FAST NATIONAL UNIVERSITY OF COMPUTER & EMERGING SCIENCES PESHAWAR CAMPUS

AL2002 – Artificial Intelligence Lab (1 CH)

Pre-Requisite: -
Instructor: Ms. Hurmat Hidayat
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Office: Khyber Lab II

Course Introduction

This course introduces strategies, methods and algorithms for solving problems that requires decision making on part of the computer. Further, different implementation techniques in automated reasoning, data and knowledge representation, search techniques, planning and learning techniques are practiced.

Grading Policy

Assessment Item	Weightage
Assignment/Quizzes	10%
Project	10%
Lab Tasks	35%
Final Term	45%

Text and Reference Books

- Lab Manuals
- Online prolog, python documentation
- Stuart Russell and Peter Norvig, Artificial Intelligence. A Modern Approach, 3rd edition, Prentice Hall, Inc., 2010.

Administrative Instructions

- Attendance as per institute's policy.
- No retake of quizzes.
- Late submission of assignment/quiz/project is not acceptable.
- For course project, the team should consist of at most 3 students.

Computer Usage/ Software Tools

- Prolog
- Python, and Jupyter Notebook

Weekly Breakdown	
Lab 01	• Practical Examples of AI + Introduction to Python and its libraries Numpy, Pandas, Matplotlib, NetworkX
Lab 02	• Types of Agents and Environments to Implement
Lab 03	• Uninformed search techniques – Formulation, identification and solution implementation using Breadth-First, Depth-First & other similar search approaches.
Lab 04	• Informed search techniques – Formulation, identification and solution implementation using Greedy and A* search approach.
Lab 05	• Introduction to Prolog – Basic concepts, Structures of Prolog programs, syntax, facts, rules and queries, Recursive definition, and Clause ordering & Goal ordering in prolog
Lab 06	• Supervised Learning (KNN)
Lab 07	• Unsupervised Learning (K-means)
Lab 08	• Naive Bayes
Lab 09	• Genetic Algorithm
Lab 10	• Constraint Search Problem
Lab 11	• Adversarial Search Strategies
Lab 12	• Linear regression, Logistic Regression
Lab 13	• Neural Networks
Lab 14	• Project Demo
Lab 15	• Final Lab Exam