

Table 3: Kappa Values Comparison for Adaptive Random Forest (ARF) with Global and Local Strategies

Dataset	ARF	Global ( $\delta=0.1$ )	Local ( $\delta=0.4$ )
Ozone	17.04	17.42 $\uparrow$	18.81 $\uparrow$
census	45.61	46.19 $\uparrow$	48.18 $\uparrow$
covtypeNorm	91.48	91.54 $\uparrow$	91.70 $\uparrow$
GMSC	17.20	17.23 $\uparrow$	18.94 $\uparrow$
airlines	31.59	31.28 $\downarrow$	31.13 $\downarrow$
elecNormNew	80.78	80.73 $\downarrow$	80.97 $\uparrow$
kddcup99	99.75	99.80 $\uparrow$	99.81 $\uparrow$
poker-lsn	79.45	79.77 $\uparrow$	80.91 $\uparrow$
connect-4	49.46	49.96 $\uparrow$	50.01 $\uparrow$
NOAA	48.04	47.63 $\downarrow$	47.77 $\downarrow$
Nomao	93.19	93.19	93.19
Outdoor	63.41	63.40 $\downarrow$	62.51 $\downarrow$
keystroke	89.08	89.64 $\uparrow$	89.86 $\uparrow$
gassensor	88.56	87.13 $\downarrow$	87.42 $\downarrow$
coil2000	1.17	1.65 $\uparrow$	1.21 $\uparrow$
letter	65.23	61.71 $\downarrow$	43.47 $\downarrow$
zoo	90.90	90.68 $\downarrow$	89.90 $\downarrow$
BankAccountFraud	-5.99	-5.32 $\uparrow$	-0.64 $\uparrow$
Rialto	69.02	68.62 $\downarrow$	68.27 $\downarrow$
Adult	53.72	53.77 $\uparrow$	53.16 $\downarrow$
LED	70.99	70.98 $\downarrow$	71.01 $\uparrow$
AGR	86.38	86.44 $\uparrow$	87.07 $\uparrow$
SEA	77.00	76.96 $\downarrow$	76.93 $\downarrow$
HYPER	71.42	71.92 $\uparrow$	72.02 $\uparrow$
SINE	99.07	99.04 $\downarrow$	99.04 $\downarrow$
WAVEFORM	78.20	78.25 $\uparrow$	78.47 $\uparrow$
RTG	92.07	91.95 $\downarrow$	90.46 $\downarrow$
RBF_f	68.68	68.20 $\downarrow$	67.52 $\downarrow$
RBF_m	83.28	83.25 $\downarrow$	83.45 $\uparrow$
LED_a	71.06	71.06	71.03 $\downarrow$
LED_g	70.13	70.15 $\uparrow$	70.09 $\downarrow$
AGR_a	75.44	75.69 $\uparrow$	74.79 $\downarrow$
AGR_g	64.57	64.93 $\uparrow$	64.74 $\uparrow$
SEA_a	78.41	78.34 $\downarrow$	78.22 $\downarrow$
SEA_g	77.38	77.34 $\downarrow$	77.36 $\downarrow$
WAVEFORM_g	77.83	77.83	77.97 $\uparrow$
Wins	-	17	18
Draws	-	3	1
Losses	-	16	17

Table 4: Kappa Values Comparison for Adaptive Random Tree Ensemble (ARTE) with Global and Local Strategies

