**Using the Streamlit Interface**

**Step A: Select Your Data Source**

1. At the top of the page, you’ll see a radio button labeled **"Select Data Source"**.
2. **Choose one of the following**:
   * **Use sample data** (if you want to see a demo without uploading any file).
   * **Upload your own CSV** (if you have a CSV file containing your own geophysical well log data).

**Step B: (Optional) Upload a CSV File**

* If you choose **"Upload your own CSV"**, a file uploader will appear. Click **"Browse files"** and select the CSV file from your machine.
* Wait for the file to finish uploading. A preview of your dataset will appear in the app.

**Step C: Select Features and Target Variable**

* A list of columns from your dataset (or sample data) will be shown.
* **Select the geophysical features** you want to include as inputs to the model (e.g., GammaRay, Porosity, etc.).
* **Choose the target variable** (e.g., “Reservoir”) that indicates reservoir vs. non-reservoir zones.

**Step D: Model Hyperparameters**

* In the **sidebar** (on the left), you’ll find sliders for:
  + **Number of Trees** (n\_estimators)
  + **Max Depth**
* Adjust them as needed or leave them at default values to train the model.

**Step E: View Model Performance**

* After selecting features and target, the app **automatically trains** a Random Forest model.
* **Model Performance**:
  + **Accuracy** is displayed.
  + **Confusion Matrix** is shown, indicating correct vs. incorrect classifications.

**Step F: Feature Importance**

* The app displays a bar plot showing which features were most important in the classification.

**Step G: Well Log Data Visualization**

* Check **"Highlight Predicted Reservoir Zones"** if you want the plots to show reservoir intervals in a highlighted color.
* A series of subplots will display each selected feature vs. Depth (inverted so deeper depths are at the bottom).

**Step H: Make Predictions on New Data**

* You can **enter new input values** for each feature in the text boxes provided.
* Click **"Predict Reservoir Potential"** to see the predicted class (Reservoir or Non-Reservoir).
* An option to **download** the prediction result as a CSV file is available.

**Step I: Decision Tree Visualization (optional)**

* **Show Tree Structure**: Displays a graphical view of one of the decision trees in the random forest.
* **Show Text Representation**: Displays a text-based set of rules for the same decision tree.