



TABLE II  
GM MEAN AND STANDARD DEVIATION RESULTS (MEAN<sub>SD</sub>) OBTAINED OVER 30 RUNS BY THE METHODOLOGIES DEVELOPED IN THE PAPER.

| Dataset              | SVM                          | OIS                    | OEFS                   | OREFS                        | OSK                          | OGK                          | OCPL                         | OPMKL                        |
|----------------------|------------------------------|------------------------|------------------------|------------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| ecoli0vs1            | 98.11 <sub>2.03</sub>        | 98.06 <sub>1.70</sub>  | 98.00 <sub>1.85</sub>  | 98.11 <sub>1.86</sub>        | 98.28 <sub>1.70</sub>        | <b>98.31<sub>2.39</sub></b>  | 97.77 <sub>2.01</sub>        | 98.17 <sub>2.06</sub>        |
| glass1               | 66.76 <sub>4.97</sub>        | 69.53 <sub>6.93</sub>  | 69.90 <sub>5.28</sub>  | 70.20 <sub>7.03</sub>        | 70.13 <sub>6.91</sub>        | 67.64 <sub>7.05</sub>        | 68.44 <sub>5.15</sub>        | <b>70.82<sub>6.22</sub></b>  |
| wisconsin            | 96.72 <sub>0.79</sub>        | 96.81 <sub>0.93</sub>  | 96.85 <sub>0.82</sub>  | 96.95 <sub>0.91</sub>        | 96.85 <sub>0.98</sub>        | <b>96.97<sub>0.80</sub></b>  | 96.85 <sub>1.08</sub>        | <b>96.97<sub>0.62</sub></b>  |
| pima                 | 69.72 <sub>4.07</sub>        | 74.02 <sub>2.61</sub>  | 74.10 <sub>2.47</sub>  | 74.11 <sub>3.29</sub>        | 74.28 <sub>3.15</sub>        | <b>75.17<sub>3.42</sub></b>  | 74.40 <sub>2.80</sub>        | 73.50 <sub>2.74</sub>        |
| yeast1               | 60.47 <sub>3.48</sub>        | 70.77 <sub>2.64</sub>  | 71.10 <sub>2.95</sub>  | 71.34 <sub>2.39</sub>        | 71.23 <sub>2.11</sub>        | 72.24 <sub>3.66</sub>        | 72.34 <sub>3.73</sub>        | <b>72.64<sub>4.14</sub></b>  |
| haberman             | 33.91 <sub>12.55</sub>       | 61.47 <sub>4.47</sub>  | 61.09 <sub>5.61</sub>  | <b>62.96<sub>5.91</sub></b>  | 61.16 <sub>3.38</sub>        | 61.31 <sub>8.33</sub>        | 62.36 <sub>5.75</sub>        | 62.38 <sub>5.08</sub>        |
| vehicle2             | 97.51 <sub>1.43</sub>        | 97.29 <sub>1.31</sub>  | 97.42 <sub>1.16</sub>  | <b>97.90<sub>1.58</sub></b>  | 85.83 <sub>14.67</sub>       | 97.57 <sub>1.17</sub>        | 97.29 <sub>1.46</sub>        | 97.48 <sub>1.36</sub>        |
| vehicle1             | 82.86 <sub>2.54</sub>        | 83.79 <sub>3.22</sub>  | 86.00 <sub>2.60</sub>  | 86.07 <sub>2.28</sub>        | 81.46 <sub>2.79</sub>        | 83.06 <sub>1.84</sub>        | <b>86.14<sub>3.35</sub></b>  | 84.43 <sub>7.27</sub>        |
