Results for MLIC for different parameter configurations

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Table 1: Table for DNF rules with k=1 and $\lambda = 1$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	DNF	1	1.0	2000	0.965	0.965	3.0
Twitter	DNF	1	1.0	2000	0.94	0.938	8.0
adult	DNF	1	1.0	2000	0.778	0.732	43.0
credit-card	DNF	1	1.0	2000	0.779	0.779	15.0
ionosphere	DNF	1	1.0	16.05	0.933	0.914	5.5
parkinsons	DNF	1	1.0	9.98	0.883	0.842	1.0
pima	DNF	1	1.0	2000	0.696	0.691	4.0
transfusion	DNF	1	1.0	3.29	0.792	0.784	3.0
wdbc	DNF	1	1.0	876.96	0.944	0.929	5.0

Table 2: Table for DNF rules with k=1 and $\lambda = 5$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	DNF	1	5.0	2000	0.964	0.965	4.0
Twitter	DNF	1	5.0	2000	0.942	0.941	7.0
adult	DNF	1	5.0	2000	0.778	0.732	43.0
credit-card	DNF	1	5.0	2000	0.779	0.779	15.0
ionosphere	DNF	1	5.0	16.82	0.933	0.914	5.5
parkinsons	DNF	1	5.0	47.94	0.883	0.842	1.5
pima	DNF	1	5.0	2000	0.687	0.651	8.0
transfusion	DNF	1	5.0	11.8	0.792	0.784	3.0
wdbc	DNF	1	5.0	803.06	0.946	0.929	5.5

Table 3: Table for DNF rules with k=1 and $\lambda = 10$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	DNF	1	10.0	2000	0.965	0.965	3.5
Twitter	DNF	1	10.0	2000	0.94	0.938	8.0
adult	DNF	1	10.0	2000	0.778	0.732	43.0
credit-card	DNF	1	10.0	2000	0.779	0.779	15.0
ionosphere	DNF	1	10.0	14.79	0.933	0.914	5.5
parkinsons	DNF	1	10.0	65.63	0.883	0.842	1.5
pima	DNF	1	10.0	2000	0.685	0.684	8.0
transfusion	DNF	1	10.0	12.29	0.792	0.784	3.0
wdbc	DNF	1	10.0	777.71	0.946	0.929	5.5

Table 4: Table for DNF rules with k=2 and $\lambda = 1$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	DNF	2	1.0	2000	0.955	0.952	13.0
Twitter	DNF	2	1.0	2000	0.948	0.946	19.0
adult	DNF	2	1.0	2000	0.796	0.756	51.5
credit-card	DNF	2	1.0	2000	0.78	0.78	27.0
ionosphere	DNF	2	1.0	2000	0.971	0.9	12.5
parkinsons	DNF	2	1.0	140.75	0.962	0.895	6.0
pima	DNF	2	1.0	2000	0.75	0.75	9.5
transfusion	DNF	2	1.0	35.05	0.801	0.791	5.0
wdbc	DNF	2	1.0	2000	0.975	0.946	10.5

Table 5: Table for DNF rules with k=2 and $\lambda = 5$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	DNF	2	5.0	2000	0.955	0.952	13.0
Twitter	DNF	2	5.0	2000	0.947	0.948	20.0
adult	DNF	2	5.0	2000	0.798	0.756	56.0
credit-card	DNF	2	5.0	2000	0.78	0.779	26.5
ionosphere	DNF	2	5.0	1396.34	0.983	0.929	15.0
parkinsons	DNF	2	5.0	139.63	0.971	0.895	8.0
pima	DNF	2	5.0	2000	0.74	0.711	11.0
transfusion	DNF	2	5.0	2000	0.8	0.777	6.5
wdbc	DNF	2	5.0	2000	0.978	0.946	11.0

Table 6: Table for DNF rules with k=2 and $\lambda = 10$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	DNF	2	10.0	2000	0.955	0.955	12.0
Twitter	DNF	2	10.0	2000	0.947	0.945	21.0
adult	DNF	2	10.0	2000	0.796	0.755	53.0
credit-card	DNF	2	10.0	2000	0.78	0.779	25.0
ionosphere	DNF	2	10.0	960.3	0.983	0.943	15.0
parkinsons	DNF	2	10.0	102.18	0.968	0.921	8.0
pima	DNF	2	10.0	2000	0.74	0.704	11.0
transfusion	DNF	2	10.0	2000	0.802	0.757	7.0
wdbc	DNF	2	10.0	2000	0.978	0.946	12.0

