

Task 5: Decision Trees and Random Forests

- **Objective:** Learn tree-based models for classification & regression.
- **Tools:** Scikit-learn, Graphviz

Hints/Mini Guide:

1. Train a Decision Tree Classifier and visualize the tree.
2. Analyze overfitting and control tree depth.
3. Train a Random Forest and compare accuracy.
4. Interpret feature importances.
5. Evaluate using cross-validation.

Dataset: You can use any dataset relevant to the task, e.g., Heart Disease Dataset
link to download: [click here to download dataset](#)

What You'll Learn : Decision trees, ensemble learning, feature importance.

Interview Questions:

1. How does a decision tree work?
2. What is entropy and information gain?
3. How is random forest better than a single tree?
4. What is overfitting and how do you prevent it?
5. What is bagging?
6. How do you visualize a decision tree?
7. How do you interpret feature importance?
8. What are the pros/cons of random forests?

Submit Here:

After completing the task, paste your GitHub repo link and submit it using the link below:

-  [\[Submission Link\]](#).

📌 Task Submission Guidelines

- 🕒 **Time Window:**

You can complete the task anytime between 10:00 AM to 10:00 PM on the given day. Submission link closes at 10 :00 PM

- 🔍 **Self-Research Allowed:**

You are free to explore, Google, or refer to tutorials to understand concepts and complete the task effectively.

- 🔧 **Debug Yourself:**

Try to resolve all errors by yourself. This helps you learn problem-solving and ensures you don't face the same issues in future tasks.

- 💰 **No Paid Tools:**

If the task involves any paid software/tools, do not purchase anything. Just learn the process or find free alternatives.

- 📁 **GitHub Submission:**

Create a new GitHub repository for each task.

Add everything you used for the task — code, datasets, screenshots (if any), and a **short README.md** explaining what you did.

- 📁 **Submit Here:**

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- 👉 [\[Submission Link\]](#).

Best
of
Luck

