**README**

**Random Forest Titanic Survival Prediction**

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**Description**

This project involves creating a Random Forest model to predict the survival of passengers on the Titanic. The dataset used is the famous Titanic dataset, which contains information about the passengers such as age, gender, class, and whether they survived or not. The goal is to preprocess the data, build a Random Forest model, and determine the most important features that contribute to predicting survival. Additionally, the model's hyperparameters (n\_estimators and max\_depth) are tuned to find the best-performing model.

Learning this aspect of coding is important because it introduces key concepts in machine learning, such as data preprocessing, model building, feature importance analysis, and hyperparameter tuning.

**Installation**

To run this code, you need to have Python installed along with the following libraries:

1. pandas
2. numpy
3. seaborn
4. scikit-learn
5. matplotlib

You can install these libraries using pip:

pip install pandas numpy seaborn scikit-learn matplotlib

**Usage**

1. ***Load the Dataset***: The dataset is loaded from the titanic.csv file.
2. ***Data Preprocessing****:* The dataset is cleaned and preprocessed. This includes handling missing values, dropping unnecessary columns, and encoding categorical variables.
3. ***Model Building****:* A Random Forest model is built using the preprocessed data.
4. ***Feature Importance Analysis****:* The most important features for predicting survival are identified and visualized.
5. ***Hyperparameter Tuning****:* The model's hyperparameters (n\_estimators and max\_depth) are tuned to find the best-performing model.
6. ***Model Evaluation****:* The accuracy of the best model is reported.

To run the code, simply execute the Jupyter notebook random\_forest\_titanic.ipynb.

***Screenshots***

Feature Importance Visualization:

A graph with blue bars

Description automatically generated

**Credits**

This project was created by Umar Mohammed. You can find more of my work on [GitHub](https://github.com/yourusername) @umabubs