Table 7: Table for DNF rules with k=3 and $\lambda = 1$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	DNF	3	1.0	2000	0.952	0.951	17.0
Twitter	DNF	3	1.0	2000	0.949	0.949	26.0
adult	DNF	3	1.0	2000	0.808	0.741	100.5
credit-card	DNF	3	1.0	2000	0.691	0.693	57.5
ionosphere	DNF	3	1.0	2000	0.978	0.914	20.0
parkinsons	DNF	3	1.0	2000	0.982	0.895	9.0
pima	DNF	3	1.0	2000	0.768	0.704	17.0
transfusion	DNF	3	1.0	155.75	0.807	0.77	8.0
wdbc	DNF	3	1.0	2000	0.956	0.92	17.0

Table 8: Table for DNF rules with k=3 and $\lambda = 5$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	DNF	3	5.0	2000	0.952	0.95	18.0
Twitter	DNF	3	5.0	2000	0.949	0.949	28.0
adult	DNF	3	5.0	2000	0.803	0.732	101.0
credit-card	DNF	3	5.0	2000	0.691	0.693	57.5
ionosphere	DNF	3	5.0	2000	0.94	0.843	20.5
parkinsons	DNF	3	5.0	1200.17	0.994	0.842	12.0
pima	DNF	3	5.0	2000	0.767	0.743	17.0
transfusion	DNF	3	5.0	2000	0.805	0.77	10.0
wdbc	DNF	3	5.0	2000	0.955	0.946	17.0

Table 9: Table for DNF rules with k=3 and $\lambda = 10$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	DNF	3	10.0	2000	0.952	0.951	17.0
Twitter	DNF	3	10.0	2000	0.948	0.947	27.0
adult	DNF	3	10.0	2000	0.805	0.749	88.5
credit-card	DNF	3	10.0	2000	0.691	0.693	57.5
ionosphere	DNF	3	10.0	2000	0.938	0.9	20.0
parkinsons	DNF	3	10.0	2000	0.994	0.842	11.5
pima	DNF	3	10.0	2000	0.768	0.711	17.0
transfusion	DNF	3	10.0	2000	0.806	0.757	10.0
wdbc	DNF	3	10.0	2000	0.952	0.946	16.5

Table 10: Table for CNF rules with k=1 and $\lambda = 1$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	CNF	1	1.0	2000	0.97	0.969	4.0
Twitter	CNF	1	1.0	2000	0.951	0.95	8.0
adult	CNF	1	1.0	2000	0.78	0.729	16.0
credit-card	CNF	1	1.0	2000	0.821	0.818	4.0
ionosphere	CNF	1	1.0	1670.68	0.827	0.786	1.0
parkinsons	CNF	1	1.0	17.14	0.906	0.895	4.0
pima	CNF	1	1.0	2000	0.678	0.671	5.0
transfusion	CNF	1	1.0	0.37	0.76	0.757	0.0
wdbc	CNF	1	1.0	928.16	0.95	0.946	3.0

Table 11: Table for CNF rules with k=1 and $\lambda = 5$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	CNF	1	5.0	2000	0.969	0.969	4.0
Twitter	CNF	1	5.0	2000	0.951	0.95	8.0
adult	CNF	1	5.0	2000	0.779	0.723	17.0
credit-card	CNF	1	5.0	2000	0.821	0.818	3.5
ionosphere	CNF	1	5.0	2000	0.789	0.729	2.5
parkinsons	CNF	1	5.0	55.54	0.912	0.895	5.5
pima	CNF	1	5.0	2000	0.673	0.671	5.0
transfusion	CNF	1	5.0	0.36	0.76	0.757	0.0
wdbc	CNF	1	5.0	1020.88	0.95	0.955	3.5

Table 12: Table for CNF rules with k=1 and $\lambda = 10$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	CNF	1	10.0	2000	0.969	0.969	4.5
Twitter	CNF	1	10.0	2000	0.951	0.95	8.0
adult	CNF	1	10.0	2000	0.777	0.723	17.0
credit-card	CNF	1	10.0	2000	0.821	0.818	4.0
ionosphere	CNF	1	10.0	2000	0.795	0.771	3.0
parkinsons	CNF	1	10.0	45.84	0.912	0.868	6.0
pima	CNF	1	10.0	2000	0.686	0.651	5.0
transfusion	CNF	1	10.0	0.36	0.76	0.757	0.0
wdbc	CNF	1	10.0	848.68	0.949	0.938	3.5