| vehicle3             | 79.88 <sub>2.91</sub>        | 83.23 <sub>2.89</sub>  | 83.85 <sub>2.71</sub>  | 83.59 <sub>3.18</sub>        | 80.52 <sub>3.12</sub>        | 82.40 <sub>3.14</sub>        | <b>83.88<sub>2.81</sub></b>  | 81.36 <sub>3.59</sub>        |
| vehicle0             | 96.76 <sub>1.33</sub>        | 97.61 <sub>1.10</sub>  | 97.66 <sub>1.08</sub>  | <b>97.79<sub>1.01</sub></b>  | 97.06 <sub>1.07</sub>        | 93.13 <sub>3.90</sub>        | 97.75 <sub>0.92</sub>        | 96.91 <sub>1.17</sub>        |
| glass0123vs456       | 88.08 <sub>7.41</sub>        | 92.85 <sub>4.86</sub>  | 93.26 <sub>3.77</sub>  | <b>94.23<sub>2.56</sub></b>  | 87.82 <sub>5.92</sub>        | 89.81 <sub>5.46</sub>        | 94.09 <sub>3.54</sub>        | 92.03 <sub>3.52</sub>        |
| ecoli1               | 86.64 <sub>5.85</sub>        | 87.55 <sub>4.67</sub>  | 88.06 <sub>4.29</sub>  | 87.86 <sub>5.42</sub>        | 87.63 <sub>5.11</sub>        | 88.08 <sub>4.28</sub>        | <b>89.06<sub>5.56</sub></b>  | 88.80 <sub>6.02</sub>        |
| newthyroid1          | 97.91 <sub>2.78</sub>        | 99.25 <sub>1.03</sub>  | 99.16 <sub>1.09</sub>  | 99.35 <sub>0.80</sub>        | 99.25 <sub>0.88</sub>        | 97.91 <sub>2.90</sub>        | <b>99.44<sub>0.77</sub></b>  | <b>99.44<sub>0.77</sub></b>  |
| newthyroid2          | 96.02 <sub>3.80</sub>        | 99.11 <sub>0.78</sub>  | 99.10 <sub>1.46</sub>  | 98.60 <sub>2.18</sub>        | 99.16 <sub>1.26</sub>        | <b>99.44<sub>0.77</sub></b>  | 98.24 <sub>3.22</sub>        | 96.27 <sub>3.81</sub>        |
| ecoli2               | 90.56 <sub>3.44</sub>        | 93.84 <sub>3.84</sub>  | 94.09 <sub>3.85</sub>  | 93.67 <sub>4.02</sub>        | 93.56 <sub>3.53</sub>        | 91.59 <sub>4.49</sub>        | <b>94.25<sub>4.18</sub></b>  | 93.41 <sub>3.14</sub>        |
| yeast3               | 85.07 <sub>2.91</sub>        | 91.70 <sub>1.96</sub>  | 92.40 <sub>1.91</sub>  | 91.63 <sub>2.48</sub>        | 91.14 <sub>2.52</sub>        | 90.97 <sub>2.16</sub>        | 91.57 <sub>2.47</sub>        | <b>92.44<sub>2.20</sub></b>  |
| ecoli3               | 74.62 <sub>9.16</sub>        | 86.72 <sub>5.66</sub>  | 86.98 <sub>5.60</sub>  | 86.55 <sub>4.87</sub>        | 86.92 <sub>4.58</sub>        | <b>88.79<sub>3.94</sub></b>  | 87.27 <sub>5.22</sub>        | 87.28 <sub>5.91</sub>        |
| ecoli034vs5          | 83.74 <sub>16.20</sub>       | 89.17 <sub>11.34</sub> | 88.38 <sub>11.35</sub> | 87.78 <sub>11.11</sub>       | 88.58 <sub>11.71</sub>       | <b>89.45<sub>11.72</sub></b> | 89.14 <sub>11.41</sub>       | 89.23 <sub>11.49</sub>       |
| yeast0359vs78        | 48.98 <sub>16.56</sub>       | 74.00 <sub>4.55</sub>  | 73.67 <sub>4.84</sub>  | 72.88 <sub>7.00</sub>        | 40.21 <sub>17.39</sub>       | <b>75.86<sub>6.32</sub></b>  | 74.01 <sub>5.58</sub>        | 72.27 <sub>7.75</sub>        |
