# ITA0612 – MACHINE LEARNING FOR DECISION MAKING

# LAB EXPERIMENT 4 – ARTIFICIAL NEURAL NETWORK USING BACKPROPAGATION

## AIM:

To build an Artificial Neural Network using the Backpropagation Algorithm.

## ALGORITHM:

1. Initialize input, hidden, and output layers.
2. Assign random weights.
3. Perform forward propagation.
4. Calculate error.
5. Adjust weights using backpropagation.
6. Repeat until minimum error is achieved.

## PYTHON CODE:

```
from sklearn.neural_network import MLPClassifier

X = [[0,0],[0,1],[1,0],[1,1]]

y = [0,1,1,0]

model = MLPClassifier(hidden_layer_sizes=(2,),

                      activation='relu',

                      max_iter=2000)

model.fit(X, y)

print("ANN trained successfully")

print("Prediction for [1,1]:", model.predict([[1,1]]))
```

**SAMPLE OUTPUT:**

```
ANN trained successfully
Prediction for [1,1]: [1]
```

**RESULT:**

Thus, the ID3 Decision Tree Algorithm was successfully implemented and used to classify a new sample.