Intelligent Systems (AI-2)

Computer Science CPSC422, Lecture 1

Sept 4, 2019

People

Instructor

- **Giuseppe Carenini** (carenini@cs.ubc.ca; office ICCS 105)

Natural Language Processing, Summarization, Discourse Parsing, Preference Elicitation, Explanation, Adaptive Visualization, Intelligent Interfaces……

Office hour: my office**,** TBD

Teaching Assistants (office hours TBD)

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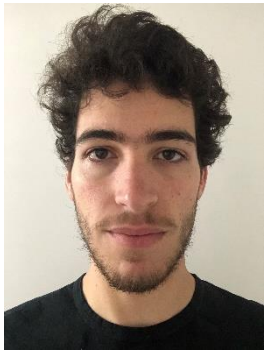

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Course Essentials(1)

- **Course website:**

  www.cs.ubc.ca/~carenini/TEACHING/CPSC422-19/index.html

  - This is where most information about the course will be posted, most handouts (e.g., slides) will be distributed, etc.
  - CHECK IT OFTEN! (draft already available on Canvas)

- **Lectures**:
  - Cover basic notions and concepts known to be hard
  - I will try to post the slides in advance (by 3:30).
  - After class, I will post the same slides inked with the notes I have added in class.
  - Each lecture will end with a set of learning goals:

  Student can….

Course Essentials(2)

Textbook: Selected Chapters from

- **Artificial Intelligence**, 2nd Edition, by Poole, Mackworth. http://people.cs.ubc.ca/~poole/aibook/

Reference (if you want to buy a book in AI this is the one!)

- **Artificial Intelligence: A Modern Approach,** 3rd edition, by Russell and Norvig [book webpage on course webpage]

More readings on course webpage…..

Course Essentials(3)

- **Canvas :** discussion board
  - Use the **discussion board** for questions about assignments, material covered in lecture, etc. That way others can learn from your questions and comments!
  - Use **email** for private questions (e.g., grade inquiries or health problems).
- **Canvas :** assignments, grades, **iClicker registration**
- **AIspace** : online tools for learning Artificial Intelligence http://aispace.org/
  - Under development here at UBC!
  - Already used in cpsc322

Course Elements

- **Practice Exercises:** 0%
- **Assignments:** 15%
- *Research Paper Questions & Summaries 10%*
- **Midterm:** 30%
- **Final:** 45%
- **Review Exam:** 1% bonus
- **Clickers** 3% bonus (1% participation + 2% correct answers)

If your final exam grade is >= 20% higher than your midterm grade:

- Midterm: 15% ↓
- Final: 60% ↑

Assignments

- **There will be four assignments in total**
  - They will not necessarily be weighted equally
  - They will be submitted using **Canvas (as single pdf file)**
  - Only the **most recent** submissions will be graded

- **Group work** (same as 322)
  - you **can** work with a partner (and get a small **bonus !**)
    - ✓ Each partnership hands in a **joint** assignment submission with both students' names/IDs
  - you may discuss questions with other students
  - you may not look at or copy each other's written work
  - additional details on the course website

Assignments: Late Days (same as 322)

- **Hand in before class on due day** (on Canvas)
- **You get four late days ☺**
  - to allow you the flexibility to manage unexpected issues
  - additional late days will not be granted except under truly exceptional circumstances
- **A day is defined as:** all or part of a 24-hour block of time beginning at the start of the class on the day an assignment is due
- Applicable to assignments only (**not midterm** or **final)**
- if you've used up all your late days (or don't claim them), **you lose 20% per day**
- **Assignments will not be accepted more than four days late**

Missing Assignments / Midterm / Final

Hopefully late days will cover almost all the reasons you'll be late in submitting assignments.

- However, something more serious like an extended illness may occur ☹

- **For all such cases:** you'll need to provide a note from your doctor, psychiatrist, academic advisor, etc.
- **If you miss:**
  - **an assignment,** your score will be reweighted to exclude that assignment
  - **the midterm,** those grades will be shifted to the final.
  - **the final,** you'll have to write a make-up final as soon as possible.

Paper Readings

- We will read and discuss 3 (fairly recent) **research papers** this term
- You will be required to submit **summaries** of the papers along with **questions** about them
- The goal is to give you practice in reading research papers with a **critical eye**
  - Note possible **weaknesses** in the research or alternative approaches that might be better
  - Connect the **concepts** from the lectures to real-world research
  - What would be the **next step**?
- **Late days cannot be claimed for paper readings!**

How to Get Help?

