cse352
Artificial Intelligence

Professor Anita Wasilewska

Fall 2019

GENERAL INFORMATION

Course Web Page
www.cs.stonybrook.edu/~ cse352

The webpage contains

Course Syllabus

Lecture Notes Slides

Course extra Materials

Project Data and Project Description

Homeworks and Homeworks **Solutions**

Extra **Lectures-Presentaions**

Some of Past Students Presentations

Course Text Book

The Essence of ARTIFICIAL INTELLIGENCE

Alison Cawsey, Prentice Hall, 1998

This is a very short and condensed book (not expensive!)

We will use only first 3 chapters and chapters 5, 7

We will **mainly use Lecture Notes** and **extra readings** posted on the course WEB PAGE

The Lecture Notes are very detailed, technically more advanced then the book, and they extend material included the book

Course Additional Text Book

DATA MINING - Concepts and Techniques

Jiawei Han and Michelle Kamber

Morgan, Kauffman Publishers, 2011

Here is the author webpage: https://hanj.cs.illinois.edu/

You can download text and slides for

CHAPTER 6: Classification and Prediction at

https : //hanj.cs.illinois.edu/bk3/bk3_slidesindex.htm

Course Goal

Artificial Intelligence is a broad and well established field.

The AI textbooks seem to be getting longer and longer.

Our little textbook attempts to reverse this trend. It provides a concise, intuitive and accessible introduction to the field

The course is designed to give a broad, yet in-depth overview of different fields of AI

Course Description

We will examine the most recognized AI techniques and algorithms in a **rigorous detail**

For this part we will provide **detailed lecture notes** and extra reading posted on the course web page

We will also explore the newest trends and developments of the field in form of past **students talks** posted on the course website

Workload

During the semester you have to complete the following.

Quizzes (30pts)

There will be **2 Quizzes** (25 minutes), 15 points each

Each quiz will consist of **2-3** questions only

NO make-up for quizzes

I might give some **additional quizzes** for extra credit

Midtem (65 pts)

Project (40pts)

Final (65pts)

Homeworks

Homeworks

I posted on course webpage:

FOUR **Homework Assignments** and might post some more

I also posted respective **Homework Solutions**

I encourage students to SOLVE homework problems first, without looking at solutions - as a **practice** to find out how much you know and understand

Then look at the at posted solutions to compare your solutions with those posted

Quizzes and TESTS will contain problems very **similar** to the Homework Problems

Workload

Extra Credit I will give during the class small questions for extra credit

You can earn up to **10** extra points during the semester

Quizzes and Tests are **closed book** (and cell phones) examinations

None of the grades will be curved

Final grade computation

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

The grade will be determined in the following way:

# of earned points divided by 2 = % 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 in a standard way i.e.

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%

PROJECT

Detailed Project Description is available on the course Web-page

I will discuss the **Project** in class when we cover enough of 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 TA

TA will also help students to form teams

Course Content

The book is very thin.

It is a short overview of major areas of AI.

I will supplement it with LECTURE NOTES for detailed information.

In particular we will cover the following book chapters and subjects (not always in the order they are listed).

Chapter 1 AI history and applications

Book and Lecture Notes

Chapter 2 Knowledge Representation and Inference

Book and Lecture Notes

Course Content

Chapter 2 Overview of Predicate Logic;

Lecture Notes provide explanation and supplement chapter 2

Chapter 2 Automated theorem proving

Supplement to Chapter 2:

Propositional Resolution

EXTRA HANDOUTS and Lecture notes

Course Content

Chapter 3 Expert Systems

Overview of EXPERT SYSTEMS Design and Technology.

Book, Lecture notes and EXTRA HANDOUT distributed in class

Chapter 5 Natural Language Processing

Reading assignment and material in the students presentations

Chapter 8 Agent and Robots

Reading assignment and students presentations

Course Content - Machine Learning

Chapter 7 Machine Learning

Concentration on **CLASSIFICATION Learning**

This is the major subject and MAIN part of the course

In particular we cover the following subjects

Decision Trees - detailed algorithm on lecture slides posted on the web and intuitive introduction is in the book

Neural Networks - detailed algorithm on lecture slides on the web and intuitive introduction in the book

Genetic Algorithms - detailed algorithm on the lecture slides on the web and intuitive introduction in the book

Association Analysis - Apriori Algorithm

Classification by Association

Clustering