MENTAL HEALTH PREDICTION

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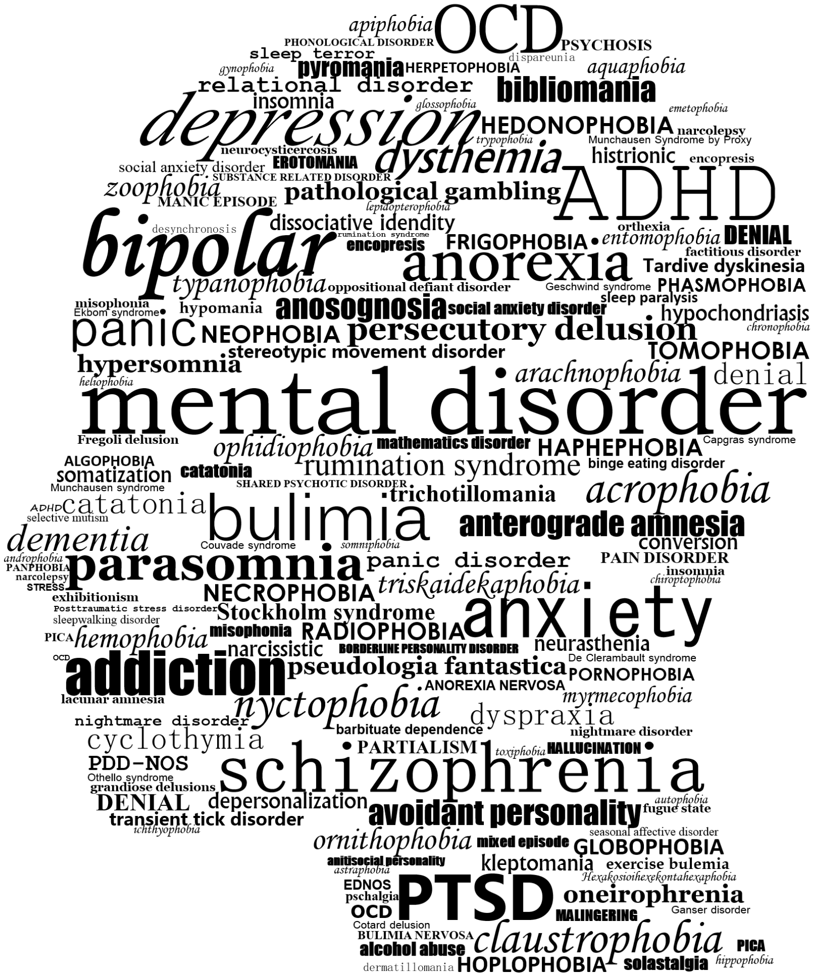
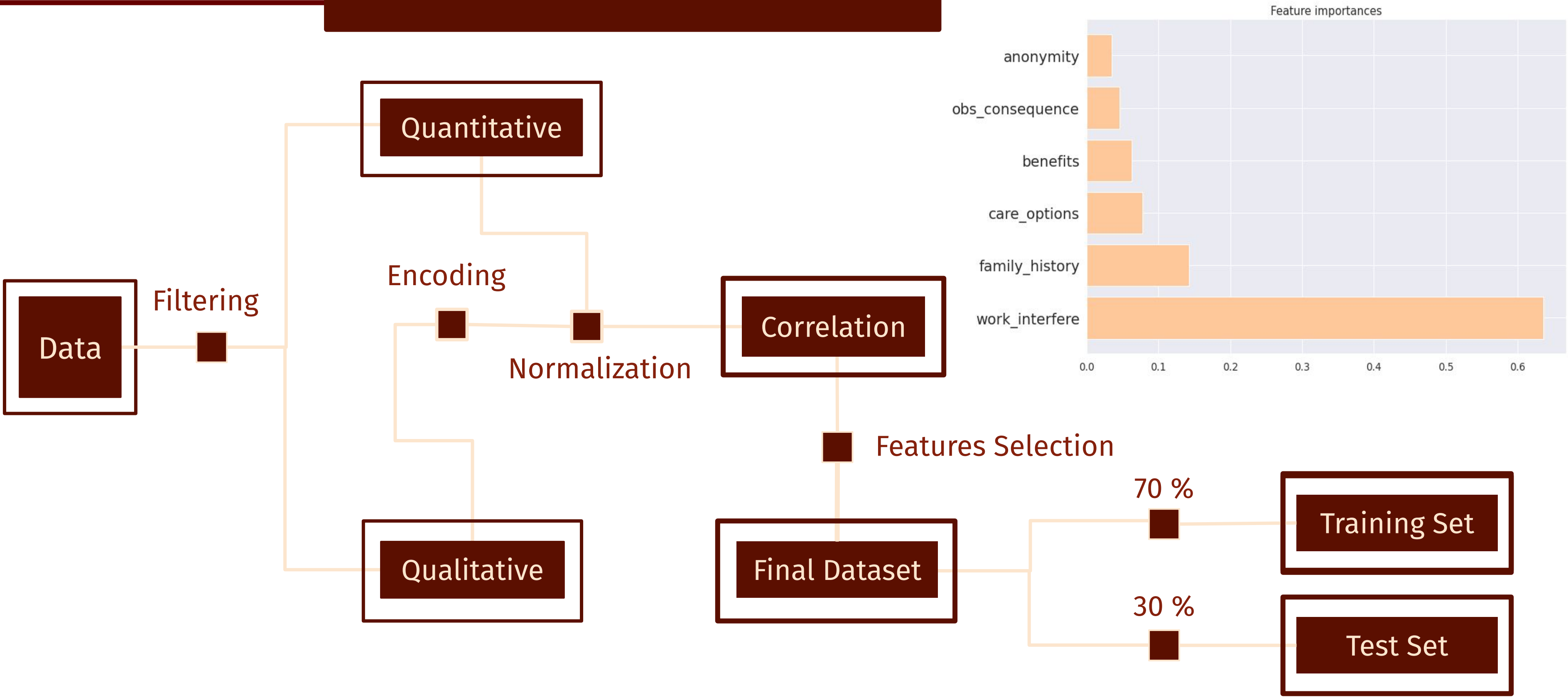


