National Institute of Technology Calicut
Department of Computer Science and Engineering
Course Plan (tentative) | Monsoon 2021
CS4023D Artificial Intelligence

Course Outcomes:

CO1 Apply State-space search strategies for problem solving and implement it using LISP.

CO2 Use heuristic functions in search strategies and Games.

CO3 Apply various knowledge representation mechanisms.

CO4 Identify and choose the appropriate machine learning approach for solving various problems.

Lecture Details: Lecture Hours: B slot | Lecture Mode: Online (Webex platform)

Instructor: **A Batch:** Gopakumar G | Email Id: gopakumarg@nitc.ac.in - **B Batch:** Pournami P N | Email Id: pournamipn@nitc.ac.in

References

- S. Russell and P. Norvig, Artificial Intelligence- A Modern Approach, 2/e, Pearson Education, 2002.

- G. F. Luger, Artificial Intelligence - Structures and Strategies for Complex Problem Solving, 4/e, 2002, Pearson Education.

- E. Rich and K. Knight, Artificial Intelligence, 2/e, Tata McGraw Hill.

- P. Winston and B. Horn, LISP , 3/e, Addison Wesley, 1989.

- I. Bratko, Prolog Programming for Artificial Intelligence, 3/e , Addison Wesley, 2000.

Grading and Mark distribution

Grading will be relative
Following is the split up of 100 marks

Quiz (4 Nos): 4×5 = 20 marks | Assignment (2 Nos): 2×10 = 20 marks | Midterm exams (2 Nos): 2×15 = 30 marks | End Exam: 30 marks

All issues regarding valuation of exams must be resolved within one week after the marks are announced.

Absence for exams/assignments/quizzes without prior permission from the instructor will be equivalent to zero marks in the corresponding exam/assignment/quiz.

There will be no makeup exam except in case of genuine reason. In the event of such exceptional cases, the student must discuss the matter with the instructor and must get permission at least one day before the date of exam.

There will not be any change in the submission date once announced. Late submission/s will not be valued at any cost, and will be awarded zero marks.

Attendance
80% attendance is compulsory for writing the end semester exam.

Standard of Conduct

Each student is expected to adhere to high standards of ethical conduct, especially those related to cheating and plagiarism. Any submitted work MUST BE an individual effort. Any academic dishonesty will result in zero marks in the corresponding exam or evaluation and will be reported to the department council for record keeping and for permission to assign F grade in the course. The department policy on academic integrity can be found at
http://cse.nitc.ac.in/sites/default/files/Academic-Integrity.pdf

Tentative Schedule
Week 01 Artificial Intelligence: Introduction, History and Applications; Intelligent Agents
Week 02 Solving problems by Searching: Structures and Strategies for state space search- Data driven and goal driven search,Uninformed Search strategies
Week 03 Informed(Heuristic) Search Strategies, Heuristic Functions, Local Search Algorithms and Optimization Problems
Week 04 Searching with Non-deterministic actions, Constraint satisfaction, Using heuristics in games- Minimax Search
Week 05 Alpha Beta Procedure,Stochastic Games
Week 06 Knowledge representation - Knowledge based agents,Propositional calculus, First-Order Logic(Predicate Calculus)
Week 07 Inference in First-Order Logic, Forward and Backward chaining
Week 08 Theorem proving by Resolution, Answer Extraction, AI Representational Schemes - Semantic Nets, Conceptual Dependency, Scripts, Frames
Week 09 Planning and acting in the real world.
Week 10 Learning - Learning From Examples, Knowledge in Learning, Learning probabilistic Models
Week 11 Reinforcement Learning
Week 12 The Genetic Algorithm- Genetic Programming, Overview of Expert System Technology
Week 13 Introduction to Natural Language Processing
Week 14 Languages and Programming Techniques for AI- Introduction to PROLOG and LISP
Week 15 Search strategies and Logic Programming in LISP

Week 16 Production System examples in PROLOG.