

Results

Sibei Liu sl4660

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Results

Newton-Raphson

After doing the Newton-Raphson modified with step and direction, the estimation of coefficients are:

intercept	0.4870168
radius_mean	-7.2218505
texture_mean	1.6547562
perimeter_mean	-1.7376303
area_mean	14.0048456
smoothness_mean	1.0749533
compactness_mean	-0.0772346
concavity_mean	0.6751231
concave points_mean	2.5928743
symmetry_mean	0.4462563
fractal_dimension_mean	-0.4824842

Table 1. Estimated coefficients under Newton-Raphson method

Coordinate-Wise

The range of λ we tried is (3,0) with length 100. The initial guess of all β including the intercept is 0.02. The Pearson-Chi square statistics(g.statistics), MSE, was introduced to compare the models. So in the 5-Fold Cross Validation. In each fold. Below is the results:

	Enter	Fold1	Fold2	Fold3	Fold4	Fold5
k	0.00	1.0000000	2.0000000	3.0000000	4.0000000	5.0000000
best_lambda	0.00	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
beta_vec1	0.02	-0.6859925	-0.6846651	-0.5202080	-0.7108130	-0.4904983
beta_vec2	0.02	2.4700201	2.2680094	2.4442414	1.6678653	2.9547735
beta_vec3	0.02	1.5423244	1.6459899	1.6960535	1.5396684	1.8918639
beta_vec4	0.02	0.1086057	0.1309746	0.0933700	1.1913073	0.1548061
beta_vec5	0.02	0.6066107	0.7695696	2.0689442	0.8991037	0.8233475
beta_vec6	0.02	1.0825592	0.9841494	1.3327553	0.9768157	1.6699939
beta_vec7	0.02	-0.5217764	-0.3350776	-1.5663942	-0.2512495	-0.8098719
beta_vec8	0.02	1.0885347	1.2501449	2.3188669	1.5697889	0.9636958
beta_vec9	0.02	2.1922951	1.9632482	1.6208382	1.4671648	2.7033725
beta_vec10	0.02	0.4242812	0.5513924	0.5472317	0.5297819	0.5455744
beta_vec11	0.02	-0.4955606	-0.6031343	-0.0903676	-0.4954602	-0.2339802
g.stat_tr	Inf	238.9887331	270.9964837	166.3436015	344.1339201	229.2555310
auc_te	0.00	0.9934211	0.9916472	0.9811912	0.9844183	0.9747280
g.stat_te	Inf	20.9787985	22.6434852	241.7250075	55.0375829	119.9943143
MSE_test	Inf	3.5422803	3.9095202	5.6402349	5.6143326	8.2576478

Table 2. Cross validation results

In all 5 folds, the optimal λ is 0, with similar β_s in each fold.

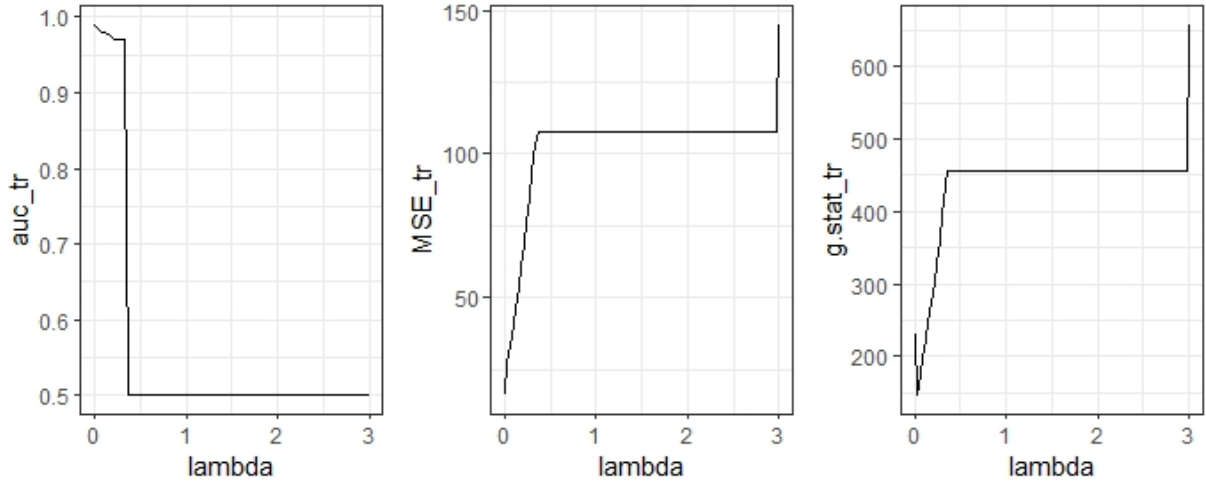


Fig 2. Change with Criteria vs λ