Dataset	ARTE	Global ( $\delta=0.1$ )	Local ( $\delta=0.4$ )
Ozone	15.93	18.91 $\uparrow$	19.06 $\uparrow$
census	48.03	48.31 $\uparrow$	49.95 $\uparrow$
covtypeNorm	92.39	92.41 $\uparrow$	92.55 $\uparrow$
GMSC	16.49	16.95 $\uparrow$	18.01 $\uparrow$
airlines	25.42	25.17 $\downarrow$	25.22 $\downarrow$
elecNormNew	81.13	80.94 $\downarrow$	81.32 $\uparrow$
kddcup99	99.82	99.82	99.83 $\uparrow$
poker-lsn	77.26	77.12 $\downarrow$	75.60 $\downarrow$
connect-4	50.21	50.39 $\uparrow$	50.80 $\uparrow$
NOAA	48.03	48.41 $\uparrow$	48.75 $\uparrow$
Nomao	93.47	93.56 $\uparrow$	93.56 $\uparrow$
Outdoor	73.51	72.42 $\downarrow$	72.67 $\downarrow$
keystroke	92.33	91.75 $\downarrow$	91.91 $\downarrow$
gassensor	94.60	94.61 $\uparrow$	94.78 $\uparrow$
coil2000	0.95	1.30 $\uparrow$	1.50 $\uparrow$
letter	82.84	82.48 $\downarrow$	82.90 $\uparrow$
zoo	82.13	81.57 $\downarrow$	82.71 $\uparrow$
BankAccountFraud	0.00	0.00	-0.66 $\downarrow$
Rialto	78.26	77.51 $\downarrow$	77.45 $\downarrow$
Adult	52.66	52.80 $\uparrow$	51.57 $\downarrow$
LED	71.02	47.33 $\downarrow$	71.03 $\uparrow$
AGR	83.78	56.10 $\downarrow$	85.59 $\uparrow$
SEA	77.42	77.41 $\downarrow$	77.41 $\downarrow$
HYPER	73.80	74.12 $\uparrow$	74.75 $\uparrow$
SINE	99.75	99.75	99.76 $\uparrow$
WAVEFORM	78.88	78.87 $\downarrow$	78.97 $\uparrow$
RTG	86.15	86.34 $\uparrow$	86.42 $\uparrow$
RBF_f	73.23	73.00 $\downarrow$	72.93 $\downarrow$
RBF_m	83.91	83.93 $\uparrow$	84.31 $\uparrow$
LED_a	70.97	71.02 $\uparrow$	71.03 $\uparrow$
LED_g	69.97	69.98 $\uparrow$	69.92 $\downarrow$
AGR_a	59.32	59.58 $\uparrow$	61.25 $\uparrow$
AGR_g	50.92	51.47 $\uparrow$	53.57 $\uparrow$
SEA_a	78.99	78.97 $\downarrow$	78.95 $\downarrow$
SEA_g	78.10	78.08 $\downarrow$	78.08 $\downarrow$
WAVEFORM_g	78.50	78.50	78.61 $\uparrow$
Wins	-	17	24
Draws	-	4	0
Losses	-	15	12

Table 5: Kappa Values Comparison for Leveraging Bagging (LB) with Global and Local Strategies

Dataset	LB	Global ( $\delta=0.1$ )	Local ( $\delta=0.4$ )
Adult	54.54	54.72 $\uparrow$	55.06 $\uparrow$
airlines	24.96	24.75 $\downarrow$	24.75 $\downarrow$
BankAccountFraud	0.11	0.07 $\downarrow$	0.04 $\downarrow$
census	41.74	42.31 $\uparrow$	48.01 $\uparrow$
coil2000	2.02	1.93 $\downarrow$	0.94 $\downarrow$
connect-4	52.21	52.48 $\uparrow$	51.14 $\downarrow$
covtypeNorm	89.32	89.31 $\downarrow$	86.68 $\downarrow$
elecNormNew	77.65	77.41 $\downarrow$	80.21 $\uparrow$
gassensor	77.11	75.75 $\downarrow$	81.26 $\uparrow$
GMSC	15.28	16.97 $\uparrow$	18.45 $\uparrow$
kddcup99	99.67	99.66 $\downarrow$	99.68 $\uparrow$
keystroke	83.25	82.74 $\downarrow$	83.19 $\downarrow$
letter	64.53	64.60 $\uparrow$	60.51 $\downarrow$
NOAA	46.70	45.61 $\downarrow$	45.94 $\downarrow$
Nomao	90.93	90.54 $\downarrow$	91.45 $\uparrow$
Outdoor	56.56	56.94 $\uparrow$	60.35 $\uparrow$
Ozone	21.96	25.79 $\uparrow$	22.87 $\uparrow$
poker-lsn	91.87	90.84 $\downarrow$	67.53 $\downarrow$
Rialto	56.74	56.39 $\downarrow$	55.52 $\downarrow$
zoo	87.27	87.12 $\downarrow$	86.97 $\downarrow$
AGR	88.20	88.18 $\downarrow$	88.07 $\downarrow$
AGR_a	78.71	79.08 $\uparrow$	79.00 $\uparrow$
AGR_g	72.13	72.28 $\uparrow$	64.01 $\downarrow$
HYPER	75.10	75.51 $\uparrow$	77.51 $\uparrow$
LED	71.04	71.04	71.07 $\uparrow$
LED_a	70.97	71.07 $\uparrow$	71.20 $\uparrow$
LED_g	70.24	70.24	70.17 $\downarrow$
RBF_f	47.12	46.51 $\downarrow$	40.98 $\downarrow$
RBF_m	80.57	80.71 $\uparrow$	79.70 $\downarrow$
RTG	95.59	95.49 $\downarrow$	95.20 $\downarrow$
SEA	77.40	77.42 $\uparrow$	77.40
SEA_a	76.62	76.77 $\uparrow$	78.56 $\uparrow$
SEA_g	77.20	77.30 $\uparrow$	77.78 $\uparrow$
SINE	99.71	99.72 $\uparrow$	99.78 $\uparrow$
WAVEFORM	78.96	79.02 $\uparrow$	79.15 $\uparrow$
WAVEFORM_g	78.74	78.75 $\uparrow$	78.97 $\uparrow$
Wins	-	18	19
Draws	-	2	1
Losses	-	19	15