OVERVIEW

Data Preparation	ML methods tuning	Results
Data Filtering	ML Methods	ROC
Data Encoding	Hyperparameters Tuning	Confusion Matrix
Feature Selection	Our Implementation	Predictions

DATA PREPARATION



Data

Filtering

Quantitative

Qualitative

Encoding

Normalization

Correlation

Features Selection

Final Dataset

70 %

30 %

Training Set

Test Set

Hyperparameters

Solver Lbfgs, **Newton**, Liblinear, Sag, Saga

Penalty l1, l2, elasticnet, **none**

Weights **Uniform**, Distance

Neighbors **15** in range 1-31

Metric Manhattan, **Euclidean**, Minkowski

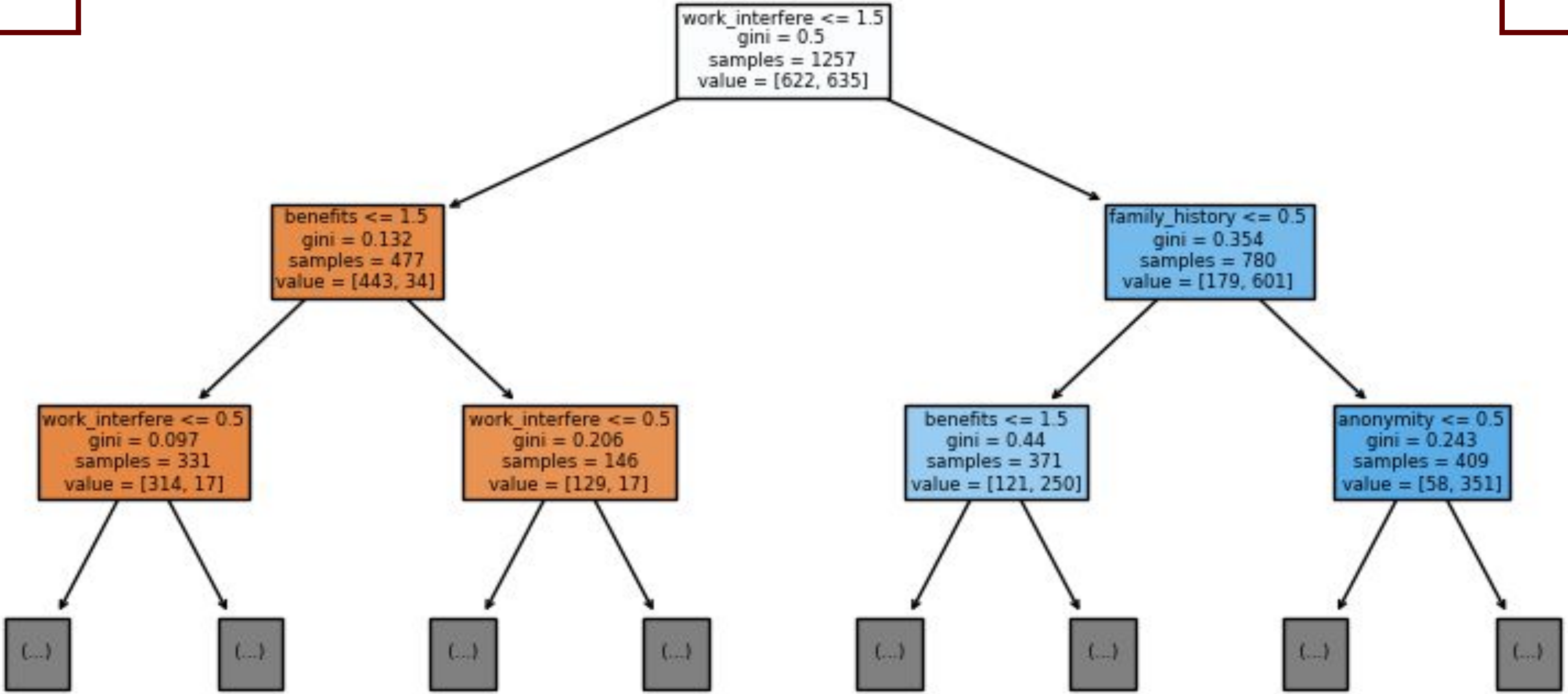
LOG. REGRESSION

	Built-in	**Our code**
AUC Score	0.802	0.736
Accuracy	0.873	0.735

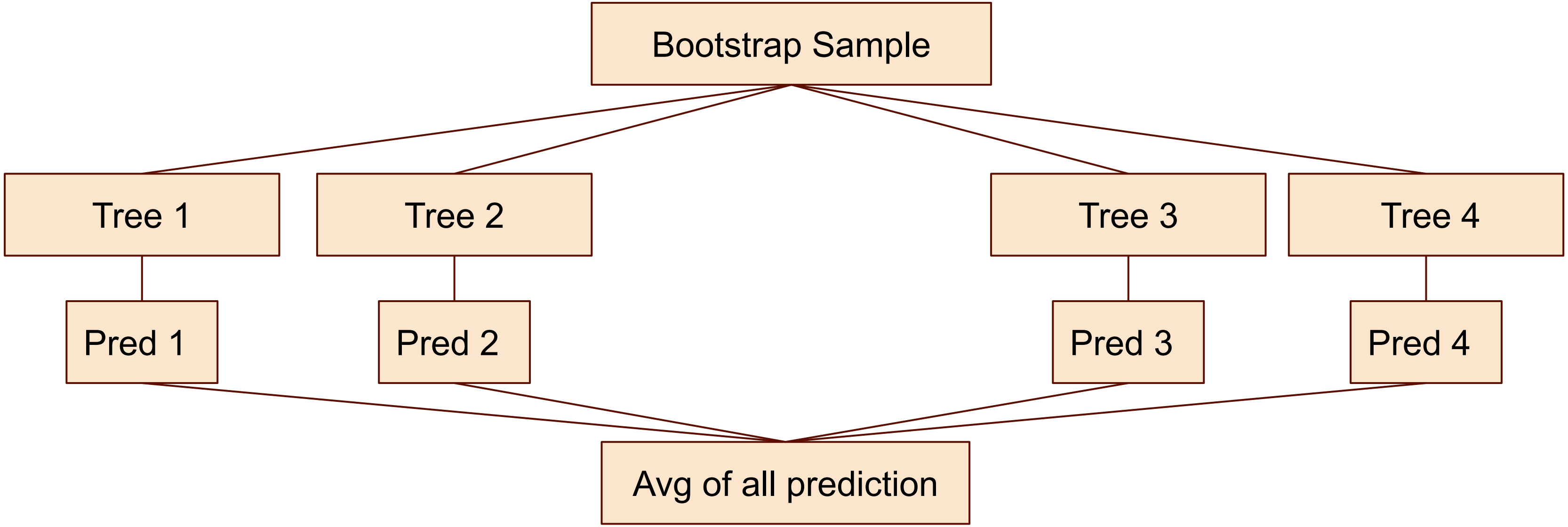
K-NEIGHBORS

	Built-in	**Our code**
AUC Score	0.829	0.805
Accuracy	0.887	0.804

DECISION TREE



RANDOM FOREST



Bootstrap Sample

Tree 1

Tree 2

Tree 3

Tree 4

Pred 1

Pred 2

Pred 3

Pred 4

Avg of all prediction

Hyperparameters

Criterion	gini, **entropy**	gini, **entropy**
Max_depth	**4**	**3**
Max_features	**7**	**7**
Min_sample_leaf	**6**	**6**
Min_sample_split	**6**	**-**
N_estimator	**-**	**20**

