Boston University Metropolitan College

Artificial Intelligence

MET CS 664 A1
Course Format - On Campus and Remote
Fall 2021

Vic Berry
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Office hours: by appointment or after class

Class Time: Wednesday - 6:00 p.m. – 8:45 p.m.
Class Location: STH B22

Course Description

This course is an intensive look at Artificial Intelligence and its applications. The course will cover many facets of AI including (but not limited to) Search, constraint propagations, and reasoning, Knowledge representation, natural language, learning, question answering, inference, visual perception, and/or problem solving. An emphasis is placed on the implementation of the techniques covered.

Lisp & Prolog are the languages of AI, we will cover them briefly, the programming assignments can be done in any modern programming language.

Text

- Stuart Russell, Peter Norvig, "Artificial Intelligence A modern Approach", 4th Edition, Prentice Hall, 2020 (*Required Text Book, available at BU Bookstore*)

Courseware

http:// learn.bu.edu

BU Community COVID-19 Public Health Policies

All students returning to campus will be required to be vaccinated against COVID-19, and upload information about their status (including applications for a medical or religious exemption or an extension) to the Patient Connect portal. In addition to the vaccine requirement, students must follow all other safety protocols, including the face covering policy, and screening, contact tracing, and testing requirements. At the beginning of each class you will be asked to show a green Healthway compliance badge on your mobile device to the instructor, and wear your face mask over your mouth and nose at all times.

Class Format and Grading Policy Policies

New material will be presented in weekly lectures. Reviews, exercises, and homework solutions will be covered during lectures. Student participation is highly recommended, although not mandatory, and it is possible for participation to lead to extra credit. Frequent in class labs will be utilized to assist students in their understanding of the material.

Students will be required to submit a semester project. This project will take approximately 8-10 weeks and should be of sufficient magnitude to cover a specific facet of Artificial Intelligence in depth. The student will submit a proposal for the project. On acceptance of this proposal the student may begin work. A list of potential projects will be covered in class.

Periodic Homework problems will be assigned, in addition to the Semester Project. Homework will be due the week following assignment. Late homework and projects will not be accepted unless permission by the instructor was granted prior to the due date. In class team and individual projects will also be implemented. A mid-term and final exam will be completed in class, and the breakdown of grading for the course is as follows:

Homework:	10%
Semester Project:	40%
In Class Work	10%
Mid-term Exam:	15%
Final Exam:	25%

This course is an intensive analysis of "Artificial Intelligence". The student should be prepared to spend sufficient time and energy on this course to allow for successful completion of the course work.

Academic Conduct Code – Work handed in by students should be of that student's design. Discussion of approach to problems with other students is encouraged, but the actual work on a project should be of an individual nature. Cheating and plagiarism will not be tolerated in any Metropolitan College course. It will result in no credit for the assignment or examination and may lead to disciplinary actions. Please take the time to review the Student Academic Conduct Code:
http://www.bu.edu/met/metropolitan_college_people/student/resources/conduct/code.html.

Class Meetings, Lectures & Assignments

Lectures, Readings, and Assignments subject to change, and will be announced in class as applicable within a reasonable time frame.

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Week	Date	Topic	Reference
(1)	8 Sep 21	Welcome, Administrative Issues, Introduction to Artificial Intelligence – Foundations, History, State of the Art	Chapter 1
(2)	15 Sep 21	Intelligent Agents, Solving problems by searching – Rationality, Search Agents, Heuristics	Chapters 2-3
(3)	22 Sep21	More Searching, Adversarial search, Local Search, Unknown Environments, Games, Stochastic Games	Chapters 4-5
(4)	29 Sep 21	Satisfying Constraints – Defining Constraints, Propagation, Backtracking, Local Search	Chapter 6
(5)	6 Oct 21	Logical Agents – Knowledge Based Agents, Propositional Logic	Chapter 7
(6)	13 Oct 21	First Order Logic – Representation, Syntax & Semantics, Usage	Chapter 8
(7)	20 Oct 21	Inference in First Order Logic – Propositional vs. FOL, Unification, Chaining, Resolution	Chapter 9
(8)	27 Oct 21	**Midterm Exam**	
(9)	3 Nov 21	Knowledge representations, Automated Planning – Definitions, Algorithms, Graphs, Planning Analysis	Chapters 10-11
(10)	10 Nov 21	Quantifying Uncertainty – Acting Under Uncertainty, Basic Probability, Inference, Bayes' Rule	Chapter 12
(11)	17 Nov 21	Learning from Example – Forms, Supervised, Decision Trees, Evaluating Hypotheses	Chapter 19
(12)	24 Nov 21	Thanksgiving Recess	Turkey
(13)	1 Dec 21	Deep Learning, reinforcement learning – feed forward networks, learning from rewards.	Chapter 21 & 22
(14)	8 Dec 21	Future of Artificial Intelligence, Final Exam Review.	
(15)	15 Dec 21	Final Exam.	