Table 6: Kappa Values Comparison for Streaming Random Patches (SRP) with Global and Local Strategies

Dataset	SRP	Global ( $\delta=0.1$ )	Local ( $\delta=0.4$ )
Ozone	13.81	14.38 $\uparrow$	19.88 $\uparrow$
census	43.60	44.30 $\uparrow$	47.34 $\uparrow$
covtypeNorm	92.51	92.43 $\downarrow$	92.57 $\uparrow$
GMSC	9.79	10.65 $\uparrow$	11.64 $\uparrow$
airlines	35.11	34.95 $\downarrow$	35.12 $\uparrow$
elecNormNew	79.13	78.53 $\downarrow$	78.68 $\downarrow$
kddcup99	99.81	99.81	99.82 $\uparrow$
poker-lsn	81.40	81.45 $\uparrow$	82.09 $\uparrow$
connect-4	50.87	51.57 $\uparrow$	51.84 $\uparrow$
NOAA	47.04	48.25 $\uparrow$	48.41 $\uparrow$
Nomao	93.58	93.44 $\downarrow$	93.42 $\downarrow$
Outdoor	67.66	67.73 $\uparrow$	67.81 $\uparrow$
keystroke	92.91	92.55 $\downarrow$	92.88 $\downarrow$
gassensor	91.87	91.96 $\uparrow$	91.18 $\downarrow$
coil2000	1.90	1.86 $\downarrow$	1.58 $\downarrow$
letter	80.67	80.42 $\downarrow$	77.52 $\downarrow$
zoo	93.58	93.64 $\uparrow$	93.60 $\uparrow$
BankAccountFraud	0.00	0.00	-1.99 $\downarrow$
Rialto	77.78	77.51 $\downarrow$	77.07 $\downarrow$
Adult	56.55	56.89 $\uparrow$	55.62 $\downarrow$
LED	71.06	71.04 $\downarrow$	71.06
AGR	87.83	87.68 $\downarrow$	87.99 $\uparrow$
SEA	77.21	77.18 $\downarrow$	77.16 $\downarrow$
HYPER	70.97	71.30 $\uparrow$	70.68 $\downarrow$
SINE	99.49	99.48 $\downarrow$	99.49
WAVEFORM	78.74	78.74	78.74
RTG	82.94	84.17 $\uparrow$	79.32 $\downarrow$
RBF_f	68.84	68.63 $\downarrow$	69.43 $\uparrow$
RBF_m	81.76	81.70 $\downarrow$	81.81 $\uparrow$
LED_a	71.14	71.14	71.15 $\uparrow$
LED_g	70.26	70.26	70.26
AGR_a	85.37	85.76 $\uparrow$	85.99 $\uparrow$
AGR_g	79.05	79.45 $\uparrow$	79.41 $\uparrow$
SEA_a	77.07	77.12 $\uparrow$	76.42 $\downarrow$
SEA_g	73.66	73.95 $\uparrow$	73.62 $\downarrow$
WAVEFORM_g	78.21	78.23 $\uparrow$	78.24 $\uparrow$
Wins	-	17	18
Draws	-	5	4
Losses	-	14	14

Table 7: Kappa performance of ARF, ARTE, LB, and SRP with and without local instance selection. Highest Kappa values per dataset are in bold.