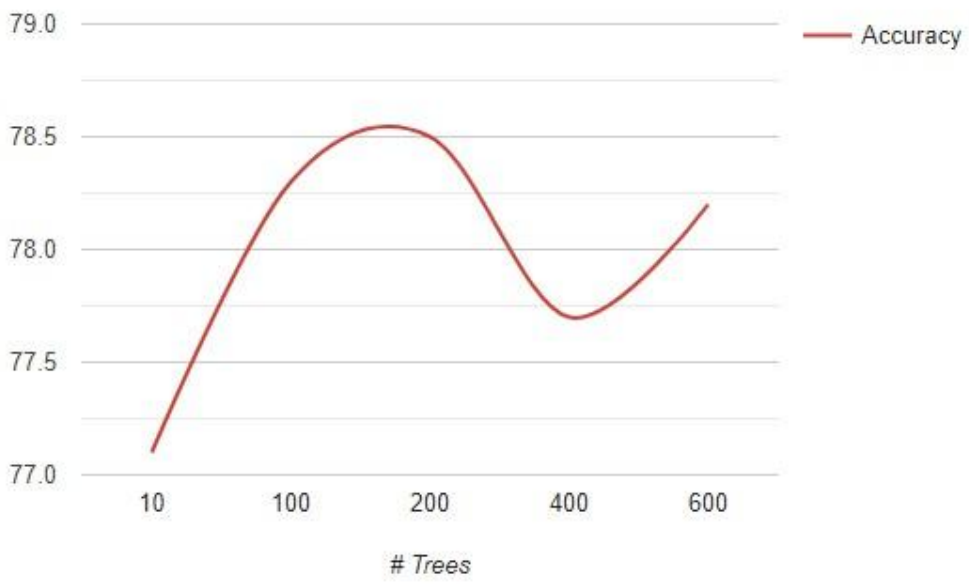
DECISION TREE

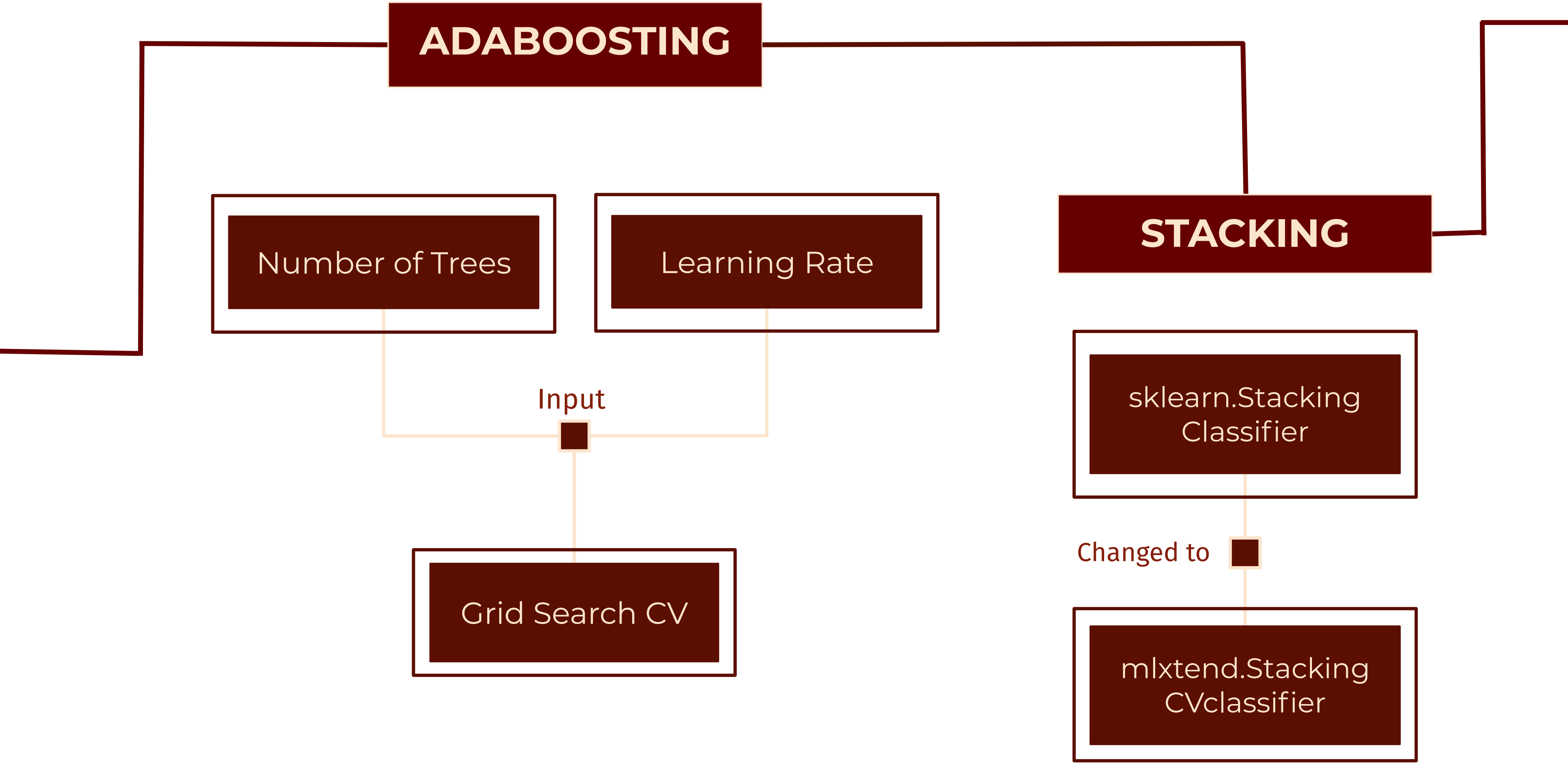
	Random	GridsearchCv
AUC Score	0.73	0.80
Accuracy	0.80	0.89

