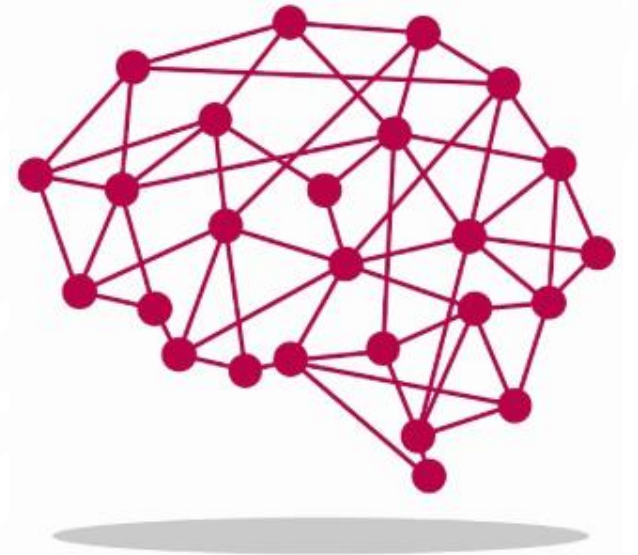# C379 EMERGING TECHNOLOGIES
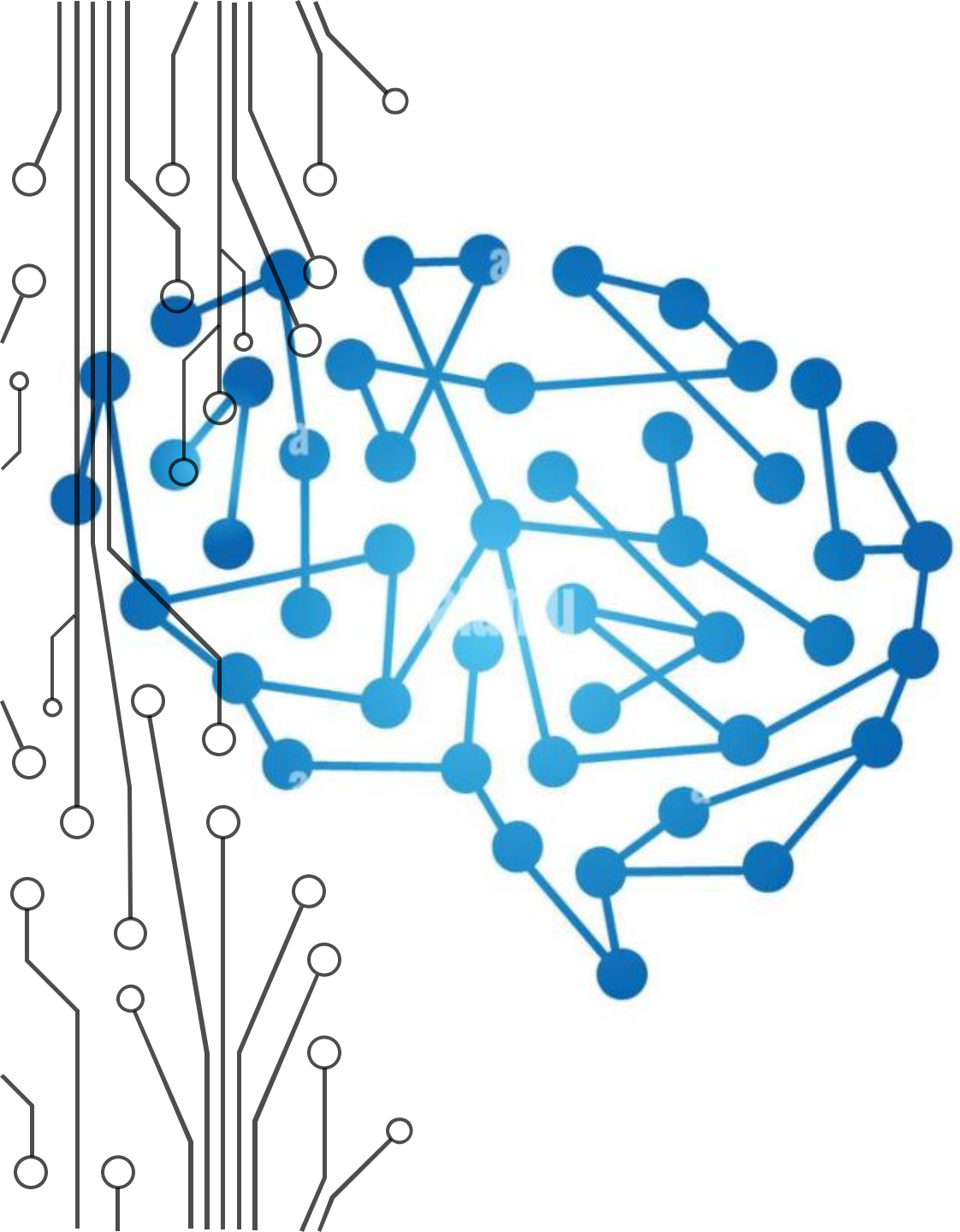
LESSON 18: DECISION TREES

