



DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

NATIONAL INSTITUTE OF TECHNOLOGY PATNA

Ashok Raj Path, PATNA 800 005 (Bihar), India

Phone No.: 0612 – 2372715, 2370419, 2370843, 2371929, 2371930, 2371715 Fax – 0612- 2670631 Website: www.nitp.ac.in

CS5402 *Artificial Intelligence Assignment*

AI Assignment no. 1 & 2 (Combined)

Soft copy of Assignment Submission **deadline: 5th Dec. 2021**

Max. Marks: 20

Instructions:

- Question No. 1, 3, 5, 7 (3 Marks each) and Question No. 2, 4, 6, 8 (2 Marks each).
- Attempt all the following questions and write answers (hand written or typed with keyboard) in your own language.
- Don't prefer copy and paste option, use above instruction (try to write plagiarism free answer).
- Send the assignment within given time limit. Soft copy should be in scanned PDF format.

- Explain the stochastic and evolutionary search algorithms used for problem-solving through search.
- Describe the use of local consistency and its types in the inference in CSPs of Constraint Propagation. Also explain how backtracking search is used for CSPs.
- Differentiate between propositional vs. first-order logic with inference rules. Write the forward and backward chaining algorithms and tree structure solutions (diagram) for the following knowledge-based automated reasoning agent and prove that West is a criminal:
“The law says that it is a crime for an American to sell weapons to hostile nations. The country Nono, an enemy of America, has some missiles, and all of its missiles were sold to it by Colonel West, who is American.”
- Write steps to find out resolution of the conjunctive normal form (CNF) for the first-order logic with the help of suitable example and also discuss the resolution inference rule with its completeness proof of resolution.
- Define the blocks world example domain with suitable example and also describe the components of a planning system. Also describe the goal stack planning method with the help of suitable example.
- Examine the nonlinear planning using constraint posting with suitable example and differentiate it with goal-stack method.
- Define the Bayes theorem and apply the Bayes'rule for examining the simple case and combining evidence with suitable examples.
- How the hierarchical planning method is used for solving complex operator hard problems with the help of suitable example?
