03	74.80	73.59	<b>76.36</b>	<b>74.97</b>
Heart (13, 120, 150)	(0.2, 0.2)	72.45	74.10	<b>74.70</b>	73.95	<b>74.35</b>	72.65
	(0.3, 0.1)	70.65	73.10	72.35	70.40	<b>73.15</b>	<b>73.15</b>
	(0.4, 0.4)	63.00	<b>70.00</b>	66.40	69.05	<b>69.35</b>	66.10
Image (18, 1188, 898)	(0.2, 0.2)	76.15	78.89	<b>80.56</b>	77.41	<b>83.15</b>	77.04
	(0.3, 0.1)	75.96	78.89	<b>80.93</b>	77.41	<b>82.04</b>	78.33
	(0.4, 0.4)	64.85	64.81	68.71	<b>69.26</b>	<b>75.56</b>	67.78
Thyroid (5, 65, 150)	(0.2, 0.2)	80.03	81.82	<b>82.61</b>	81.63	77.82	<b>82.11</b>
	(0.3, 0.1)	70.99	<b>81.99</b>	<b>76.92</b>	70.41	73.30	75.98
	(0.4, 0.4)	72.86	72.92	<b>75.65</b>	74.28	68.37	<b>76.05</b>
Votes (5, 168, 267)	(0.2, 0.2)	68.72	70.95	<b>74.52</b>	69.76	68.81	<b>72.62</b>
	(0.3, 0.1)	69.43	<b>74.53</b>	70.95	70.48	71.67	<b>77.38</b>
	(0.4, 0.4)	55.62	56.67	59.28	56.67	<b>60.24</b>	<b>62.62</b>
Sonar (60, 97, 111)	(0.2, 0.2)	70.65	<b>72.75</b>	72.65	72.20	<b>72.80</b>	72.30
	(0.3, 0.1)	71.35	<b>75.75</b>	73.50	71.90	<b>74.20</b>	72.15
	(0.4, 0.4)	59.60	61.05	61.20	<b>62.65</b>	<b>61.80</b>	60.75
Fourclass (2, 307, 555)	(0.2, 0.2)	78.62	77.67	<b>79.49</b>	78.99	75.96	<b>80.55</b>
	(0.3, 0.1)	75.78	<b>77.90</b>	77.24	76.42	77.36	<b>78.17</b>
	(0.4, 0.4)	72.32	<b>75.26</b>	74.13	<b>76.93</b>	70.55	72.73
Svmguide3 (22, 337, 947)	(0.2, 0.2)	85.21	84.65	<b>88.60</b>	84.42	<b>88.14</b>	88.14
	(0.3, 0.1)	75.68	79.07	79.54	76.28	<b>80.00</b>	<b>82.56</b>
	(0.4, 0.4)	69.16	72.33	<b>79.53</b>	71.86	<b>78.84</b>	70.93
Splice (60, 617, 483)	(0.2, 0.2)	91.33	92.64	<b>93.33</b>	<b>93.22</b>	92.99	92.64
	(0.3, 0.1)	89.72	<b>92.07</b>	<b>92.07</b>	90.69	91.27	91.95
	(0.4, 0.4)	75.93	74.83	80.69	<b>86.78</b>	<b>88.16</b>	77.01
Average		73.07	75.16	<b>76.20</b>	75.11	<b>76.29</b>	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 ( $\rho+1, \rho-1$ )	$\ell_{hinge}$	$IW\ell_{hinge}$	$RD\ell_{hinge}$	$mCRF\ell_{hinge}$	$kRRP\ell_{hinge}$	$cRRP\ell_{hinge}$
diabetes (8, 268, 500)	(0.2, 0.2)	74.43	72.99	<b>76.04</b>	<b>76.43</b>	73.38	75.97
	(0.3, 0.1)	65.73	72.99	68.70	70.33	<b>73.25</b>	<b>74.22</b>
	(0.4, 0.4)	68.39	64.09	<b>71.56</b>	70.39	<b>70.52</b>	70.13
German (20, 300, 700)	(0.2, 0.2)	70.66	69.83	<b>74.51</b>	<b>73.81</b>	73.53	73.06
	(0.3, 0.1)	62.91	75.03	<b>77.11</b>	67.86	<b>75.66</b>	75.09
	(0.4, 0.4)	68.58	64.45	<b>70.06</b>	69.71	<b>74.91</b>	69.65
Heart (13, 120, 150)	(0.2, 0.2)	70.10	69.25	<b>72.45</b>	<b>72.05</b>	71.25	71.90
	(0.3, 0.1)	68.10	70.10	70.35	<b>71.05</b>	<b>71.80</b>	70.95
	(0.4, 0.4)	63.20	<b>70.45</b>	65.15	67.15	<b>68.95</b>	64.40
Image (18, 1188, 898)	(0.2, 0.2)	72.26	73.89	<b>76.67</b>	75.74	<b>81.11</b>	74.26
	(0.3, 0.1)	75.59	<b>79.81</b>	76.67	74.26	<b>79.63</b>	78.70
	(0.4, 0.4)	67.44	67.78	67.78	<b>69.63</b>	<b>77.59</b>	66.48
Thyroid (5, 65, 150)	(0.2, 0.2)	77.57	76.20	<b>83.73</b>	83.09	61.20	<b>83.92</b>
	(0.3, 0.1)	74.44	76.80	<b>81.65</b>	75.46	59.35	<b>78.92</b>
	(0.4, 0.4)	73.14	68.18	<b>76.13</b>	75.07	61.41	<b>77.30</b>
Votes (5, 168, 267)	(0.2, 0.2)	67.53	69.53	<b>73.33</b>	<b>71.19</b>	69.76	70.95
	(0.3, 0.1)	68.48	<b>70.95</b>	70.48	68.57	65.48	<b>71.91</b>
	(0.4, 0.4)	60.86	60.00	<b>61.91</b>	61.90	59.05	<b>62.38</b>
Sonar (60, 97, 111)	(0.2, 0.2)	73.50	75.35	<b>75.60</b>	<b>75.60</b>	71.85	74.25
	(0.3, 0.1)	71.90	<b>76.20</b>	73.65	70.20	73.20	<b>73.75</b>
	(0.4, 0.4)	58.75	60.20	60.25	61.45	<b>64.55</b>	<b>62.10</b>
Fourclass (2, 307, 555)	(0.2, 0.2)	75.90	75.53	<b>80.16</b>	79.07	63.31	<b>79.92</b>
	(0.3, 0.1)	72.75	74.75	<b>76.30</b>	<b>75.68</b>	66.30	75.56
	(0.4, 0.4)	71.77	73.54	<b>75.64</b>	<b>75.64</b>	60.23	74.09
Svmguide3 (22, 337, 947)	(0.2, 0.2)	83.12	82.33	<b>87.21</b>	84.65	75.81	<b>86.75</b>
	(0.3, 0.1)	77.30	80.00	<b>82.56</b>	79.54	77.44	<b>83.26</b>
	(0.4, 0.4)	77.54	73.26	<b>85.12</b>	79.07	77.44	<b>80.93</b>
Splice (60, 617, 483)	(0.2, 0.2)	90.41	<b>92.76</b>	92.18	91.49	89.54	<b>93.33</b>
	(0.3, 0.1)	90.18	<b>93.22</b>	90.69	90.35	89.43	<b>92.30</b>
	(0.4, 0.4)	<b>86.04</b>	76.90	83.79	<b>90.11</b>	85.98	85.17
Average		72.62	73.54	<b>75.91</b>	74.88	72.10	<b>75.72</b>