|  |  |  |  |
| --- | --- | --- | --- |
| Model | K Nearest Neighbour Method | Decision Tree | Support Vector Method |
| Accuracy | 86.44 | 89.83 | 89.83 |
| Sensitivity | 97.5 | 95.0 | 97.5 |
| Specificity | 63.15 | 78.94 | 73.68 |
| False Positive Rate | 36.84 | 21.05 | 26.31 |
| Precision | 84.78 | 90.47 | 86.63 |

### Libraries:

1. \*\*Pandas\*\*: Pandas is a powerful data manipulation and analysis library for Python. It provides data structures and functions for handling structured data and performing data analysis tasks such as data cleaning, manipulation, and aggregation.

2. \*\*NumPy\*\*: NumPy is a fundamental package for scientific computing with Python. It provides support for large, multi-dimensional arrays and matrices, along with a collection of mathematical functions to operate on these arrays efficiently.

3. \*\*matplotlib.pyplot\*\*: Matplotlib is a comprehensive library for creating static, animated, and interactive visualizations in Python. `pyplot` is a sub-module of Matplotlib that provides a MATLAB-like interface for creating plots and visualizations.

4. \*\*Seaborn\*\*: Seaborn is a statistical data visualization library based on Matplotlib. It provides a high-level interface for drawing attractive and informative statistical graphics.

### Tools:

1. \*\*scikit-learn (sklearn)\*\*: Scikit-learn is a machine learning library for Python that provides simple and efficient tools for data mining and data analysis. It includes various algorithms for classification, regression, clustering, dimensionality reduction, and model selection.

2. \*\*scipy.stats\*\*: Scipy is a scientific computing library for Python that builds on NumPy. The `stats` module in Scipy provides a large number of probability distributions and statistical functions for analyzing data and performing statistical tests.

### Machine Learning Models:

1. \*\*KNeighborsClassifier\*\*: This is a classification algorithm from scikit-learn (sklearn) that implements the k-nearest neighbors algorithm. It is a non-parametric method used for classification and regression tasks.

2. \*\*DecisionTreeClassifier\*\*: This is a classification algorithm from scikit-learn (sklearn) that implements a decision tree classifier. Decision trees are a popular method for classification and regression tasks, known for their simplicity and interpretability.

3. \*\*svm\*\*: This import likely refers to support vector machine (SVM) algorithms provided by scikit-learn (sklearn). SVMs are supervised learning models used for classification and regression tasks. Scikit-learn provides various SVM algorithms, including SVC (Support Vector Classification) for classification tasks.

In your Parkinson's disease progression prediction project, we have used Pandas and NumPy for data manipulation and analysis, Matplotlib and Seaborn for data visualization, and scikit-learn for implementing machine learning models such as k-nearest neighbors, decision trees, and support vector machines. Additionally, you've utilized functions from scipy.stats for statistical analysis.