**Lab Plan**

**Year: 2023-24**

| **Lab Code : ADL502** | **Year/ Semester :** T.E.(AI and DS)/ Sem V |
| --- | --- |
| **Name Of the Lab :** Artificial Intelligence Lab | **Class :** D11AD |
| **Lab Teacher :** Himanshi Jiwatramani | **Subject Teacher :** Dr. Anjali Yeole |
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**Prerequisite: Structured Programming Approach**

**Lab Objectives:**

|  | **Description** |
| --- | --- |
| **1** | To design suitable Agent Architecture for a given real world AI problem |
| **2** | To implement knowledge representation and reasoning in AI language |
| **3** | To design a Problem-Solving Agent |
| **4** | To incorporate reasoning under uncertainty for an AI agent |

**Lab Outcome:**

| **LO** | **Description** |
| --- | --- |
| **LO 1** | Identify suitable Agent Architecture for a given real world AI problem |
| **LO 2** | Implement simple programs using Prolog |
| **LO 3** | Implement various search techniques for a Problem-Solving Agent |
| **LO 4** | Represent natural language description as statements in Logic and apply inference rules to it |
| **LO 5** | Construct a Bayesian Belief Network for a given problem and draw probabilistic inferences from it |

**Term Work & Practical Examination:**

**TermWork:**

1. Term work should consist of 8(min) to 12(max) experiments.

2. The final certification and acceptance of term work ensures satisfactory performance of laboratory work and minimum passing marks in term work.

3. Total 25 Marks based on evaluation of Experiments.

**Evaluation Exam Practical Exam based on lab syllabus of ADL502**

**List of Experiments:**

| **Sr No** | **List of Experiments** | **LO’s** | **Bloom’s levels** |
| --- | --- | --- | --- |
| 1 | Write simple programs using PROLOG as an AI programming Language   1. Family Tree 2. Tower of Hanoi | LO2 | 1,2 |
| 2. | a. Implement any one of the Uninformed search techniques  b.Implement any one Uninformed Search (DFS/BFS) for 4 queen/8 queen/8 puzzle or any state space | LO3 | 2,3,4 |
| 3 | Implement any one of the Informed search techniques E.g. A-Star algorithm for 8 puzzle problem | LO3 | 2,3,4 |
| 4 | Implement adversarial search using min-max algorithm. | LO3 | 2,3,4 |
| 5 | Implement any one of the Local Search techniques. E.g. Hill Climbing, Simulated Annealing, Genetic algorithm | LO3 | 2,3,4 |
| 6 | Define an ontology in first-order logic for tic-tac-toe/ building Pizza ontology | LO4 | 1,2 |
| 7 | Create a Bayesian Network for the given Problem Statement and draw inferences from it. (You can use any Belief and Decision Networks Tool for modeling Bayesian Networks) | LO5 | 3,4,5 |
| 8 | Implement a Planning Agent | LO1 | 2,3,4 |
| 9 | Design a prototype of an AI based Game | LO5 | 6 |
| 10 | . Case study of any existing successful AI system | LO1 | 1,2 |

**Note:** \* indicates newly added experiments this year.

**Bloom’s Taxonomy:-**

| **Level** | **Descriptor** | **Level of Attainment** |
| --- | --- | --- |
| 1 | Remembering | Recalling from memory of previously learned material |
| 2 | Understanding | Explaining ideas or concepts |
| 3 | Applying | Using information in another familiar situation |
| 4 | Analyzing | Breaking information into part to explore understandings and relationships |
| 5 | Evaluating | Justifying decision or course of actions |
| 6 | Creating | Generating new ideas, products or new ways of viewing things |

**Software Tools used:**

* Visual Studio Code, Jupyter Notebook

**Web Resources**

[1 An Introduction to Artificial Intelligence - Course (nptel.ac.in)](https://tinyurl.com/ai-for-everyone)

[2 https://tinyurl.com/ai-for-everyone](https://tinyurl.com/ai-for-everyone)

[3 https://ai.google/education/](https://tinyurl.com/ai-for-everyone)

[4 https://openai.com/research/](https://tinyurl.com/ai-for-everyone)

**Evaluation:**

* Experiments are evaluated based on viva taken on experiments.
* Evaluation is based on following table:-

| **Range** | **Grade** |
| --- | --- |
| 80 and above | Outstanding (O) |
| 75.00 – 79.99 | Excellent (A) |
| 70.00 – 74.99 | Very Good (B) |
| 60.00 – 69.99 | Good (C) |
| 50.00 – 59.99 | Fair (D) |
| 45.00 – 49.99 | Average (E) |
| 40.00 – 44.99 | Pass (P) |
| Less than 40.00 | Fail (F) |

| Program Execution | 3 |
| --- | --- |
| Documentation | 3 |
| Timely Checked | 2 |
| Viva | 2 |
| Total | 10 |
| Mini project Execution | 3 |
| Documentation | 3 |
| Timely Checked | 2 |
| Viva | 2 |
| Total | 10 |

**Name Of Lab Teacher: Himanshi Jiwatramani Name of Subject Teacher: : Dr. Anjali Yeole Signature** : **Signature :**