AI Assignment (III Internal) Max Marks: 20

Subject: Artificial Intelligence

Subject Code:IT-803B

Course: M.Tech VIII Semester
Session: Jan May 2023

Date of Submission: 20th April, 2023.

Note: Write the answers, in a notebook. Make all entries like Roll Number, Name, Class, Subject Name, Date of Submission and signature on the assignment sheet.

1. What is an AI Technique? Explain various task domains of AI.

2. Write the problem characteristics used in heuristic search in brief. How it is differ from algorithmic search?

3. Define the heuristic search technique. Explain steepest-ascent hill climbing method with an example.

4. Write the algorithm for breath first search and depth firth search.

5. Explain the difference between simple relational knowledge and procedural knowledge with example.

6. Consider the following sentences:
   1. Marcus was a man.
   2. Marcus was Pompeian.
   3. All Pompeian's were Romans.
   4. Caesar was a ruler.
   5. All Romans were either loyal to caser or hated him.
   6. Everyone is loyal to someone.
   7. People try to assassinate rulers they are not loyal to.
   8. Marcus tried to assassinate Caesar.
        (a) Translate these sentences into formulas predicate logic.
        (b) Convert the formulas of part a clause form.
        (c) Prove that "Marcus hates Caeser" using resolution.

7. State the role of facts and rules in knowledge representation with examples. Convert following rules in prolog.

a) A person is happy if he is rich and famous.
b) Ram likes anyone who likes cricket.
c) Ram likes anyone who likes themselves.
d) A hope less person is an unhappy person.
e) A healthy person eats fruits and drink milk.

8. What is a Knowledge Based System? Draw and Explain its architecture.

9. Show a conceptual dependency representation of following sentences.
a. John begged Mary for a pencil.
b. John ate noodles with a folk.

10. Illustrate the use of semantic net in knowledge representation with an example.

11. On the basis of six jobs, your task is to choose the job, that will give you the highest salary, Given   the constraints that the job should be interesting and close to your home,
The fuzzy sets are:
Interest = { (1, 0.4), (2, 0.6), (3, 0.7), (4, 0.9), (5, 0.3), (6, 0.8) }
Drive   = { (1, 0.1), (2, 0.9), (3, 0.6), (4, 1.0), (5, 0.2), (6, 0.3) }
Salary   = { (1, 0.785),(2, 0.312),(3, 0.723),(4, 0.129),(5, 0.345),(6, 0.823}
Highest membership shows highest interest, lowest drive and highest salary also Draw graph.

12. Write the short notes on followings.
a) Approaches to knowledge representation
b) Restaurant Script
c) Fail predicate with example
d) Production rules for water jug problem

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