L18 LEARNING OBJECTIVES

- Apply Decision Tree algorithm to a train predictive model

- Test and evaluate the Decision Tree model

- Explain and effectively present results to end-user devices
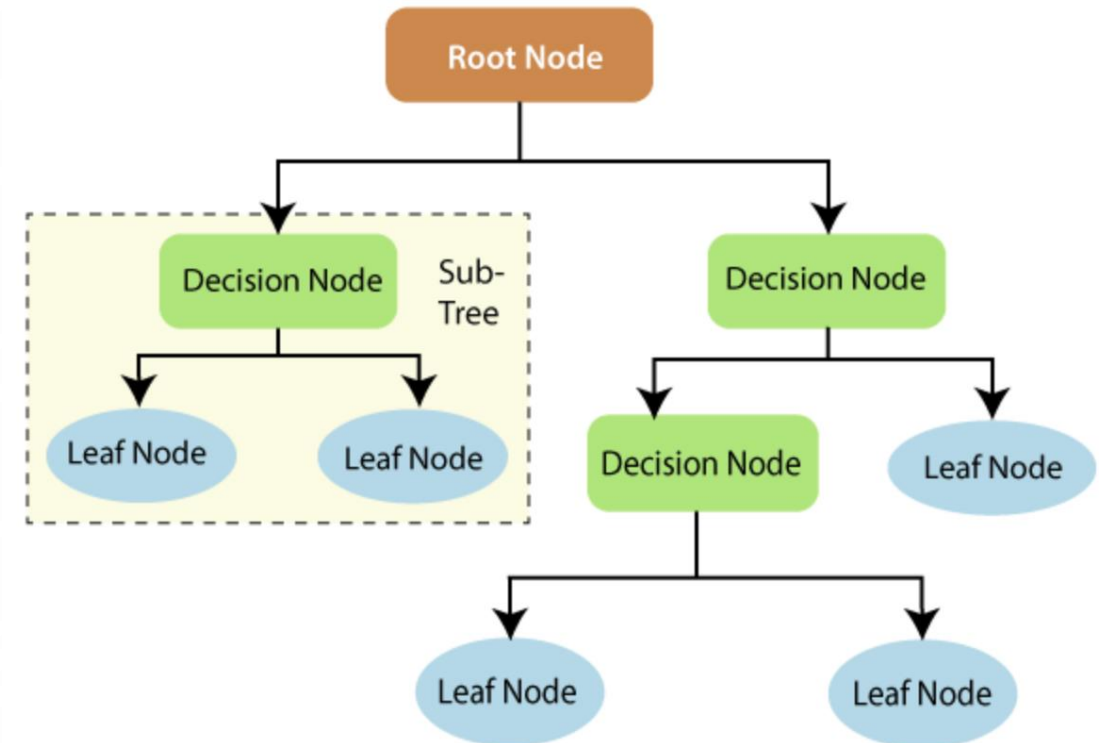
MODEL BUILDING

DECISION TREES

DECISION TREE

- Classification trees are popular because they are transparent, straightforward and easy to understand how they produce the predictions. They can be used for regression or classification tasks.