Table 13: Table for CNF rules with k=2 and $\lambda = 1$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	CNF	2	1.0	2000	0.922	0.922	3.0
Twitter	CNF	2	1.0	2000	0.959	0.957	15.0
adult	CNF	2	1.0	2000	0.746	0.713	28.5
credit-card	CNF	2	1.0	2000	0.613	0.617	15.0
ionosphere	CNF	2	1.0	2000	0.865	0.814	4.0
parkinsons	CNF	2	1.0	559.02	0.974	0.895	9.0
pima	CNF	2	1.0	2000	0.751	0.737	9.0
transfusion	CNF	2	1.0	2000	0.774	0.757	2.0
wdbc	CNF	2	1.0	2000	0.972	0.938	8.0

Table 14: Table for CNF rules with k=2 and $\lambda = 5$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	CNF	2	5.0	2000	0.946	0.945	6.5
Twitter	CNF	2	5.0	2000	0.958	0.958	15.0
adult	CNF	2	5.0	2000	0.746	0.713	28.5
credit-card	CNF	2	5.0	2000	0.613	0.617	15.0
ionosphere	CNF	2	5.0	2000	0.862	0.829	5.0
parkinsons	CNF	2	5.0	38.26	0.988	0.895	12.5
pima	CNF	2	5.0	2000	0.744	0.724	10.0
transfusion	CNF	2	5.0	2000	0.773	0.75	2.5
wdbc	CNF	2	5.0	2000	0.972	0.946	10.5

Table 15: Table for CNF rules with k=2 and $\lambda = 10$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	CNF	2	10.0	2000	0.928	0.931	6.5
Twitter	CNF	2	10.0	2000	0.958	0.957	15.0
adult	CNF	2	10.0	2000	0.746	0.713	28.5
credit-card	CNF	2	10.0	2000	0.613	0.617	15.0
ionosphere	CNF	2	10.0	2000	0.867	0.843	6.0
parkinsons	CNF	2	10.0	21.87	0.988	0.921	12.5
pima	CNF	2	10.0	2000	0.746	0.724	9.5
transfusion	CNF	2	10.0	2000	0.773	0.75	2.5
wdbc	CNF	2	10.0	2000	0.974	0.938	10.5

Table 16: Table for CNF rules with k=3 and $\lambda = 1$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	CNF	3	1.0	2000	0.942	0.941	8.0
Twitter	CNF	3	1.0	2000	0.957	0.955	25.0
adult	CNF	3	1.0	2000	0.759	0.718	42.0
credit-card	CNF	3	1.0	2000	0.712	0.712	19.0
ionosphere	CNF	3	1.0	2000	0.733	0.686	14.5
parkinsons	CNF	3	1.0	1600.56	0.994	0.895	12.5
pima	CNF	3	1.0	2000	0.769	0.73	13.5
transfusion	CNF	3	1.0	913.86	0.8	0.784	4.0
wdbc	CNF	3	1.0	2000	0.956	0.946	12.5

Table 17: Table for CNF rules with k=3 and $\lambda = 5$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	CNF	3	5.0	2000	0.94	0.94	7.5
Twitter	CNF	3	5.0	2000	0.957	0.955	24.0
adult	CNF	3	5.0	2000	0.759	0.718	42.0
credit-card	CNF	3	5.0	2000	0.712	0.712	19.0
ionosphere	CNF	3	5.0	2000	0.784	0.743	13.0
parkinsons	CNF	3	5.0	1200.13	1.0	0.895	14.0
pima	CNF	3	5.0	2000	0.765	0.75	14.0
transfusion	CNF	3	5.0	2000	0.797	0.777	4.0
wdbc	CNF	3	5.0	2000	0.955	0.938	12.0

Table 18: Table for CNF rules with k=3 and $\lambda = 10$

Benchmark	Rule Type	k	λ	Time Taken	Train Accuracy	Test Accuracy	Rule Size
TomsHardware	CNF	3	10.0	2000	0.94	0.941	8.5
Twitter	CNF	3	10.0	2000	0.956	0.955	24.0
adult	CNF	3	10.0	2000	0.759	0.718	42.0
credit-card	CNF	3	10.0	2000	0.712	0.712	19.0
ionosphere	CNF	3	10.0	2000	0.784	0.7	13.5
parkinsons	CNF	3	10.0	2000	1.0	0.895	13.0
pima	CNF	3	10.0	2000	0.766	0.743	15.5
transfusion	CNF	3	10.0	2000	0.796	0.77	4.0
wdbc	CNF	3	10.0	2000	0.952	0.929	11.5