

Instructions:

1. Student has to select a sheet that contains experiment number.
2. 10 marks for execution of the program. 5 marks for viva.
3. You should write code/pseudocode/algorithm and theory on paper.
4. Change of experiment will lead to deduction of 2 marks out of 10.
5. Viva is based on the theory corresponding to the given experiment only.
6. You should be able to find the output of the program on paper for any given input.
7. There will not be internet connection. Program should be executed on college PC using Jupyter notebook.

List of Experiments

1. Implement Recursive Depth First Search Algorithm. Read the undirected unweighted graph from a .csv file.
2. Implement Non-Recursive Depth First Search Algorithm. Read the undirected unweighted graph from user.
3. Implement Breadth First Search Algorithm. Read the undirected unweighted graph from user.
4. Implement Best First Search Algorithm. Read the directed unweighted graph and the heuristic values from user.
5. Implement Best First Search Algorithm. Read the undirected weighted graph and the heuristic values from user.
6. Implement Best First Search Algorithm. Read the undirected unweighted graph and the heuristic values from user.
7. Implement Best First Search Algorithm. Read the directed weighted graph and the heuristic values from user.
8. Implement A* algorithm. Read directed weighted graph and heuristic values from a .csv file.
9. Implement A* algorithm. Read directed weighted graph and heuristic values from user.
10. Implement A* algorithm. Read undirected weighted graph and heuristic values from a .csv file.

11. Implement A* algorithm. Read undirected weighted graph and heuristic values from user.
12. Implement Fuzzy set operations – union, intersection and complement. Demonstrate these operations with 3 fuzzy sets.
13. Implement Fuzzy set operations – union, intersection and complement. Demonstrate De Morgan's Law (Complement of Union) with 2 fuzzy sets.
14. Implement Fuzzy set operations – union, intersection and complement. Demonstrate De Morgan's Law (Complement of Intersection) with 2 fuzzy sets.
15. Implement any two-player game (Modified Tic-Tac-Toe, Nim Game, Connect Four Game or Gomoku Game) using min-max algorithm such that in every play either computer wins or it is a draw.
16. Implement any two-player game (Modified Tic-Tac-Toe, Nim Game, Connect Four Game or Gomoku Game) using min-max algorithm such that in every play either computer loses or it is a draw.
17. Implement a simple Multi-Layer Perceptron with N binary inputs, two hidden layers and one binary output. Display the final weight matrices, bias values and the number of steps. Note that random values are assigned to weight matrices and bias in each step.
18. Implement a simple Multi-Layer Perceptron with 4 binary inputs, one hidden layer and two binary outputs. Display the final weight matrices, bias values and the number of steps. Note that random values are assigned to weight matrices and bias in each step.
19. Implement a simple Multi-Layer Perceptron with N binary inputs, two hidden layers and one output. Use backpropagation and Sigmoid function as activation function.
20. Implement a simple Multi-Layer Perceptron with N binary inputs, two hidden layers and one output. Use backpropagation and ReLU function as activation function.
21. Implement a simple Multi-Layer Perceptron with N binary inputs, two hidden layers and one output. Use backpropagation and Tanh function as activation function.

22. Write a program to read a text file with at least 30 sentences and 200 words and perform the following tasks in the given sequence.
 - a. Text cleaning by removing punctuation/special characters, numbers and extra white spaces. Use regular expression for the same.
 - b. Convert text to lowercase
 - c. Tokenization
 - d. Remove stop words
 - e. Correct misspelled words
23. Write a program to read a text file with at least 30 sentences and 200 words and perform the following tasks in the given sequence.
 - a. Text cleaning by removing punctuation/special characters, numbers and extra white spaces. Use regular expression for the same.
 - b. Convert text to lowercase
 - c. Stemming and Lemmatization
 - d. Create a list of 3 consecutive words after lemmatization
24. Write a program to read a 3 text files on any technical concept with at least 20 sentences and 150 words. Implement one-hot encoding.
25. Write a program to read a 3 text files on a movie review with at least 20 sentences and 150 words. Implement bag of words.
26. Write a program to read a 3 text files a tourist place with at least 20 sentences and 150 words. Implement TF-IDF.