We choose Artificial Neural Network, Decision tree, Random Forest, and Naïve Bayes Classifier.

Artificial Neural Network is a model composed of layers and each layer contains multiple neurons. Each neuron receives the input and performs a weighted. Then the neurons through an activation function decide how to pass to the next layer. ANN is capable of learning complex non-linear relationships and is used to classification problems.

Decision tree is a model has hierarchical decision model that follows the path of the tree through a series of questions and answers until a final decision or prediction is reached.

Random Forest is an ensemble model composed of multiple decision trees that improve the accuracy and robustness of the overall prediction by merging the prediction results of individual trees.

Naïve Bayes Classifier is a classification model based on Bayes' theorem, which assumes that all features are independent of each other and is used to make fast and effective predictions.

ANN:

1). Compared with the decision tree, the decision tree might be overfitting., ANN can better generalize to unseen data and reduce the risk of overfitting with sufficient data training.

2). Compared to linear models, ANNs can learn and model very complex and non-linear relationships

Decision tree:

1). Compared with the ANN model, the results of the decision tree are easier to understand because it can be visualized.

2). Unlike SVM which requires feature scaling, decision trees can directly handle features of different ranges and scales.

Random forest:

1). Random forests are better than decision trees because they can reduce the risk of overfitting by integrating multiple decision trees.

2). Random forests are better than ANN because they can provide an intuitive understanding of feature importance, which helps identify the most influential variables in the data.

Naïve Bayes Classifier:

1). Compared with ANN, the Naive Bayes classifier is faster, and is particularly suitable for large data sets.

2). Compared with decision forest, Naive Bayes are effective when dealing with high-dimensional sparse data.

Weakness

ANN:

1). Compared with naive bayes classifiers, ANN requires more computing resources and time to train, especially when dealing with large-scale data sets.

2). Compared with decision trees, neural networks cannot observe the decision-making process.

Decision tree:

1). Compared with ANN, the decision tree is easy to overfit, especially for a large dataset.

2). Compared to random forests, decision trees can result in completely different tree structures for small changes in the training data. The random forest is more stability.

Random forest:

1). Compared with a decision tree, the random forest model is more complex and requires more time to train and predict.

2). Random forests are less interpretable than decision trees because the model’s decision-making process is more difficult to track and explain.

Naïve Bayes Classifier:

1). Compared to the ANN, Naive Bayes assumes that all features are independent of each other, which is often not true in real-world data and may lead to degraded model performance.

2). Compared to the random forest, Naive Bayes is more sensitive to class imbalance in the data, which may lead to poor prediction performance.