RANDOM FOREST

	Random	GridsearchCv
AUC Score	0.89	0.91
Accuracy	0.81	0.90

BAGGING





ADABOOSTING

Number of Trees

Learning Rate

Input

Grid Search CV

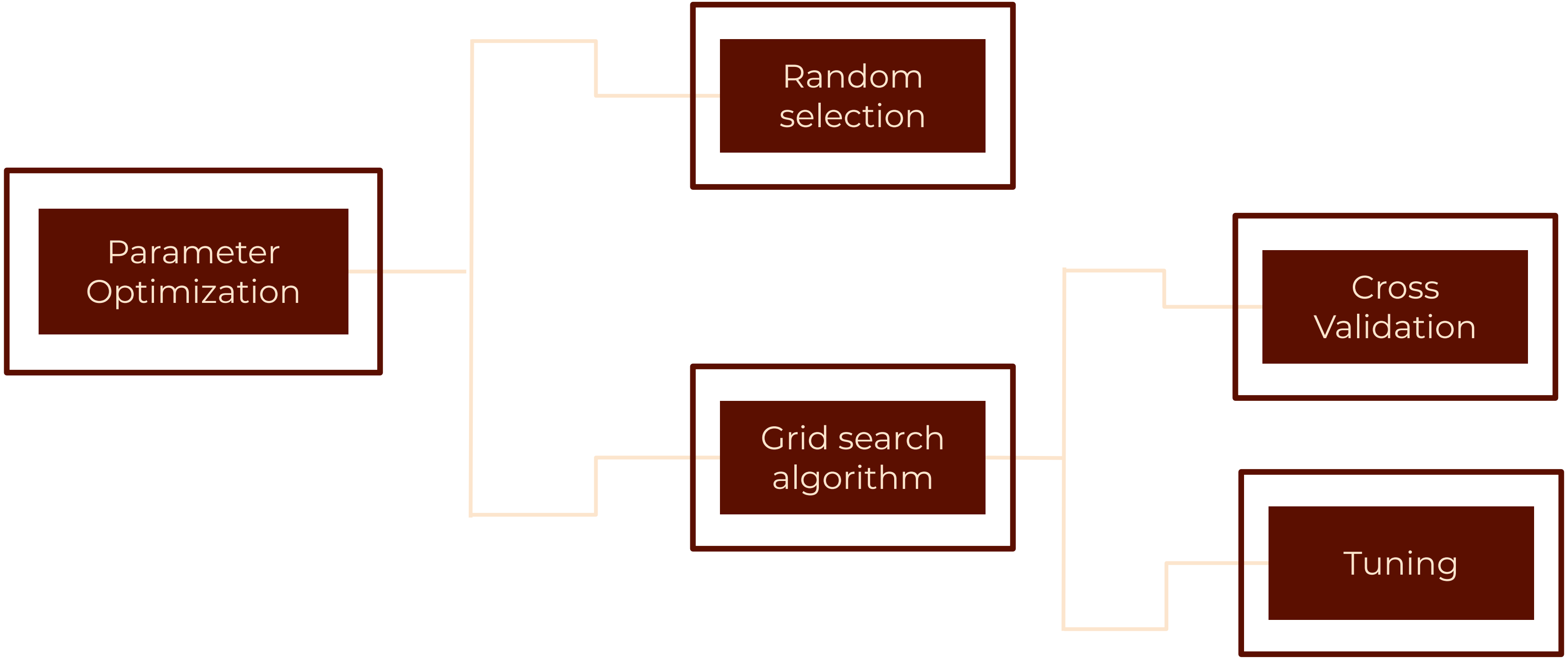
