**e-Learning Material to be uploaded on Virtual C4**

**Course/ Programme:** M.Sc. Computer Science

**Year & Semester:** IInd Year Sem-IV

**Subject:** 4MCS1 - Artificial Intelligence and Expert Systems

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| **Sr. No.** | **Topic** | **e-content Link \*** |
| **Prolog Programming– NPTEL lectures by Prof. P. Dasgupta, Department of Computer Science and Engineering, IIT, Kharagpur** | | |
| 1 | Logic Programming: Prolog | <https://www.youtube.com/watch?v=jySpg72Vbc4> |
| 2 | Prolog Programming | <https://www.youtube.com/watch?v=iJhtgWAGUAQ&list=RDCMUC640y4UvDAlya_WOj5U4pfA&start_radio=1&t=2587> |
| **Artificial Intelligence – NPTEL course by Prof. Deepak Khemani, Department of Computer Science and Engineering, IIT, Madras** | | |
| 1 | Artificial Intelligence: Introduction | <https://www.youtube.com/watch?v=XCPZBD9lbVo&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=1> |
| 2 | Introduction to AI | <https://www.youtube.com/watch?v=iF1tOCEXLXY&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=2> |
| 3 | AI Introduction: Philosophy | <https://www.youtube.com/watch?v=ExoluwBk4Xc&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=3> |
| 4 | AI Introduction | <https://www.youtube.com/watch?v=zx_oMonGdK4&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=4> |
| 5 | Introduction: Philosophy | <https://www.youtube.com/watch?v=uUnaBP-9zVI&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=5> |
| 6 | State Space Search - Introduction | <https://www.youtube.com/watch?v=52nI2IPyOu8&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=6> |
| 7 | Search - DFS and BFS | <https://www.youtube.com/watch?v=TMLyKcBtHuo&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=7> |
| 8 | Search DFID | <https://www.youtube.com/watch?v=xIEe0yK1VL4&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=8> |
| 9 | Heuristic Search | <https://www.youtube.com/watch?v=dtGRmhZ6Cuo&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=9> |
| 10 | Hill climbing | <https://www.youtube.com/watch?v=ZOvRZ7UJMjk&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=10> |
| 11 | Solution Space Search,Beam Search | <https://www.youtube.com/watch?v=Fioj-Zx-PHA&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=11> |
| 12 | TSP Greedy Methods | <https://www.youtube.com/watch?v=Bk1GmENOvrQ&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=12> |
| 13 | Tabu Search | <https://www.youtube.com/watch?v=wrkMM6a4S-U&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=13> |
| 14 | Optimization - I (Simulated Annealing) | <https://www.youtube.com/watch?v=dg5zUxdAE_E&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=14> |
| 15 | Optimization II (Genetic Algorithms) | <https://www.youtube.com/watch?v=THSNf9mPsmA&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=15> |
| 16 | Population based methods for Optimization | <https://www.youtube.com/watch?v=ra13Sv7XZ3M&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=16> |
| 17 | Population Based Methods II | <https://www.youtube.com/watch?v=V-Yipf9GuH0&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=17> |
| 18 | Branch and Bound, Dijkstra's Algorithm | <https://www.youtube.com/watch?v=TWCWuTfOrSo&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=18> |
| 19 | A\* Algorithm | <https://www.youtube.com/watch?v=yMcZvZayJUA&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=19> |
| 20 | Admissibility of A\* | <https://www.youtube.com/watch?v=v_No7NEGIKE&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=20> |
| 21 | A\* Monotone Property, Iterative Deeping A\* | <https://www.youtube.com/watch?v=aqdkuGLXlnI&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=21> |
| 22 | Recursive Best First Search, Sequence Allignment | <https://www.youtube.com/watch?v=EvvSYeI6BaQ&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=22> |
| 23 | Pruning the Open and Closed lists | <https://www.youtube.com/watch?v=wZQqE-N-VeA&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=23> |
| 24 | Problem Decomposition with Goal Trees | <https://www.youtube.com/watch?v=TYHOvqkm5Zk&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=24> |
| 25 | AO\* Algorithm | <https://www.youtube.com/watch?v=6CoX9GmDRhU&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=25> |
| 26 | Game Playing | <https://www.youtube.com/watch?v=RuWFxh9aRmc&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=26> |
| 27 | Game Playing- Minimax Search | <https://www.youtube.com/watch?v=a2tqR2eUlek&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=27> |
| 28 | Game Playing - AlphaBeta | <https://www.youtube.com/watch?v=0oqhN5tvLgA&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=28> |
| 29 | Game Playing-SSS \* | <https://www.youtube.com/watch?v=2I9eR3IO6zM&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=29> |
| 30 | Rule Based Systems | <https://www.youtube.com/watch?v=6kRYg1QVcWo&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=30> |
| 31 | Inference Engines | <https://www.youtube.com/watch?v=HIA0nevQqoc&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=31> |
| 32 | Rete Algorithm | <https://www.youtube.com/watch?v=XG1sxRcdQZY&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=32> |
| 33 | Planning | <https://www.youtube.com/watch?v=7lvthOTND_I&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=33> |
| 34 | Planning FSSP, BSSP | <https://www.youtube.com/watch?v=UMiO831onfo&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=34> |
| 35 | Goal Stack Planning. Sussman's Anomaly | <https://www.youtube.com/watch?v=nvRmeHykltA&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=35> |
| 36 | Non-linear planning | <https://www.youtube.com/watch?v=wt2iN_XrNkk&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=36> |
| 37 | Plan Space Planning | <https://www.youtube.com/watch?v=3nFFmKtoWYM&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=37> |
| 38 | GraphPlan | <https://www.youtube.com/watch?v=Ru5c6LamlYM&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=38> |
| 39 | Constraint Satisfaction Problems | <https://www.youtube.com/watch?v=il20Q5tXp-A&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=39> |
| 40 | CSP continued | <https://www.youtube.com/watch?v=Y-Abw8Jz4zs&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=40> |
| 41 | Knowledge-based systems | <https://www.youtube.com/watch?v=vmCSX4iUB_4&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=41> |
| 42 | Knowledge-based Systems, PL | <https://www.youtube.com/watch?v=u1qrVIwijbw&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=42> |
| 43 | Propositional Logic | <https://www.youtube.com/watch?v=5fZ_RnhvGMQ&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=43> |
| 44 | Resolution Refutation for PL | <https://www.youtube.com/watch?v=zf1WkHq0k2o&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=44> |
| 45 | First-order Logic (FOL) | <https://www.youtube.com/watch?v=A8OiEf7DxKY&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=45> |
| 46 | Reasoning in FOL | <https://www.youtube.com/watch?v=RIG4_j4zs2E&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=46> |
| 47 | Backward chaining | <https://www.youtube.com/watch?v=i3L4G1ZO7_E&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=47> |
| 48 | Resolution for FOL | <https://www.youtube.com/watch?v=i3L4G1ZO7_E&list=PLbMVogVj5nJQu5qwm-HmJgjmeGhsErvXD&index=47> |
| **Alternative AI Video course**  **Artificial Intelligence – NPTEL course by Prof. Sudeshna Sarkar and Prof. Anupam Basu, Department of Computer Science & Engineering, IIT, Kharagpur** | | |
| 1 | Artificial Intelligence Lecture series  (39 Lectures) | <http://www.nptelvideos.in/2012/11/artificial-intelligence.html> |

\* e-content:

**References:**

1. NPTEL-Youtube Channel

**Name of the teacher:** A. B. Manwar

**Designation:** Associate Professor

**Department:** Computer Science