

# Online Supplementary Material

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## I. FURTHER COMPARISONS WITH P-MEDA

Fig. 1: Comparison between G-MEDA, P-MEDA<sub>10</sub>, and P-MEDA<sub>50</sub>

Datasets	Cases	Accuracy			Computation time (in seconds)		
		P-MEDA <sub>10</sub>	P-MEDA <sub>50</sub>	G-MEDA	P-MEDA <sub>10</sub>	P-MEDA <sub>50</sub>	G-MEDA
Amazon Review	B → D	70.15	69.63	<b>75.29</b>	454.60	2484.09	<b>149.38</b>
	B → C	73.31	72.17	<b>76.35</b>	460.16	2317.18	<b>142.12</b>
	B → K	72.82	74.83	<b>78.44</b>	542.41	2145.69	<b>135.39</b>
	D → B	65.35	66.38	<b>71.05</b>	542.54	2416.62	<b>125.39</b>
	D → E	73.83	71.07	<b>76.74</b>	491.86	1965.85	<b>128.58</b>
	D → K	75.35	74.83	<b>78.45</b>	527.65	2531.54	<b>128.46</b>
	E → B	<b>68.57</b>	63.86	67.35	479.95	2552.33	<b>124.05</b>
	E → D	68.96	68.82	<b>72.14</b>	511.27	2244.03	<b>126.47</b>
	E → K	80.37	80.95	<b>83.14</b>	531.58	2275.77	<b>128.50</b>
	K → B	66.56	62.78	<b>67.81</b>	520.81	2262.10	<b>123.25</b>
	K → D	66.64	68.62	<b>72.34</b>	488.24	4871.57	<b>117.25</b>
	K → E	77.04	77.03	<b>78.62</b>	551.96	2300.74	<b>120.26</b>
Office+Caltech10	A → C	43.28	43.29	<b>47.17</b>	205.22	651.29	<b>55.64</b>
	A → D	46.67	<b>47.07</b>	45.73	94.70	170.18	<b>9.54</b>
	A → W	47.60	46.84	<b>49.41</b>	114.14	255.57	<b>12.06</b>
	C → A	55.82	55.68	<b>57.64</b>	252.25	695.05	<b>44.04</b>
	C → D	<b>58.66</b>	58.60	54.76	139.04	313.42	<b>12.58</b>
	C → W	<b>56.75</b>	56.72	53.13	161.69	455.32	<b>15.86</b>
	D → W	84.14	84.02	<b>90.88</b>	7.29	13.79	<b>3.14</b>
	D → A	40.08	39.12	<b>43.52</b>	25.13	210.35	<b>20.25</b>
	D → C	35.85	<b>36.07</b>	33.17	49.44	283.71	<b>12.68</b>
	W → A	42.07	41.76	<b>42.57</b>	39.60	248.15	<b>12.23</b>
	W → C	<b>34.21</b>	33.66	31.01	59.21	268.58	<b>15.37</b>
	W → D	85.73	84.90	<b>91.23</b>	11.10	26.07	<b>2.91</b>
Office-31	A → D	85.74	85.74	<b>87.65</b>	5706.80	8191.02	<b>172.94</b>
	A → W	86.34	86.36	<b>87.47</b>	5957.05	7831.20	<b>208.23</b>
	D → A	<b>72.51</b>	72.50	71.40	792.03	2697.28	<b>197.06</b>
	D → W	96.73	96.73	<b>97.38</b>	261.08	456.42	<b>33.26</b>
	W → A	72.90	<b>73.34</b>	72.56	1124.53	3506.38	<b>242.42</b>
	W → D	99.00	99.00	<b>99.70</b>	403.20	605.89	<b>38.41</b>

In this section, G-MEDA is compared with P-MEDA<sub>10</sub> and P-MEDA<sub>50</sub> — two versions of P-MEDA with different population sizes. Particularly, P-MEDA<sub>10</sub> stands for P-MEDA with a population size of 10 which is the standard setting for P-MEDA, and P-MEDA<sub>50</sub> stands for P-MEDA with a population size of 50 which is equal to the population size of G-MEDA. Following the original paper of P-MEDA, we use 10 different classifiers to initialize the population of P-MEDA<sub>10</sub>. However, since the population size of P-MEDA<sub>50</sub> is large, 10 different classifiers are used to initialize 10 population members, and the remaining 40 members are randomly initialized.

The comparison is shown in Table 1, where the highest accuracy and the lowest computation time are marked in bold. It can be seen that on 22 out of the 30 cases, G-

MEDA achieves the best classification accuracy. The main reason is that P-MEDA evolves ensemble classifiers by using a set of good classifiers to well initialize its population. If its population size is large, some population members need to be randomly initialized, which likely results in a high proportion of bad classifiers in the obtained ensemble classifiers. As a consequence, the performance of P-MEDA is slightly deteriorated in some cases. In contrast, G-MEDA does not rely on any classifiers to initialize its population, and therefore its population size can be freely increased if necessary. In terms of computation time, G-MEDA is the most efficient algorithm on all cases. The experiment results show that G-MEDA is more effective and efficient than P-MEDA.