STACKING

sklearn.Stacking Classifier

Changed to

mlxtend.Stacking CVclassifier

Comparisons and Conclusions



Parameter Optimization

Random selection

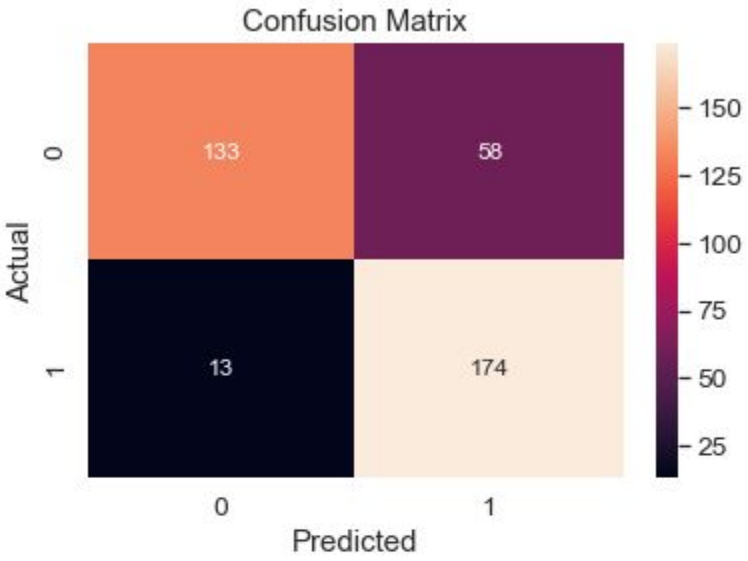