- They produce the predictions by creating a series of rules that applied consecutively until they arrive at a "leaf" node in the tree that contains the classification.
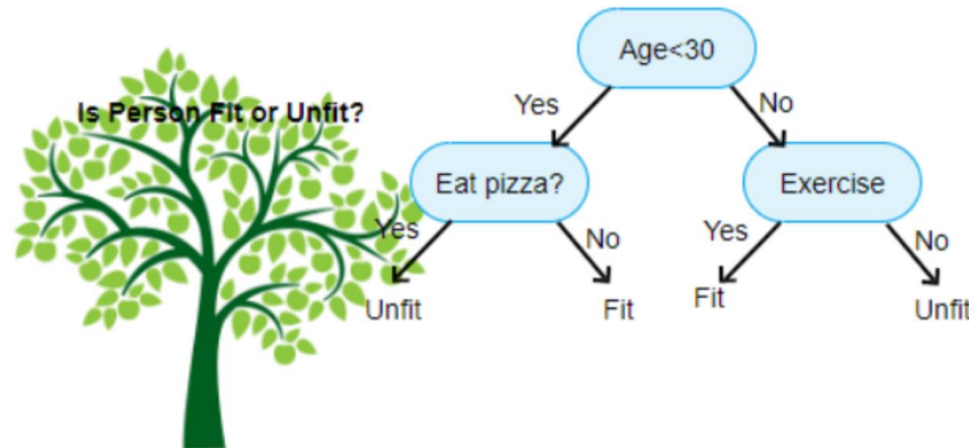
DECISION TREE

- One of the main **drawbacks of Decision Tree** is that they are very prone to over-fitting – It can do well on training data but are not so flexible for making predictions on unseen samples.

- However, the model is simple, and the results are easy to interpret.

DECISION TREE CLASSIFIER

1. Importing decision tree method from scikit-learn framework

2. Calling DT method with a maximum depth of the tree (= 6) and the minimum number of samples required to split (=50) as parameters

```python
from sklearn.tree import DecisionTreeClassifier

class_tree = DecisionTreeClassifier(max_depth=6, min_samples_split=50)
class_tree.fit(X_train, y_train)
y_pred_class_tree = class_tree.predict(X_train)
```

3. From the training dataset and labels provided in the parameters, this method train the model to make prediction.

4. The predict method is used to classify incoming data point

- *X_train* matrix contains all the features of the training set
- *y_train* matrix contains the label from the training set

LAB DEMONSTRATION

LAB 18-1

USING A DECISION TREE MODEL
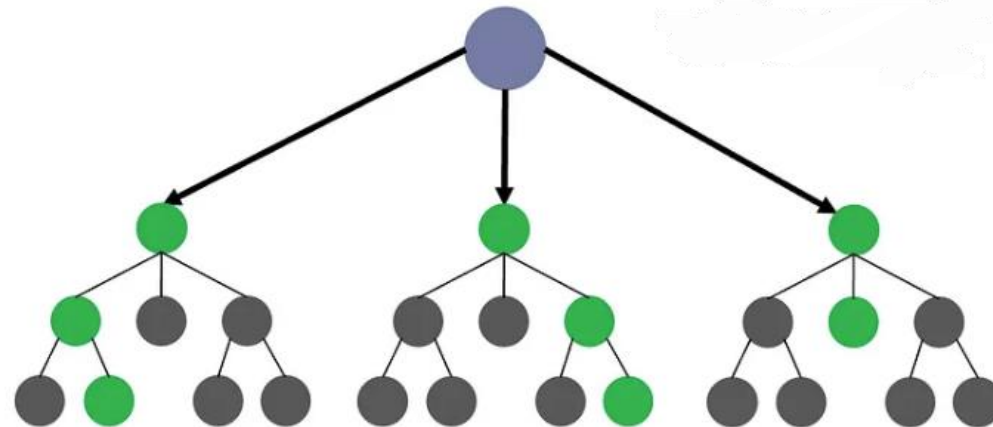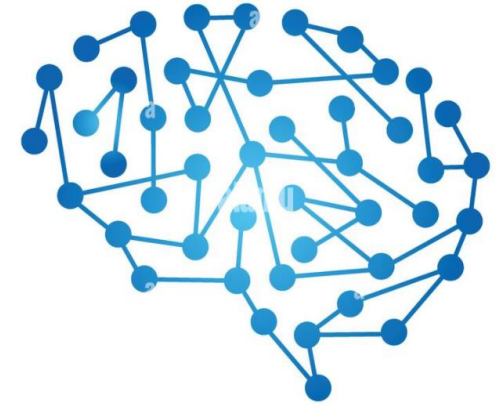
DECISION TREE

LAB 18-2

BUILD A BINARY TREE MODEL TO SOLVE

LAUNDROMAT PROBLEM

UNSCHEDULED ASYNCHRONOUS E-LEARNING

Watch the following videos before Lesson 19:

• Random Forest –

https://www.youtube.com/watch?v=J4Wdy0Wc_xQ

60 mins