

SUPPLEMENTARY MATERIALS

A Multiobjective Genetic Programming based Ensemble for Simultaneous Feature Selection and Classification

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TABLE S-I
SOME OF THE BEST BINARY CLASSIFIERS (GPs) FOR MICROARRAY DATA SETS

Data Set	CL ^a	TrA ^b	Best Genetic Program (Binary Classifier)
Colon	negative	98.18	$((x_{1359} + ((x_{1858} + 0.44) - x_{376})) - x_{376})$
	positive	98.18	$((x_{492} - (0.66 + x_{575})) + x_{13}) - x_{1441})$
TOX-171	1	97.39	$(((((-2.16 + (x_{977} + (x_{1327} + x_{1669}))) + x_{1669}) + (x_{5475} + ((x_{2883} + x_{999}) + x_{5568}))) + (x_{2956} + (x_{2956} + (((x_{2429} + -0.49) + x_{1220}) + (x_{1327} + (-2.16 + ((x_{5568} + x_{1220}) + (x_{3601} + x_{999}))))))) + (x_{2883} + (-2.16 + x_{2956}) + (((-2.16 + x_{265}) + x_{1669}) + x_{2883}) + x_{2956})))$
	2	98.04	$(((((x_{2176} - x_{5608}) + (x_{3527} + -1.48)) - x_{564}) - x_{5608}) + ((x_{5099} + ((x_{521} + ((x_{2176} - x_{5213}) + (x_{685} - 3.04))) + x_{5465})) + x_{4197})) - x_{564})$
	3	100.00	$((x_{624} - (x_{2307} + x_{3601})) - ((x_{2768} + (x_{4073} - (x_{1864} - 1.78))) - ((x_{2015} - 1.08) - x_{4073})))$
	4	99.35	$((x_{4436} + (((x_{4422} - 2.57) + x_{1983}) + x_{1892})) + x_{5684}) + x_{3440})$
Leukemia1	ALL	100.00	$(x_{5170} - x_{3251})$
	AML	100.00	$(x_{3251} - x_{757})$
Leukemia2	ALL	100.00	$(0.16 - x_{4846})$
	AML	100.00	$(7.6 * x_{4846})$
CLL-SUB-111	1	100.00	$(-1.14 + x_{6559})$
	2	96.97	$(((((x_{10124} + x_{10389}) + x_{9520}) - x_{10903}) - ((x_{10092} - (x_{14} - ((x_{8462} - (((x_{10124} - x_{4890}) + x_{4231}) - 1.19)) + x_{6527}))) + x_{6527}))$
	3	96.97	$((x_{4999} - x_{348}) + (((((x_{64} + x_{1861}) + x_{9138}) + x_{1861}) + ((x_{10178} - x_{8518}) - x_{9448})) + x_{6191}) + x_{5887}) - x_{8518}))$
	0	99.22	$(((((x_{2173} * x_{7307}) - (1.47 + x_{15052})) + ((x_{8462} - 1.81) + (x_{10928} + (x_{11553} - 0.77))) + x_{8263}) + x_{10928}) + x_{9691})$
GCM	1	100.00	$((x_{12503} * (7.26 - x_{8902})) + x_{6941})$
	2	100.00	$(x_{2435} + ((x_{6867} + (x_{279} - 3.11)) + x_{8333}))$
	3	100.00	$((x_{3338} - 2.12) + x_{5490}) + x_{12313})$
	4	100.00	$(x_{6656} - 0.15)$
	5	100.00	$((((x_{965} - 1.79) - x_{2715}) - 1.04) - x_{15971})$
	6	98.45	$((x_{2650} - 1.41) - x_{6887})$
	7	100.00	$(x_{3258} + (x_{4136} + (x_{5365} - 2.53)))$
	8	100.00	$((x_{2268} - 1.47) + x_{3596})$
	9	100.00	$((((x_{7067} - 2.23) + x_{3041}) + x_{5274})$
	10	100.00	$((x_{1096} + (x_{15254} - 0.97)) + x_{4454})$
	11	100.00	$((x_{8776} - 3.9) + (x_{2359} + (x_{13518} + x_{14888})))$
	12	100.00	$((-1.48 + x_{13508}) + (x_{2621} / (-0.87 + x_{7191})))$
	13	100.00	$(x_{11018} + x_{548})$
SMK-CAN-187	1	89.29	$((((((x_{12065} - x_{3087}) - x_{5094}) + (x_{8465} + x_{10370})) + (((x_{12065} - x_{3087}) + x_{10370}) + x_{16876})) + (x_{16876} - 0.5)) + x_{7209}) + (((((x_{16876} - (x_{8465} + x_{10370})) - x_{3087}) + (((x_{12065} - x_{3087}) - x_{16876}) + x_{10370})) + (((x_{12065} - 0.29) - x_{5094}) + x_{16876})) + (1.27 + x_{15445})) - (x_{12065} + 0.78)))$
	2	89.29	$((((x_{5701} + ((x_{8889} + (x_{8889} - x_{11317}) - x_{13749})) + ((0.62 + (1.82 - x_{5569})) - x_{19412})) - x_{4716}) + (((x_{15453} / x_{6993}) * (x_{11521} - x_{7593})) + ((x_{8889} + ((x_{6054} / x_{6993}) + (((x_{5701} - x_{11041}) - 1.51) - x_{11041}))) - x_{5701})) - x_{4716}))$
GLA-BRA-180	1	100.00	$((x_{36519} - 2.25) + x_{19374})$
	2	96.30	$((((((x_{20651} - (x_{43947} - x_{48975})) - 0.94) - (x_{33319} - (x_{20801} - x_{11906}))) + x_{44840}) - (2.64 - x_{15031})) - x_{11906}) + x_{35714}) + (x_{45181} - ((1.78 - (x_{20651} - 0.44)) - (x_{47620} + x_{1685})))$
	3	94.44	$(((((x_{31170} + x_{27810}) + (((x_{187} + x_{28332}) + (x_{31280} + x_{3320})) + 0.72)) + (x_{187} + x_{28332})) + x_{28332}) + (x_{31280} + (x_{20443} + (x_{31280} + x_{3320}))))$
	4	95.06	$((x_{11225} - 0.78) + (((((x_{43755} - x_{11522}) - x_{5202}) + (((x_{10207} - x_{10153}) + ((x_{43755} - x_{34025}) + x_{8954})) + x_{29225})) + (((x_{11225} - 3.46) - x_{30877}) + x_{22932}) + x_{34601})) - x_{5202}) + (((x_{43755} - x_{24511}) + x_{8954}) - x_{5202}))$

