CMPT 310: Artificial Intelligence

Fall 2017
Tuesdays 1:30PM - 2:20PM, BLU9660
Thursdays 12:30PM - 2:20PM, AQ3003

Course information

Lectures:

Tuesdays 1:30PM - 2:20PM, BLU9660
Thursdays 12:30PM - 2:20PM, AQ3003

Instructor:

Maxwell Libbrecht
Email: maxwl at sfu dot ca
Office: TASC 1 9219
Web page:
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TA:

Heng Liu
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Course web page

Course web page:
courses.cs.sfu.ca/2017fa-cmpt-310-d1/pages/

Short version: goo.gl/Rv1PnE

Course description

Provides a unified discussion of the fundamental approaches to the problems in artificial intelligence. The topics considered are: representational typology and search methods; game playing, heuristic programming; pattern recognition and classification; theorem-proving; question-answering systems; natural language understanding; computer vision.

Prerequisites: CMPT 225 and (MACM 101 or ENSC 251 and ENSC 252))

Course grading

Grading:

- 40% - 4 assignments, each worth 10%.
- 20% - Midterm test. Tuesday 2017-11-07 in class.
- 40% - Final exam.
- +5% - Extra credit for class participation or participation on the discussion forum.
- +5% - Extra credit for assignment challenge questions.

You must be able to attend both exams. Email me if you suspect that you might not be able to make it.

Assignments

- Assignments will be a mix of programming, proofs and free answer questions.
- Programming will be in Python.

Getting help

Office hours:

- Max: Tuesdays 2:30-3:30PM in TASC 1 9219
- Heng: TBA

Grading:

- Questions on the homework should be posted to the discussion forum at: https://courses.cs.sfu.ca/2017fa-cmpt-310-d1/discussion/
- The TA and I will watch this page and respond promptly. To encourage discussion, we will not answer homework questions by email.
- Please discuss with each other on the forum!
- For other questions, email the TA or me.

Marking issues

Marking issues:

- For questions concerning the assignments, please see the TA first, then talk to me if you have further concerns.
- If you have concerns regarding grading of an assignment or test, please notify me or the TA promptly after the material is handed back.

Working in a group and sharing answers

- I encourage you to work in a group. Feel free to discuss solution strategies and check each others' work.
- However, you must write all the text and code you submit on your own. Joint submissions are not allowed, nor is copying someone else's text or code.
- If in doubt, please ask.
- Try not to post explicit answers to the discussion forum. The instructor and TA will remove posts that are too revealing. (To encourage discussion, there will never be further penalty for well-meaning posts.)
- SFU's plagiarism policy: http://www.sfu.ca/policies/gazette/student/s10-01.html

About you

Who is:

- Undergraduate program? Graduate?
- CS? Other departments?
- Zhejiang exchange program?

Resources

Textbook: *Artificial Intelligence: A Modern Approach* (3rd Edition), Stuart Russell and Peter Norvig, Prentice Hall, 2010

Other AI references:

- *Artificial Intelligence: Foundations of Computational Agents*, David Poole and Alan Mackworth, Cambridge University Press, 2010. http://artint.info/index.html.
- *Artificial Intelligence: Structures and Strategies for Complex Problem Solving*, G.F. Luger and W.A. Stubblefield, 2004.

Topics

1. Introduction and history
2. Solving problems by searching. Uninformed search. Informed (heuristic) search, incl. A*.
3. Game playing. Adversarial search.
4. Constraint satisfaction.
5. Logic. Logical agents, propositional logic, first-order logic.
6. Planning.
7. Uncertainty. Review of probability and probabilistic inference.
8. Bayesian networks.
9. Learning from examples. Supervised machine learning. Decision trees.
10. Neural networks.
11. Natural language processing. Vision and image processing.

Beyond CMPT 310

Other AI courses:

- CMPT 411: Knowledge representation
- CMPT 412: Computational vision
- CMPT 413: Computational linguistics
- CMPT 414: Model-based computer vision
- CMPT 417: Intelligent systems
- CMPT 419: Special topics in artificial intelligence (Often offered as machine learning)