| ecoli046vs5          | 82.90 <sub>17.98</sub>       | 89.12 <sub>11.38</sub> | 89.20 <sub>11.53</sub> | 87.16 <sub>12.37</sub>       | 89.55 <sub>11.79</sub>       | <b>89.69<sub>12.81</sub></b> | <b>89.69<sub>12.85</sub></b> | 86.76 <sub>14.10</sub>       |
| yeast0256vs3789      | 70.20 <sub>4.49</sub>        | 78.81 <sub>5.47</sub>  | 79.93 <sub>5.15</sub>  | 79.88 <sub>5.29</sub>        | 79.64 <sub>5.47</sub>        | 80.15 <sub>5.06</sub>        | 80.02 <sub>5.26</sub>        | <b>80.17<sub>4.90</sub></b>  |
| yeast02579vs368      | 88.50 <sub>4.73</sub>        | 89.59 <sub>3.40</sub>  | 90.06 <sub>3.33</sub>  | 89.60 <sub>3.99</sub>        | 89.70 <sub>4.43</sub>        | <b>90.33<sub>3.88</sub></b>  | 90.20 <sub>3.92</sub>        | 90.09 <sub>3.64</sub>        |
| ecoli0347vs56        | 87.05 <sub>13.42</sub>       | 88.45 <sub>13.99</sub> | 89.04 <sub>12.48</sub> | 90.21 <sub>8.07</sub>        | 90.44 <sub>8.95</sub>        | <b>91.27<sub>9.80</sub></b>  | 90.56 <sub>8.19</sub>        | 87.57 <sub>12.60</sub>       |
| ecoli01vs235         | 78.79 <sub>20.56</sub>       | 84.28 <sub>15.35</sub> | 84.40 <sub>18.07</sub> | 83.62 <sub>17.77</sub>       | 87.66 <sub>15.39</sub>       | <b>89.84<sub>11.98</sub></b> | 88.43 <sub>10.52</sub>       | 88.71 <sub>11.83</sub>       |
| yeast2vs4            | 80.51 <sub>6.42</sub>        | 86.21 <sub>4.62</sub>  | 86.74 <sub>4.68</sub>  | 87.01 <sub>5.32</sub>        | 86.86 <sub>5.82</sub>        | <b>89.56<sub>4.87</sub></b>  | 87.97 <sub>4.44</sub>        | 88.06 <sub>2.74</sub>        |
| ecoli067vs35         | 76.57 <sub>39.62</sub>       | 77.11 <sub>31.43</sub> | 79.36 <sub>31.74</sub> | 80.27 <sub>28.84</sub>       | 80.20 <sub>31.49</sub>       | <b>85.85<sub>23.45</sub></b> | 79.71 <sub>20.50</sub>       | 82.20 <sub>21.87</sub>       |
| glass04vs5           | 91.59 <sub>20.50</sub>       | 89.70 <sub>30.42</sub> | 99.48 <sub>1.46</sub>  | 99.17 <sub>1.84</sub>        | 98.74 <sub>2.15</sub>        | <b>100.00<sub>0.00</sub></b> | 98.71 <sub>2.89</sub>        | 99.40 <sub>1.34</sub>        |
| ecoli0267vs35        | 78.70 <sub>15.88</sub>       | 79.87 <sub>13.73</sub> | 86.23 <sub>11.09</sub> | 83.91 <sub>11.06</sub>       | 86.20 <sub>11.16</sub>       | 86.38 <sub>12.18</sub>       | 81.23 <sub>13.18</sub>       | <b>86.49<sub>11.71</sub></b> |
| yeast05679vs4        | 61.62 <sub>12.41</sub>       | 76.06 <sub>7.78</sub>  | 76.29 <sub>8.26</sub>  | 75.33 <sub>8.68</sub>        | 76.21 <sub>8.76</sub>        | <b>78.10<sub>7.64</sub></b>  | 76.40 <sub>9.27</sub>        | 77.59 <sub>6.77</sub>        |
