Supervised Learning Algorithms (With Regressor / Classifier Labels)

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1. Linear Models

Regression

- Linear Regression — **Regressor**
- Ridge Regression — **Regressor**
- Lasso Regression — **Regressor**
- Elastic Net — **Regressor**
- Bayesian Regression — **Regressor**
- ARD Regression — **Regressor**
- LARS — **Regressor**
- LARS-Lasso — **Regressor**
- Orthogonal Matching Pursuit (OMP) — **Regressor**
- Polynomial Regression — **Regressor**
- Quantile Regression — **Regressor**
- Huber Regression — **Regressor**
- Theil–Sen Regression — **Regressor**
- Robust Regression (RANSAC) — **Regressor**

Generalized Regression

- Tobit Regression — **Regressor**
- Poisson Regression — **Regressor**
- Gamma Regression — **Regressor**
- Negative Binomial Regression — **Regressor**
- Tweedie Regression — **Regressor**
- GLM (for regression families) — **Regressor**

Classification

- Logistic Regression — **Classifier**
- Probit Regression — **Classifier**
- Fisher's Linear Discriminant — **Classifier**
- LDA — **Classifier**
- QDA — **Classifier**
- Ridge Classifier — **Classifier**
- Passive-Aggressive Classifier — **Classifier**
- Perceptron — **Classifier**

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2. Support Vector Machine / Kernel Methods

- SVM Classifier (SVC) — **Classifier**
- nu-SVC — **Classifier**
- Linear SVM — **Classifier**
- Kernel SVM — **Classifier**

Regression

- SVR (Support Vector Regression) — **Regressor**
- nu-SVR — **Regressor**

Both

- Kernel Ridge Regression — **Regressor**
- Kernel Logistic Regression — **Classifier**
- Relevance Vector Machines (RVM) — **Both**
- Laplacian SVM — **Classifier**

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3. Nearest Neighbor Based

- KNN Classifier — **Classifier**
- KNN Regression — **Regressor**
- Radius Neighbors Classifier — **Classifier**
- Radius Neighbors Regressor — **Regressor**

- Ball Tree KNN — **Both**
- KDTree KNN — **Both**

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4. Decision Trees and Rule-Based

Both

- Decision Tree Classifier — **Classifier**
- Decision Tree Regressor — **Regressor**
- CART — **Both**
- C4.5 — **Classifier**
- C5.0 — **Classifier**
- ID3 — **Classifier**
- CHAID — **Classifier**
- QUEST — **Classifier**
- GUIDE — **Classifier**

Ensemble-Style Trees

- Extra Trees Classifier — **Classifier**
- Extra Trees Regressor — **Regressor**
- Rotation Forest — **Classifier**
- Randomer Forest — **Both**

Rule-Based

- RuleFit — **Both**
- RIPPER — **Classifier**
- PART — **Classifier**
- OneR — **Classifier**
- ZeroR — **Both (predicts mean or majority)**

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5. Ensemble Methods

Both

- Bagging — **Both**
- Random Forest — **Both**
- Extra Trees — **Both**
- AdaBoost — **Both**
- Gradient Boosting — **Both**
- XGBoost — **Both**
- LightGBM — **Both**
- CatBoost — **Both**
- Histogram Gradient Boosting — **Both**
- Stacking — **Both**
- Blending — **Both**
- Voting Classifier — **Classifier**

Imbalanced Ensembles

- Balanced Random Forest — **Classifier**
- EasyEnsemble — **Classifier**
- RUSBoost — **Classifier**
- SMOTEBoost — **Classifier**
- Balanced Bagging Classifier — **Classifier**

Deep Forest

- gcForest — **Classifier**

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6. Probabilistic / Bayesian Models

- Bayesian Network Classifier — **Classifier**
- Naive Bayes (Gaussian) — **Classifier**
- Naive Bayes (Multinomial) — **Classifier**
- Naive Bayes (Bernoulli) — **Classifier**
- Complement Naive Bayes — **Classifier**
- Semi-Naive Bayes (TAN, AODE) — **Classifier**
- Gaussian Process Regression — **Regressor**
- Gaussian Process Classification — **Classifier**
- Hidden Markov Models (supervised HMM) — **Classifier**
- Maximum Entropy Classifier — **Classifier**

- CRF (Conditional Random Fields) — **Classifier**
- Kalman Filters (supervised variants) — **Both**
- Student-t Regression — **Regressor**

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7. Neural Network Models

Both

- MLP Classifier — **Classifier**
- MLP Regressor — **Regressor**
- RBF Networks — **Both**
- Probabilistic Neural Networks — **Classifier**
- Extreme Learning Machines — **Both**
- DNNs — **Both**
- CNN — **Both**
- RNN — **Both**
- LSTM — **Both**
- GRU — **Both**
- Bidirectional LSTM — **Both**
- Transformer-based Classifiers — **Classifier**
- Transformer Regressors — **Regressor**
- Attention Networks — **Both**
- ResNet — **Both**
- Capsule Networks — **Both**
- Siamese Networks — **Both**

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8. Sequence & Time-Series Models

Statistical

- ARIMA — **Regressor**
- SARIMA — **Regressor**
- SARIMAX — **Regressor**
- ARIMAX — **Regressor**
- VAR — **Regressor**

- Holt-Winters — **Regressor**

Machine Learning

- Random Forest for Time-Series — **Regressor**
- Gradient Boosting for Time-Series — **Regressor**
- SVR for Time-Series — **Regressor**
- KNN for Time-Series — **Regressor**

Deep Learning

- LSTM — **Regressor**
- GRU — **Regressor**
- TCN — **Regressor**
- Transformer for Time-Series — **Regressor**
- DeepAR — **Regressor**
- N-BEATS — **Regressor**

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9. Survival Analysis Models

- Cox Proportional Hazards Model — **Regressor (time-to-event)**
- Random Survival Forest — **Regressor**
- DeepSurv — **Regressor**
- Weibull Regression — **Regressor**
- Accelerated Failure Time Model — **Regressor**
- Supervised Kaplan–Meier models — **Regressor**

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10. Ranking Algorithms (Learning to Rank)

- RankNet — **Ranker**
- LambdaRank — **Ranker**
- LambdaMART — **Ranker**
- RankBoost — **Ranker**
- ListNet — **Ranker**
- Coordinate Ascent Ranker — **Ranker**

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11. Multi-Label & Multi-Output Models

Problem Transformation

- Binary Relevance — **Classifier**
- Classifier Chains — **Classifier**
- Label Powerset — **Classifier**

Algorithm Adaptation

- Multi-output Decision Trees — **Both**
- Multi-output Random Forest — **Both**
- Multi-output Gradient Boosting — **Both**
- Multi-label kNN — **Classifier**
- Multi-label SVM — **Classifier**
- Multi-label Neural Networks — **Classifier**

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12. Other Specialized Supervised Models

- Elastic Maps Regression — **Regressor**
- Projection Pursuit Regression — **Regressor**
- MARS — **Regressor**
- GAM — **Regressor**
- Isotonic Regression — **Regressor**
- Ordinal Regression Models — **Classifier**
- Bayesian Personalized Ranking — **Ranker**
- Maximum Margin Regression — **Regressor**
- Core Vector Machine — **Both**