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| LUSC | parameters | | |
| methy | mRNA | miRNA |
| XGBoost | learning\_rate :0.01,  n\_estimators:100,  max\_depth:3,  min\_child\_weight:5,  gamma:0.4,  subsample:0.8,  colsample\_bytree:0.8,  reg\_alpha:0,  reg\_lambda: 2, | learning\_rate :0.01,  n\_estimators:300,  max\_depth:4, min\_child\_weight:6,  gamma:0.4,  subsample:0.7, colsample\_bytree:1.0,  reg\_alpha: 0,  reg\_lambda: 0, | learning\_rate :0.01,  n\_estimators:100,  max\_depth:3, min\_child\_weight:4,  gamma:0,  subsample:0.8, colsample\_bytree:0.8,  reg\_alpha: 0,  reg\_lambda: 1 |
| SVM | kernel: 'linear', C: 1e-07 | kernel:'linear', C:1e-08, | kernel: 'linear', C: 1e-06 |
| RF | n\_estimators : 500 | n\_estimators : 100 | n\_estimators': 500 |
| ENSNET | alpha: 0.7,  lambda: 0.1168957 | alpha: 0.9,  lambda: 0.1008585 | alpha: 0.2,  lambda: 0.3241014 |
| KNN | n\_neighbors: 3,  weights: 'distance',  p: 1 | n\_neighbors:6,  weights:'uniform' | n\_neighbors: 2,  weights: 'distance',  p: 5 |

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| **HNSC** | **parameters** | | |
| **methy** | **mRNA** | **miRNA** |
| **XGBoost** | learning\_rate :0.01,  n\_estimators:300,  max\_depth:5,  min\_child\_weight:6,  gamma:0,  subsample:0.7,  colsample\_bytree:0.7,  reg\_alpha: 0.05,  reg\_lambda: 0, | learning\_rate :0.01,  n\_estimators:3000,  max\_depth:9,  min\_child\_weight:1,  gamma:0.3,  subsample:0.6,  colsample\_bytree:0.8,  reg\_alpha: 0,  reg\_lambda: 1 | learning\_rate :0.01,  n\_estimators:500,  max\_depth:4,  min\_child\_weight:6,  gamma:0.6,  subsample:0.9,  colsample\_bytree:0.8,  reg\_alpha: 0.1,  reg\_lambda: 1, |
| **SVM** | kernel': 'linear', C: 0.01 | kernel: 'linear', 'C': 0.01 | kernel:'linear', C:0.1, |
| **RF** | n\_estimators: 2500 | n\_estimators: 100 | n\_estimators: 1500 |
| **ENSNET** | alpha:0.5,  lambda: 0.08531111 | alpha:0.9,  lambda: 0.005695722 | alpha:0.7,  lambda: 0.06716714 |
| **KNN** | n\_neighbors: 8,  weights: 'uniform' | n\_neighbors: 9,  weights: 'uniform' | n\_neighbors: 5,  weights: distance,  p: 2 |

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| **KIRC** | **parameters** | | |
| **methy** | **mRNA** | **miRNA** |
| **XGBoost** | learning\_rate :0.01,  n\_estimators:300,  max\_depth:4,  min\_child\_weight:1,  gamma:0.3,  subsample:0.7, colsample\_bytree:0.7,  reg\_alpha : 1,  reg\_lambda : 0.1, | learning\_rate :0.01,  n\_estimators:1000,  max\_depth:4,  min\_child\_weight:2,  gamma:0,  subsample:0.6,  colsample\_bytree:0.8,  reg\_alpha: 0,  reg\_lambda: 0.1, | learning\_rate:0.01, n\_estimators:1500,  max\_depth:3, min\_child\_weight:2,  gamma:0, subsample:0.9, colsample\_bytree:1.0,  reg\_alpha: 2,  reg\_lambda: 3, |
| **SVM** | kernel: 'linear', C: 0.01 | kernel: 'linear', C: 0.0001 | kernel: 'linear', C: 0.001 |
| **RF** | n\_estimators: 100 | n\_estimators: 1500 | n\_estimators: 1500 |
| **ENSNET** | alpha:0.1,  lambda:2.307076 | alpha:0.1,  lambda:1.215116 | alpha:0.1,  lambda: 1.363138 |
| **KNN** | n\_neighbors: 10,  weights: 'uniform' | n\_neighbors: 9,  weights: 'uniform' | n\_neighbors: 5,  weights: 'distance',  p: 1 |