cse352
Artificial Intelligence

Professor Anita Wasilewska

Spring 2022
GENERAL INFORMATION
The webpage contains
Course Syllabus
Lecture Notes Slides
Course extra Materials
Project Data and Project Description
Homeworks and Homeworks Solutions
Extra Lectures-Presentations
Some of Past Students Presentations
Professor and TAs Office Hours

**Professor Office Hours**

*Tuesday, Thursday 11:30 am - 12:30 pm and by appointment*

**Place**  New Computer Science Building, Room 208,
telephone: 2-8458

*In person in the Office and/or ZOOM on demand*

I also *read emails DAILY and respond* within a day or two to students e-mails
Professor and TAs Office Hours

There are multiple TAs - and their office hours listed on course webpage and advertised on Blackboard.

TAs are responsible for grading - I write tests and solutions.

All grades are listed on Blackboard.

TAs' office hours and other responsibilities are colorred listed and updated, if needed, on the course webpage and also advertised on Blackboard.
Course General Description

AI is a broad and well established field. AI books are long and often narrowly specialized. Our course attempts to provide a concise and accessible introduction to the field. It is designed to give a broad and yet in-depth overview of different fields of AI. We discuss and examine the most recognized techniques and algorithms in a rigorous detail. We also explore trends, areas, and developments of the field based on newest research and its applications.
Textbooks

There are two books we cover in some measure and several additional course materials we cover in great detail.

**Book 1**
*The Essence of ARTIFICIAL INTELLIGENCE*
Alison Cawsey
Prentice Hall, 1998

**Book 2**
*DATA MINING - Concepts and Techniques*
Jiawei Han and Michelle Kamber
Morgan, Kauffman Publishers, 2011
Second/Third Edition
This is a short, not expensive and not technical book. It is easy to read and builds a lot of intuitions, but lacks technical rigor and new approaches and developments. These are provided in the very extensive Course Lectures.
Book 1

The Essence of ARTIFICIAL INTELLIGENCE

We will use only chapters 1-3 and chapters 5, 7. Chapters 1-3 are supplemented by the course Lectures, Homeworks solutions, and additional materials for detailed technical details. Chapter 7 is supplemented by the Book 2 and very extensive course Lectures that are based on the Book 2 relevant chapters.
Book 2

DATA MINING - Concepts and Techniques

Course Lectures cover some parts of chapters 2, 5, 6 of the Second Edition
You do not need to buy the book
Original Book 2 Slides for Chapters 2, 5, 6 are posted on course webpage
Material covered in them is presented in Lectures 7-17
Additional Book

LOGICS FOR COMPUTER SCIENCE: Classical and Non - Classical
Anita Wasilewska, Springer, 2018

We use in Lectures 4, 6 parts of chapter 2 that is posted on the course webpage.
The links to the Chapter 2 VIDEO and corresponding Video Slides are also posted.
Chapter 2 VIDEO is a part of the YOUTUBE LOGIC Channel (link posted)
Class Lectures

Class attendance is very important, as the course Lectures serve as an Extra Textbook for the course and play an integral and very important part of the course design.
GRADING

During the semester you have to complete the following.

**Quizzes** - (30pts)

**Midtem** - (65 pts)

**Project** (40pts)

**Final** - (65pts)

**Extra Credit**

You can earn up to **15 extra points** during the semester.
Final grade computation

You can earn up to **200 points** during the semester plus up to **25 extra credit** points

The grade will be determined in the following way:

\[
\text{# of earned points divided by 2} = \% \text{ grade}
\]

The \% grade is translated into a letter grade in a standard way as described in the course Syllabus
Final grade computation

The % grade is translated into a letter grade as follows:

100 – 95 % is A
94 – 90 is A–
89 – 86% is B+
85 – 83 % is B
82 – 80 % is B–
79 – 76 % is C+
75 – 73 % is C
72 – 70 % is C–
69 – 60 % is D range and F is below 60%
Quizzes and Tests Schedule

This is a Preliminary Schedule

Q1  March 1  in class
Spring Break  March 14 - 20
Project Data - due  March 24
MIDTERM  April 5
Q2  April 11
Project - - due  April 14
Last Class  May 5  - Review for Final
Finals Week  May 10 - 18

Quizzes and Tests  are closed book examinations

· None of the grades will be curved
Homeworks

Homeworks
There are 4 Homework and Homework Solutions posted
I encourage students to solve homework problems first as a practice to find out how much you know and understand
Then look at the at posted solutions and compare your solutions with those posted
Quizzes and TESTS will contain problems very similar to the Homework Problems
PROJECT

Detailed Project Description is available on the course webpage.
I will discuss the Project in class when we cover enough of the material for students to understand it.
It is a practical and simple project that does not involve programming.
It is a TEAM Project.
Please form 3-4 people TEAMS and send e-mail to a designated TA.
TA will also help students to form teams.
Course Structure and Content

Part 1  Lectures 1 - 6

1. Introduction to AI, Knowledge Representation and Inference  
Lectures 1, 2 - details for Book 1, Chapter 1, 2

2. Logic for AI, Overview of Propositional and Predicate Logic; Predicate languages and basic Laws of Quantifiers; Predicate Logic Arguments.  
Lectures 3, 4 - details for Book 1, Chapter 2, Additional Book, Chapter 2

3. Rules Based Expert System  
Lectures 5, 5a - details for Book 1, Chapter 2, J. Busse book ”Managing Uncertainty in Expert Systems” (Handout 1)
Course Structure and Content

4. Automated theorem proving - Propositional Resolution and resolution strategies
   
   Lecture 6 - details for Book 1, Chapter 2, Genesereth, Nilson book”Logical Foundations of Artificial Intelligence ”, chapter 4 (Handout 2)
   
   Q1 - MARCH 1

Part 2  Lectures 7 - 12

1. Introduction to Machine Learning and Classification
   
   Book 2, Chapter 6, Lectures 7 - 9
Course Structure and Content

2. Descriptive Classifier - Decision Tree Basic and Full Algorithms (Handout 3)
   Book 2, Chapter 6, Lectures 10 - 12
   MIDTERM - April 5

Part 3  Lectures 13, 14, 14a

1. Non Descriptive Classifier - Neural Network, Back propagation Algorithm (Handout 4)
   Book 2, Chapter 6, Lecture 13

2. Classification Review
   Book 2, Chapter 6, Lecture 14, 14a

Q2 - April 11

Project  due  April 14
Course Structure and Content

Part 4  Lectures 15 - 18

1. Association Analysis: Apriori Algorithm and Classification by Association
   Book 2, Chapter 5, Lectures 15, 16

2. Genetic Algorithms introduction and applications examples
   Book 2, Chapter 6, Lectures 17, 18