

1 **Supplementary tables for manuscript**
 2 Predictive models for disease detection in group-housed preweaned dairy calves using data
 3 collected from automated milk feeders
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8 Table S1. Hyperparameters by model for Generalized Linear Model.

Model	Data 1		Data 2	
	Alpha	Lambda	Alpha	Lambda
M1	0.0	0.3	0.2	0.1
M2	0.0	0.0	0.2	0.1
M3	0.0	0.1	0.1	0.3
M4	0.0	0.0	0.0	0.2
M5	0.0	0.2	0.0	0.5
M6	0.0	0.0	0.2	0.1
M7	0.0	0.3	0.2	0.1
M8	0.0	1.0	0.1	0.1
M9	0.1	0.1	0.1	0.1
M10	0.0	0.2	0.0	0.1
M11	0.0	0.1	0.0	0.0
M12	0.0	0.7	0.0	0.0
M13	0.0	0.2	0.1	0.1
M14	0.0	0.2	0.0	0.0
M15	0.0	0.3	0.0	0.0
M16	0.0	0.3	0.0	0.0

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Table S2. Hyperparameter by model for Random Forest.

Model	Data 1				Data 2			
	Max. Depth	Min. Rows	N. Bins	N. Trees	Max. Depth	Min. Rows	N. Bins	N. Trees
M1	10	2	10	50	10	10	4	20
M2	10	2	8	80	20	15	2	300
M3	30	20	3	80	60	30	6	200
M4	60	1	5	20	10	20	4	50
M5	1	25	10	40	20	30	5	10
M6	20	2	8	50	20	15	10	100
M7	20	1	4	50	10	1	3	100
M8	40	15	5	50	60	10	6	80
M9	80	1	3	20	10	1	5	80
M10	40	2	5	100	20	1	2	200
M11	50	1	4	200	30	10	4	300
M12	30	10	2	100	20	2	3	200
M13	80	10	6	300	20	2	3	200
M14	1	15	2	100	80	10	6	300
M15	10	1	3	100	60	2	2	300
M16	60	2	2	300	50	10	3	80

1 Table S3. Hyperparameter by model for Gradient Boosting Machine.

Model	CSR	CSR-l	CSR-t	Histogram Type	MD	MR	MSI	NB	NBc	NT	SR
Best hyperparameter for Data 1											
M1	0.63	1.00	0.27	QuantilesGlobal	10	10	0.0	3	512	80	0.81
M2	0.59	1.01	0.65	UniformAdaptive	10	2	0.000001	5	128	60	0.77
M3	0.52	1.06	0.52	UniformAdaptive	80	20	0.000001	3	256	10	0.85
M4	0.42	1.10	0.90	Random	40	20	0.000001	3	16	80	0.61
M5	0.42	1.10	0.90	Random	40	20	0.000001	3	16	80	0.61
M6	0.81	1.06	0.75	QuantilesGlobal	10	1	0.000001	4	128	60	0.44
M7	0.62	0.94	0.93	RoundRobin	80	10	0.000001	3	256	80	0.26
M8	0.72	0.90	0.87	RoundRobin	20	10	0.0	3	2048	40	0.47
M9	0.73	1.05	0.51	RoundRobin	80	30	0.0	2	32	68	0.85
M10	0.52	1.02	0.33	UniformAdaptive	20	10	0.00000001	6	256	100	0.28
M11	0.52	1.02	0.33	UniformAdaptive	20	10	0.00000001	6	256	100	0.28
M12	0.33	0.95	0.45	UniformAdaptive	80	1	0.0	5	128	100	0.53
M13	0.77	0.98	0.71	QuantilesGlobal	80	10	0.00000001	6	2048	40	0.63
M14	0.23	0.90	0.50	QuantilesGlobal	40	2	0.000001	3	4096	40	0.31
M15	0.36	1.10	0.31	UniformAdaptive	1	2	0.0	5	512	80	0.27
M16	0.60	1.04	0.41	RoundRobin	1	2	0.0001	4	128	80	0.41
Best hyperparameter for Data 2											
M1	0.52	1.02	0.33	UniformAdaptive	20	10	0.00000001	6	256	100	0.28
M2	0.65	0.95	0.97	QuantilesGlobal	40	20	0.000001	4	32	80	0.2
M3	0.44	0.95	0.24	RoundRobin	1	1	0.0001	2	4096	222	0.59
M4	0.49	0.99	0.83	QuantilesGlobal	1	20	0.0	6	64	80	0.40
M5	0.70	0.91	0.72	UniformAdaptive	80	20	0.0001	6	32	134	0.43
M6	0.83	1.04	0.43	RoundRobin	10	20	0.0	6	64	100	0.51
M7	0.42	0.99	0.95	RoundRobin	40	1	0.000001	6	1024	62	0.81
M8	0.69	0.95	0.94	UniformAdaptive	40	1	0.00000001	4	4096	40	0.40
M9	0.98	0.91	0.50	RoundRobin	40	30	0.00000001	5	128	40	0.48
M10	0.36	1.09	0.71	RoundRobin	40	20	0.0	5	32	164	0.71
M11	0.57	1.00	0.79	UniformAdaptive	20	2	0.00000001	2	64	80	0.62
M12	0.36	1.09	0.71	RoundRobin	40	20	0.0	5	32	170	0.71
M13	0.98	1.04	0.41	QuantilesGlobal	40	30	0.000001	5	1024	100	0.33
M14	0.44	1.00	0.87	QuantilesGlobal	20	30	0.0001	4	16	51	0.48
M15	0.26	1.01	0.79	RoundRobin	80	2	0.000001	2	64	96	0.91
M16	0.89	0.94	0.38	RoundRobin	40	2	0.0001	3	256	106	0.85

2 CSR = column sampling rate; CSR-l = column sampling rate change per level; CSR-t = column sampling rate
3 change per tree; MD = maximum tree depth; MR = minimum rows; MSI = minimum splitting improvement; NB =
4 number of bins; NBc = number of bins per categories; NT = number of trees; and SR = sampling rate.
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