Grid search algorithm

Cross Validation

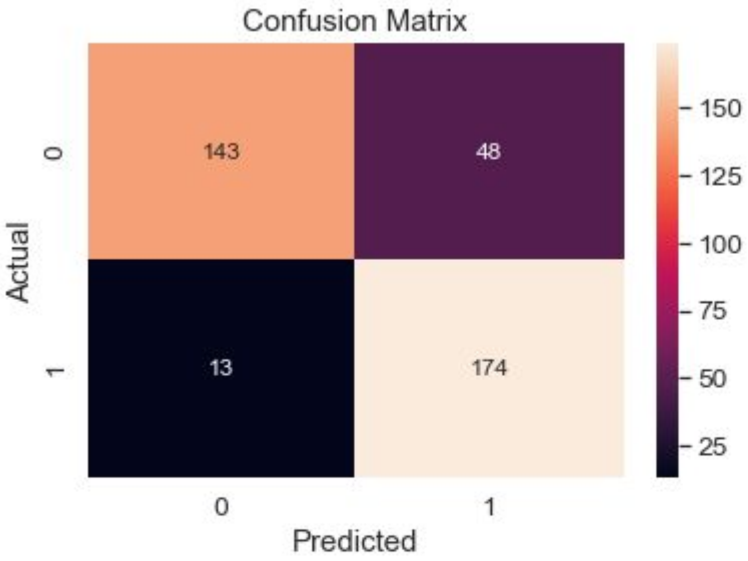
Tuning

COMPARISONS

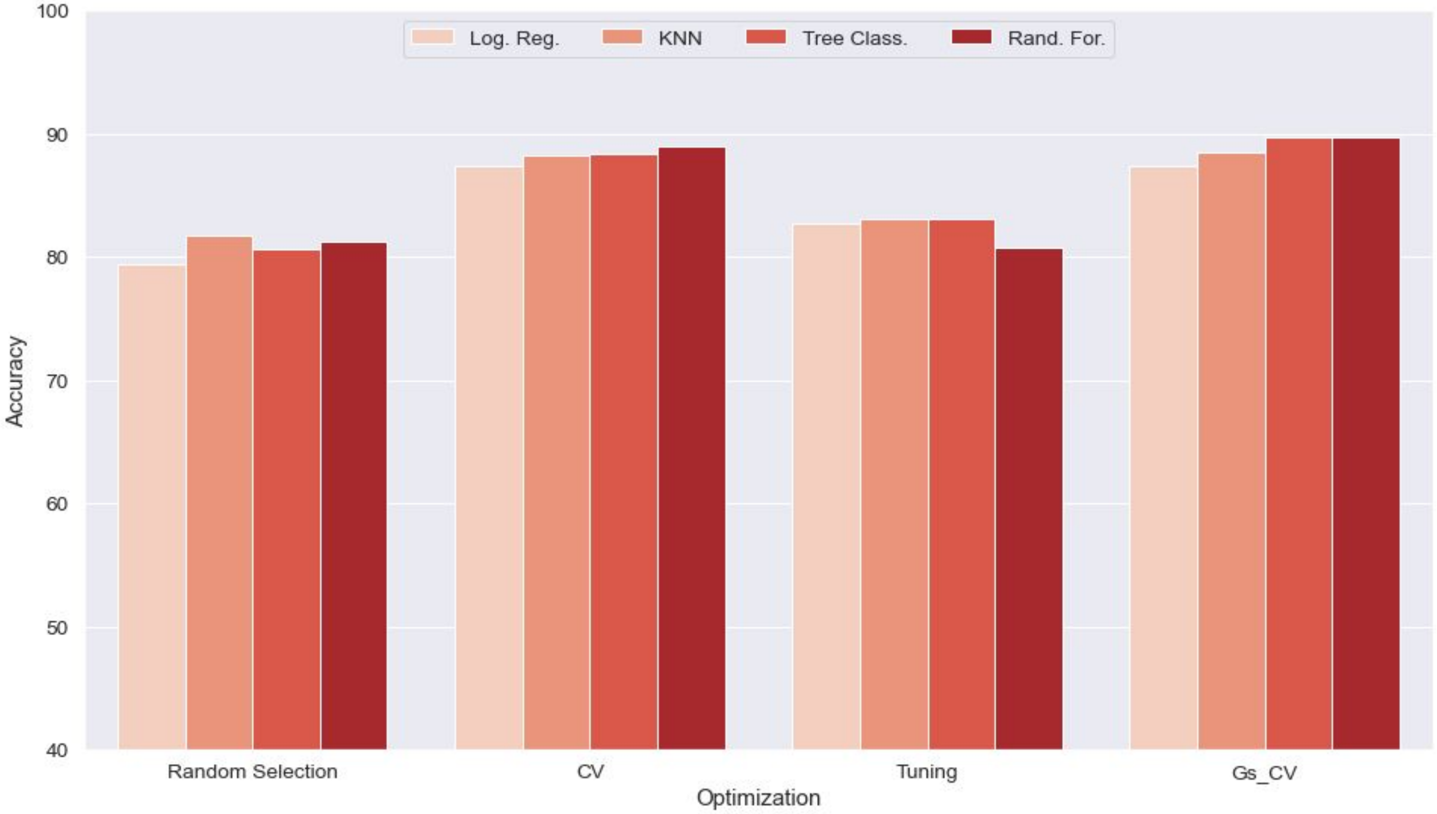
Author’s Solution



Our Solution



COMPARISONS



Thank You !