Dataset	ARF	ARF $\delta = 0.3$	ARTE	ARTE $\delta = 0.7$	LB	LB $\delta = 0.4$	SRP	SRP $\delta = 0.4$
Adult	53.72	53.35	52.66	49.19	54.54	55.06	<b>56.55</b>	55.62
Airlines	31.59	31.31	25.42	24.23	24.96	24.75	35.11	<b>35.12</b>
BankFraud	-5.99	-1.33	0.00	0.03	<b>0.11</b>	0.04	0.00	-1.99
Census	45.61	47.37	48.03	<b>52.67</b>	41.74	48.01	43.60	47.34
Coil2000	1.17	1.26	0.95	1.63	<b>2.02</b>	0.94	1.90	1.58
Connect-4	49.46	49.93	50.21	<b>52.41</b>	52.21	51.14	50.87	51.84
CovType	91.48	91.61	92.39	<b>92.70</b>	89.32	86.68	92.51	92.57
Electricity	80.78	80.89	81.13	<b>81.73</b>	77.65	80.21	79.13	78.68
Gassensor	88.56	87.99	<b>94.60</b>	94.45	77.11	81.26	91.87	91.18
GMSC	17.20	18.55	16.49	<b>20.72</b>	15.28	18.45	9.79	11.64
Kddcup99	99.75	99.79	99.82	<b>99.83</b>	99.67	99.68	99.81	99.82
Keystroke	89.08	89.75	92.33	91.66	83.25	83.19	<b>92.91</b>	92.88
Letter	65.23	47.45	82.84	<b>83.87</b>	64.53	60.51	80.67	77.52
NOAA	48.04	47.89	48.03	<b>49.15</b>	46.70	45.94	47.04	48.41
Nomao	93.19	93.25	93.47	93.51	90.93	91.45	<b>93.58</b>	93.42
Outdoor	63.41	62.58	<b>73.51</b>	72.53	56.56	60.35	67.66	67.81
Ozone	17.04	16.75	15.93	<b>25.54</b>	21.96	22.87	13.81	19.88
Poker-lsn	79.45	80.44	77.26	73.90	<b>91.87</b>	67.53	81.40	82.09
Rialto	69.02	68.49	<b>78.26</b>	76.75	56.74	55.52	77.78	77.07
Zoo	90.90	90.26	82.13	83.72	87.27	86.97	93.58	<b>93.60</b>
Real avg rank	5.20	5.10	4.00	<b>2.95</b>	5.55	5.90	3.75	3.50
AGR	86.38	86.97	83.78	86.06	<b>88.20</b>	88.07	87.83	87.99
AGR <sub>a</sub>	75.44	74.99	59.32	62.05	78.71	79.00	85.37	<b>85.99</b>
AGR <sub>g</sub>	64.57	64.96	50.92	53.81	72.13	64.01	79.05	<b>79.41</b>
HYPER	71.42	71.79	73.80	75.75	75.10	<b>77.51</b>	70.97	70.68
LED	70.99	70.99	71.02	71.04	71.04	<b>71.07</b>	71.06	71.06
LED <sub>a</sub>	71.06	71.07	70.97	71.03	70.97	<b>71.20</b>	71.14	71.15
LED <sub>g</sub>	70.13	70.12	69.97	69.93	70.24	70.17	<b>70.26</b>	<b>70.26</b>
RBF <sub>f</sub>	68.68	67.90	<b>73.23</b>	71.29	47.12	40.98	68.84	69.43
RBF <sub>m</sub>	83.28	83.43	83.91	<b>84.63</b>	80.57	79.70	81.76	81.81
RTG	92.07	90.91	86.15	86.58	<b>95.59</b>	95.20	82.94	79.32
SEA	77.00	76.97	<b>77.42</b>	77.35	77.40	77.40	77.21	77.16
SEA <sub>a</sub>	78.41	78.31	<b>78.99</b>	78.83	76.62	78.56	77.07	76.42
SEA <sub>g</sub>	77.38	77.41	<b>78.10</b>	77.99	77.20	77.78	73.66	73.62
SINE	99.07	99.06	99.75	99.75	99.71	<b>99.78</b>	99.49	99.49
WAVEFORM	78.20	78.38	78.88	78.98	78.96	<b>79.15</b>	78.74	78.74
WAVEFORM <sub>G</sub>	77.83	77.90	78.50	78.54	78.74	<b>78.97</b>	78.21	78.24
Synt. avg rank	5.69	5.56	4.38	4.06	4.00	<b>3.00</b>	4.56	4.63
Overall avg rank	5.42	5.31	4.17	<b>3.44</b>	4.86	4.61	4.11	4.00