^aClass Label, ^bTraining Accuracy

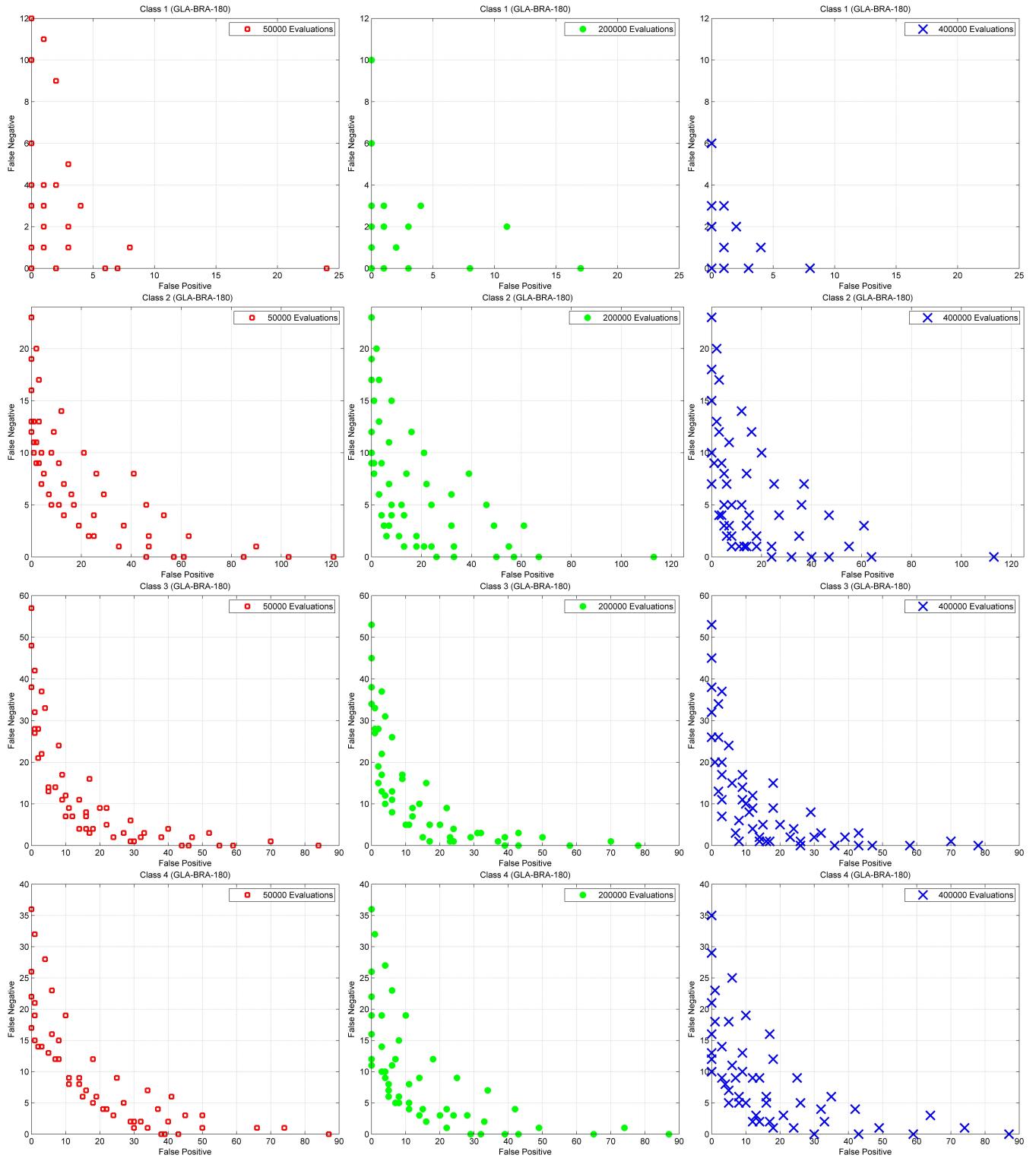


Fig. S-1. Changes in archives with different number of function evaluations (FEs) for all four classes of GLA-BRA-180 data set (archives