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| Model | GridSearch Parameters | Best Parameters |
| LR | ''C': [1, 30, 50, 100] | 'C': 30 |
| 'solver': ['newton-cg', 'lbfgs', 'liblinear', 'sag', 'saga'] | 'solver': 'newton-cg' |
| RF | n\_estimators': [10, 50, 100, 200, 500] | 'n\_estimators': 10 |
| max\_features': ['auto', 'sqrt', 'log2'] | 'max\_features': 'auto' |
| max\_depth': [3, 5, 8] | 'max\_depth': 8 |
| 'criterion': ['friedman\_mse', 'entropy'] | 'criterion': 'entropy' |
| BN | var\_smoothing':[0.001, 0.005, 0.01, 0.015, 0.02, 0.025, 0.03] | var\_smoothing': 0.05 |
| DT | 'max\_depth': [3, 5, 8] | 'max\_depth': 8 |
| 'criterion': ['gini', 'entropy'] | 'criterion': 'gini' |
| 'min\_samples\_split': [2, 5, 10] | 'min\_samples\_split': 5 |
| 'min\_samples\_leaf': [1, 2, 4] | 'min\_samples\_leaf': 1 |
| KNN | 'n\_neighbors': [1, 3, 5, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25] | 'n\_neighbors': 10 |
| 'weights': ['uniform', 'distance'] | 'weights': 'distance' |
| GB | 'n\_estimators': [50, 100, 200] | 'n\_estimators': 200 |
| 'learning\_rate': [0.1, 0.01, 0.001] | 'learning\_rate': 0.1 |
| SVC | 'kernel': ['linear', 'rbf']  'C': [0.1, 1, 10]  'gamma': [0.1, 1, 10] |  |

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| Model | GridSearch Parameters | Best Parameters |
| LR | ''C': [1, 30, 50, 100] | 'C': 30 |
| 'solver': ['newton-cg', 'lbfgs', 'liblinear', 'sag', 'saga'] | 'solver': 'newton-cg' |
| RF | n\_estimators': [10, 50, 100, 200, 500] | 'n\_estimators': 10 |
| max\_features': ['auto', 'sqrt', 'log2'] | 'max\_features': 'auto' |
| max\_depth': [3, 5, 8] | 'max\_depth': 8 |
| 'criterion': ['friedman\_mse', 'entropy'] | 'criterion': 'entropy' |
| BN | var\_smoothing':[0.001, 0.005, 0.01, 0.015, 0.02, 0.025, 0.03] | var\_smoothing': 0.05 |
| DT | 'max\_depth': [3, 5, 8] | 'max\_depth': 8 |
| 'criterion': ['gini', 'entropy'] | 'criterion': 'gini' |
| 'min\_samples\_split': [2, 5, 10] | 'min\_samples\_split': 5 |
| 'min\_samples\_leaf': [1, 2, 4] | 'min\_samples\_leaf': 1 |
| KNN | 'n\_neighbors': [1, 3, 5, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25] | 'n\_neighbors': 10 |
| 'weights': ['uniform', 'distance'] | 'weights': 'distance' |
| GB | 'n\_estimators': [50, 100, 200] | 'n\_estimators': 200 |
| 'learning\_rate': [0.1, 0.01, 0.001] | 'learning\_rate': 0.1 |
| SVC |  |  |