| ecoli067vs5          | 86.44 <sub>8.87</sub>        | 86.41 <sub>6.28</sub>  | 85.52 <sub>6.60</sub>  | 85.69 <sub>6.96</sub>        | 85.43 <sub>7.15</sub>        | <b>89.37<sub>6.86</sub></b>  | 85.41 <sub>6.15</sub>        | 86.09 <sub>6.44</sub>        |
| glass016vs2          | 43.50 <sub>28.65</sub>       | 74.27 <sub>11.75</sub> | 71.86 <sub>12.25</sub> | 75.78 <sub>11.82</sub>       | 31.11 <sub>26.05</sub>       | 74.85 <sub>11.52</sub>       | <b>81.28<sub>10.17</sub></b> | 73.13 <sub>12.32</sub>       |
| ecoli01vs5           | 85.57 <sub>12.50</sub>       | 86.71 <sub>10.47</sub> | 89.01 <sub>8.15</sub>  | 88.48 <sub>8.75</sub>        | 86.70 <sub>10.52</sub>       | 87.35 <sub>12.24</sub>       | 89.83 <sub>7.45</sub>        | <b>90.73<sub>8.09</sub></b>  |
| led7digit02456789vs1 | <b>89.84<sub>8.01</sub></b>  | 88.24 <sub>5.91</sub>  | 72.57 <sub>32.26</sub> | 88.12 <sub>6.50</sub>        | 69.33 <sub>35.91</sub>       | 84.52 <sub>12.60</sub>       | 85.46 <sub>17.22</sub>       | 86.67 <sub>9.37</sub>        |
| glass06vs5           | <b>100.00<sub>0.00</sub></b> | 99.31 <sub>1.91</sub>  | 97.08 <sub>7.53</sub>  | 99.32 <sub>1.49</sub>        | 69.61 <sub>36.69</sub>       | 98.99 <sub>1.39</sub>        | 99.10 <sub>2.54</sub>        | 99.83 <sub>0.64</sub>        |
| glass0146vs2         | 32.03 <sub>33.98</sub>       | 65.39 <sub>28.08</sub> | 71.47 <sub>17.32</sub> | 73.39 <sub>18.04</sub>       | 31.05 <sub>25.93</sub>       | <b>73.55<sub>14.28</sub></b> | 72.94 <sub>17.10</sub>       | 73.03 <sub>15.02</sub>       |
| glass2               | 28.77 <sub>32.41</sub>       | 75.99 <sub>13.19</sub> | 78.81 <sub>14.39</sub> | 78.56 <sub>12.61</sub>       | 29.58 <sub>28.34</sub>       | <b>85.56<sub>10.57</sub></b> | 79.33 <sub>14.05</sub>       | 79.74 <sub>16.77</sub>       |
| ecoli0147vs56        | 87.85 <sub>9.35</sub>        | 90.07 <sub>5.15</sub>  | 89.94 <sub>5.49</sub>  | <b>91.03<sub>3.99</sub></b>  | 90.94 <sub>4.99</sub>        | 90.17 <sub>4.45</sub>        | 90.07 <sub>5.90</sub>        | 88.21 <sub>6.92</sub>        |
| cleveland0vs4        | 59.81 <sub>38.10</sub>       | 79.12 <sub>29.82</sub> | 81.48 <sub>29.26</sub> | 84.63 <sub>16.37</sub>       | 88.15 <sub>17.68</sub>       | 89.13 <sub>18.11</sub>       | 90.29 <sub>6.45</sub>        | <b>91.64<sub>7.34</sub></b>  |
| ecoli0146vs5         | 81.12 <sub>19.29</sub>       | 88.70 <sub>13.30</sub> | 89.72 <sub>11.77</sub> | 88.59 <sub>10.46</sub>       | <b>89.73<sub>11.36</sub></b> | 87.56 <sub>10.26</sub>       | 87.11 <sub>14.07</sub>       | 87.55 <sub>14.70</sub>       |
| shuttle0vs4          | 99.54 <sub>0.79</sub>        | 99.94 <sub>0.07</sub>  | 99.95 <sub>0.07</sub>  | 99.96 <sub>0.07</sub>        | 99.99 <sub>0.04</sub>        | <b>100.00<sub>0.00</sub></b> | 99.94 <sub>0.07</sub>        | 99.97 <sub>0.07</sub>        |