at different evaluations are shown separately).

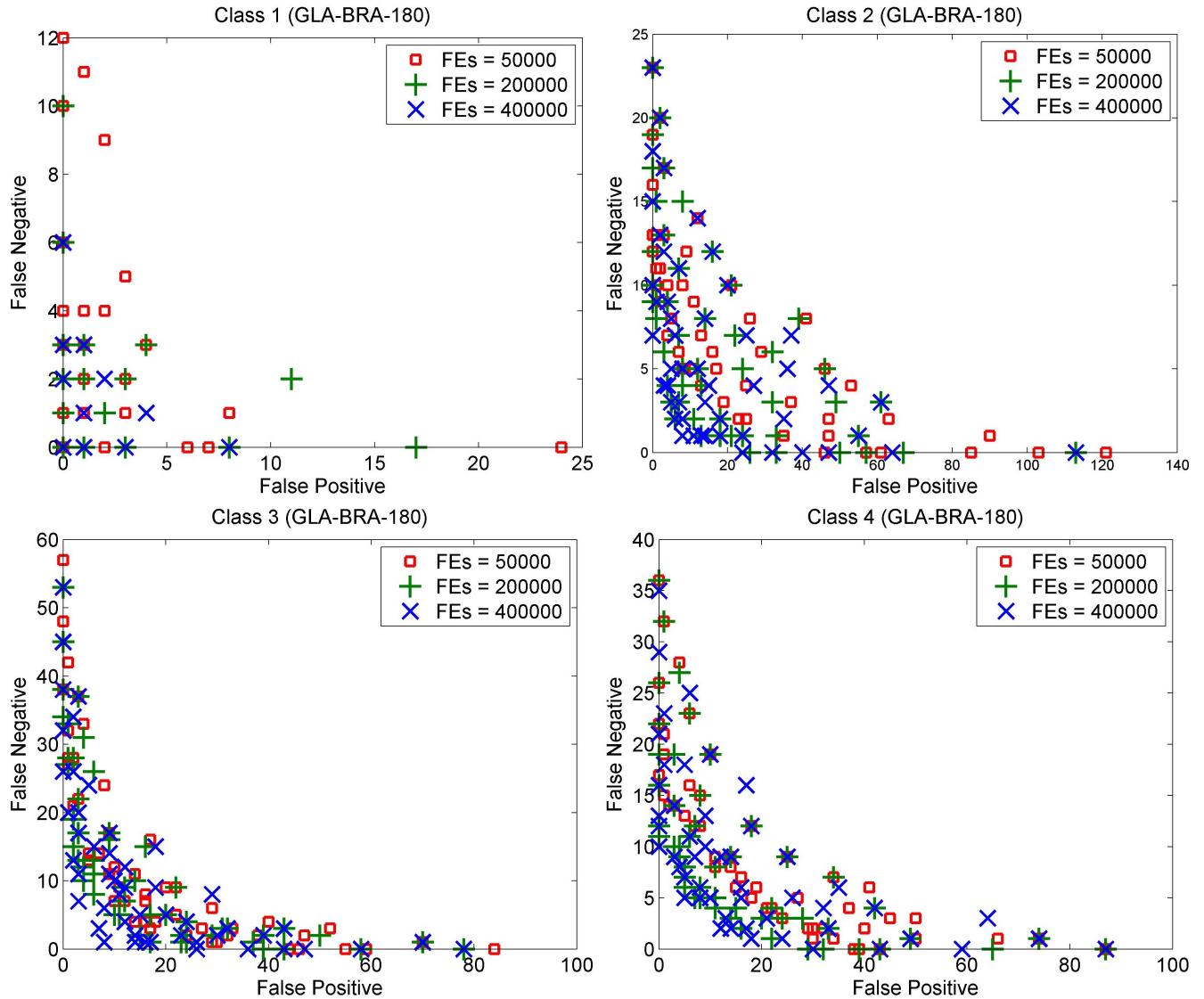


Fig. S-2. Changes in archives with different number of function evaluations (FEs) for all four classes of GLA-BRA-180 data set.