

Course Syllabus

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CPSC 481: Introduction to Data Science and Big Data Spring 2022

Instructor

Dr. Anand Panangadan

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Office Hours: Tuesdays 7-8pm, Wednesdays, 7-9pm

Office: CS 548

and on Zoom: [https://fullerton.zoom.us/j/783606364?](https://fullerton.zoom.us/j/783606364?pwd=Rm9JNndqbUZWTWNmZEE1OGdWN3pBQT09)

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(same as class meeting Zoom link)

Student Technical support:

- (657) 278-8888
- Email: StudentITHelpDesk@fullerton.edu
[Help Desk - Division of Information Technology](http://www.fullerton.edu/it/students/helpdesk/index.php)
[.\(http://www.fullerton.edu/it/students/helpdesk/index.php\)](http://www.fullerton.edu/it/students/helpdesk/index.php)
- Chat with IT: Log into: <http://my.fullerton.edu/> and Click Online IT Help Click on Live Chat
- Canvas Support Hotline: 855-302-7528 [.\(https://cases.canvaslms.com/liveagentchat?chattype=student\)](https://cases.canvaslms.com/liveagentchat?chattype=student)
- [Canvas Support Chat Student](https://cases.canvaslms.com/liveagentchat?chattype=student) [.\(https://cases.canvaslms.com/liveagentchat?chattype=student\)](https://cases.canvaslms.com/liveagentchat?chattype=student)

Meeting Information

1. CPSC 481-05: TuTh 2:30PM - 3:45PM Classroom: EC 167
2. CPSC 481-06: Thu 7:00PM - 9:50PM Classroom: EC 167

Zoom link for virtual class (First two weeks): [https://fullerton.zoom.us/j/783606364?](https://fullerton.zoom.us/j/783606364?pwd=Rm9JNndqbUZWTWNmZEE1OGdWN3pBQT09)

[pwd=Rm9JNndqbUZWTWNmZEE1OGdWN3pBQT09](https://fullerton.zoom.us/j/783606364?pwd=Rm9JNndqbUZWTWNmZEE1OGdWN3pBQT09) [.\(https://fullerton.zoom.us/j/783606364?pwd=Rm9JNndqbUZWTWNmZEE1OGdWN3pBQT09\)](https://fullerton.zoom.us/j/783606364?pwd=Rm9JNndqbUZWTWNmZEE1OGdWN3pBQT09)

Final Exam Dates

1. CPSC 481-05: 5/19/2022, Thursday, 1:00PM - 2:50PM Classroom: EC 167
2. CPSC 481-06: 5/19/2022, Thursday, 7:00PM - 8:50PM Classroom: EC 167

Description & Objectives

Using computers to simulate human intelligence. Production systems, pattern recognition, problem solving, searching game trees, knowledge representation and logical reasoning. Programming in AI environments.

Learning Goals

1. To provide an overview and applications of Artificial Intelligence (AI).
2. To discuss the concepts, theories, and techniques of AI, focusing on complex problem-solving strategies for practical applications.
3. To introduce subjects including knowledge representation, heuristic search, evolutionary computation, reasoning, learning, and stochastic methods for complex decision making.
4. To introduce other relevant subjects to develop intelligent systems.
5. To define intelligence and intelligent agents and explain its role in different problem domains.
6. To understand and choose appropriate representations for a problem.
7. To choose and apply heuristic search and evolutionary computation methods to solve complex problems.
8. To have a capstone experience through a project

Textbooks

Required

- [RN] *Artificial Intelligence A Modern Approach*, **4th edition (3rd edition is ok too)**, Stuart Russell and Peter Norvig

This textbook is available through the Titan Direct Access Program and can be accessed through the course materials link in the My Courses section of the student portal. If you prefer not to participate in Titan Direct Access, you should simply opt-out of the materials by 2/7/2022 through the student portal link. **If you decide to maintain access, you will be billed following the 2/7/2022 deadline and must make your payment on your Titan Shops account.** Students with outstanding balances will have their digital access and bill removed with no further action needed. You can learn more about Titan Direct Access at <http://www.fullerton.edu/it/students/titandirectaccess/> (<http://www.fullerton.edu/it/students/titandirectaccess/>)

Optional

- [Lug] *Artificial Intelligence: Structures and Strategies for Complex Problem Solving*, 6th edition, George F. Luger, Pearson

Course Outline (Subject to change)


Topics per week

Week	Material	Textbook Sections
1	Introduction to AI	RN: Ch. 1, 2

	Properties of environments	Lug: Ch. 1
2	State space representation Search: DFS	RN: 3.1-3.2, 3.3 Lug: 3.1, 3.2
3	Search: BFS, iterative deepening	RN: 3.4 Lug: 3.2
4	Search: heuristics, best first search, A*	RN: 3.5, 3.6 Lug: 4.0, 4.2, 4.3
5	Search: adversarial search (minimax, α - β pruning)	RN: 5.1-5.3 Lug: 4.4
6	Search: local search (hill climbing, simulated annealing, genetic algorithms)	RN: 4.1 Lug: 4.1.1, 12.1
7	Logic and reasoning: propositional logic	RN: 7-7.5 Lug: 2.1
8	Logic and reasoning: predicate logic	RN: 8-8.3 Lug: 2.2
9	<i>Midterm review</i> <i>Midterm</i>	Lecture slides
10	Logic and reasoning: Prolog	RN: 9.4 Lecture slides
11	Reasoning with uncertainty: Bayes rule, naive Bayes classifier	RN: 12.1-12.6 Lug: 5.2-5.4
12	Reasoning with uncertainty: Bayesian networks	RN: 13.1-13.2

		Lug: 9.3.1-9.3.3
13	Reasoning with uncertainty: Bayesian networks (contd.)	RN: 13.1-13.2 Lug: 9.3.1-9.3.3
14	Ethics of AI	RN: 27.3
15	Project presentations	
	<i>final exam (covers material after midterm)</i>	

Course Summary:

Date	Details	Due
	 <u>Class participation</u> https://csufullerton.instructure.com/courses/3249064/assignments/33757621	