eTable 1: Algorithms’ parameters

|  |  |  |
| --- | --- | --- |
| Algorithm | Grid search | Parameter tune |
| RANDOM FOREST | mtry=C (1:15), ntree=C (500, 1000, 1500, 2000, 2500, 3000, 3500, 4000) | Number of trees = 1000, mtry = 7 |
| RECURSIVE FEATURE ELIMINATION | None | None |
| BORUTA |  | doTrace = 2 |
| GENETIC ALGORITHM | Iteration = 50, 100, 200, 300, 500, Population size = 20, 30,50,100, 275, 300 | Iteration =200, population size = 275 |
| **LEARING VECTOR** QUANTITIZATION | size=c (5,10,15,20,25,30,35,40,45,50), k=c (3,5,7,10) | Size = 35 and k = 5 |
| Decision Tree | None | tune Length = 10 |
| ELASTIC NET | lambda.grid <- seq(0, 100,150)  alpha.grid <- seq(0, 0.5,1, length = 10) | maxit = 1000000, alpha = 0.5, lambda = 100. |
| LOGISTIC REGRESSION | None | tuneLength = 15 |

All of the above used similar number of folds = 3 and cross validation k =10 and all data were pre-processed for model development and prediction.

**eTable 2: Predictive performance of ACS mortality using different prediction models with varying number of variables.**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Model | 4 VARIABLES | 8 VARIABLES | 12 VARIABLES | 16 VARIABLES | 20 VARIABLES | All VARIABLES |
| RF | 0.7942 | 0.7028 | 0.6998 | 0.6958 | 0.7259 | 0.6165 |
| RF-RFE | 0.7821 | 0.7821 | 0.7821 | 0.7821 | 0.7821 | 0.7821 |
| RF-BORUTA | 0.6767 | 0.6767 | 0.6767 | 0.6767 | 0.6767 | 0.6767 |
| RF-CD | 0.6486 | 0.689 | 0.689 | 0.689 | 0.689 | 0.689 |
| RF-GA | 0.751 | 0.751 | 0.751 | 0.751 | 0.751 | 0.6275 |
| RF-LVQ | 0.6948 | 0.6928 | 0.6576 | 0.6265 | 0.6205 | 0.6125 |
| DT-IG | 0.6185 | 0.6185 | 0.5542 | 0.5542 | 0.5542 | 0.5542 |
| EN | 0.6145 | 0.6225 | 0.6004 | 0.5763 | 0.492 | 0.5221 |
| LR | 0.6365 | 0.5984 | 0.6245 | 0.506 | 0.4739 | 0.6064 |

\* Predictive performances are expressed as AUC values

Random Forest (RF), Random Forest - Recursive Feature Elimination (RF-RFE), Random Forest – Boruta (RF-BORUTA), Random Forest - Cluster Dendrogram (RF-CD), Random Forest - Genetic Algorithm (RF-GA), Random Forest - Learning Vector Quantization (RF-LVQ), Decision Tree-Information Gain (DT-IG), Elastic Net (EN), Logistic Regression (LR).