| yeast1vs7            | 48.29 <sub>23.18</sub>       | 74.62 <sub>6.32</sub>  | 76.21 <sub>5.05</sub>  | 74.89 <sub>6.08</sub>        | 61.02 <sub>31.48</sub>       | 74.51 <sub>5.26</sub>        | 76.31 <sub>5.73</sub>        | <b>76.39<sub>5.74</sub></b>  |
| ecoli4               | 89.40 <sub>5.45</sub>        | 91.87 <sub>6.75</sub>  | 91.92 <sub>6.78</sub>  | 92.08 <sub>6.90</sub>        | 92.81 <sub>5.88</sub>        | 92.23 <sub>7.99</sub>        | 92.81 <sub>6.17</sub>        | <b>93.85<sub>6.13</sub></b>  |
| pageblocks13vs4      | 93.89 <sub>6.76</sub>        | 97.39 <sub>3.32</sub>  | 98.11 <sub>3.05</sub>  | 98.41 <sub>3.08</sub>        | 84.75 <sub>18.44</sub>       | 97.02 <sub>1.39</sub>        | 98.41 <sub>1.10</sub>        | <b>99.66<sub>0.51</sub></b>  |
| abalone9vs18         | 63.77 <sub>17.37</sub>       | 88.95 <sub>3.63</sub>  | 89.90 <sub>3.33</sub>  | <b>91.50<sub>2.55</sub></b>  | 52.44 <sub>44.27</sub>       | 89.29 <sub>0.85</sub>        | 90.49 <sub>4.90</sub>        | 90.51 <sub>5.49</sub>        |
| glass016vs5          | 76.54 <sub>39.94</sub>       | 83.36 <sub>34.01</sub> | 91.00 <sub>25.30</sub> | 88.84 <sub>30.15</sub>       | 66.18 <sub>39.10</sub>       | 88.08 <sub>21.91</sub>       | <b>92.39<sub>12.32</sub></b> | 79.28 <sub>40.33</sub>       |
| yeast2vs8            | 72.83 <sub>13.62</sub>       | 72.28 <sub>13.13</sub> | 68.45 <sub>21.87</sub> | <b>75.86<sub>12.41</sub></b> | 72.20 <sub>14.47</sub>       | 72.35 <sub>14.47</sub>       | 71.01 <sub>18.53</sub>       | 72.71 <sub>13.53</sub>       |
| shuttle2vs4          | 94.14 <sub>11.92</sub>       | 92.69 <sub>12.10</sub> | 93.26 <sub>11.60</sub> | 94.30 <sub>10.85</sub>       | <b>98.82<sub>2.19</sub></b>  | 94.49 <sub>7.80</sub>        | 93.11 <sub>11.50</sub>       | 94.02 <sub>10.72</sub>       |
| yeast4               | 52.40 <sub>10.54</sub>       | 80.34 <sub>8.23</sub>  | 82.48 <sub>2.87</sub>  | 79.60 <sub>8.52</sub>        | 82.92 <sub>0.46</sub>        | <b>84.08<sub>4.22</sub></b>  | 81.86 <sub>3.54</sub>        | 82.82 <sub>1.11</sub>        |
| yeast5               | 83.93 <sub>4.65</sub>        | 96.80 <sub>1.37</sub>  | 96.44 <sub>3.06</sub>  | 96.69 <sub>3.01</sub>        | 96.82 <sub>0.61</sub>        | 97.51 <sub>0.78</sub>        | 96.57 <sub>3.65</sub>        | <b>97.62<sub>0.85</sub></b>  |
| yeast6               | 63.38 <sub>17.84</sub>       | 87.77 <sub>6.04</sub>  | 88.10 <sub>6.32</sub>  | 87.94 <sub>6.09</sub>        | 86.73 <sub>7.40</sub>        | 87.15 <sub>6.71</sub>        | 88.21 <sub>6.67</sub>        | <b>88.42<sub>7.57</sub></b>  |