- Use the course **discussion board** for questions on course material (so keep reading from it !)
  - ***Please check for similar questions before posting***
- If you answer a challenging question you may get **bonus points**! ☺

- Go to **office hours**
  - times will be finalized by next week

- Can schedule by appointment if you can document a serious conflict with the official office hours (or if other considerations apply)

Getting Help from Other Students? From the Web? (Plagiarism)

- **It is OK to talk with your classmates about assignments; learning from each other is good**
- **But you must:**
  - Not copy from others (with or without their consent)
  - Write/present your work completely on your own (code questions exception)

- **If you use external source (Web, other students, etc.)** in the assignments. Put material in quotes and cite source!

e.g., *"bla bla bla….."* [wikipedia]

Getting Help from Other Sources? (Plagiarism)

When you are in doubt whether the line is crossed:

- Talk to me or the TA's

- See **UBC official regulations** on what constitutes plagiarism (pointer in course Web-page)
- Ignorance of the rules will not be a sufficient excuse for breaking them

Any unjustified cases will be **severely dealt with** **by the Dean's Office** (that's the official procedure)

- My advice: better to skip an assignment than to have "academic misconduct" recorded on your transcript and additional penalties as serious as expulsion from the university!

Clickers - Cheating

- **Using another person's clicker**
- **Having someone use your clicker**

is considered **cheating** with the same policies applying as would be the case for turning in illicit written work.

To Summarize

- All the course logistics are described in the course Webpage

www.cs.ubc.ca/~carenini/TEACHING/CPSC422-19/index.html

Or WebSearch: Giuseppe Carenini

(And summarized in these slides)

- Make sure you carefully read and understand them!

Your UBC-AI Background

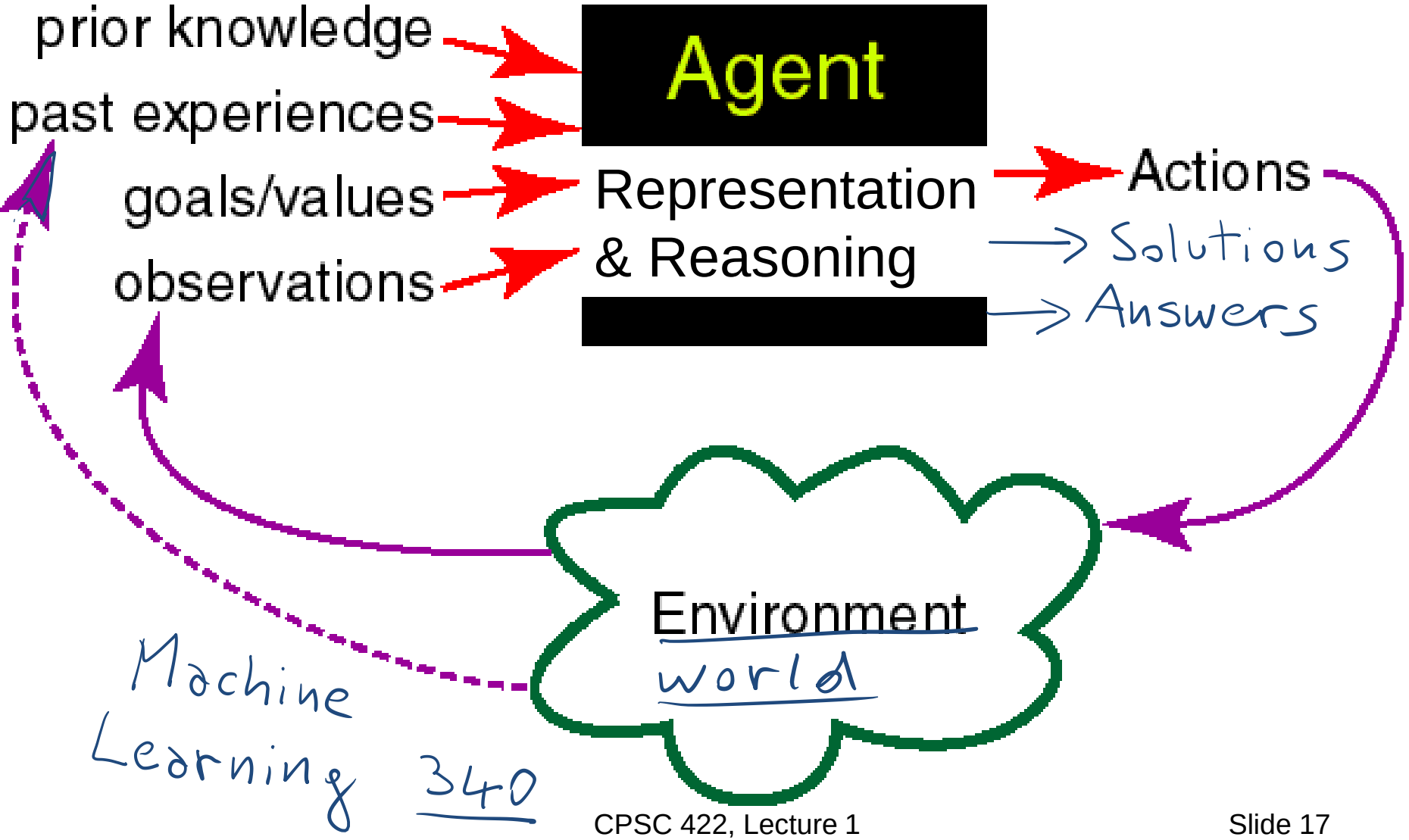
I took 322 within the last 12 months

A. ***yes*** **B.** ***no***

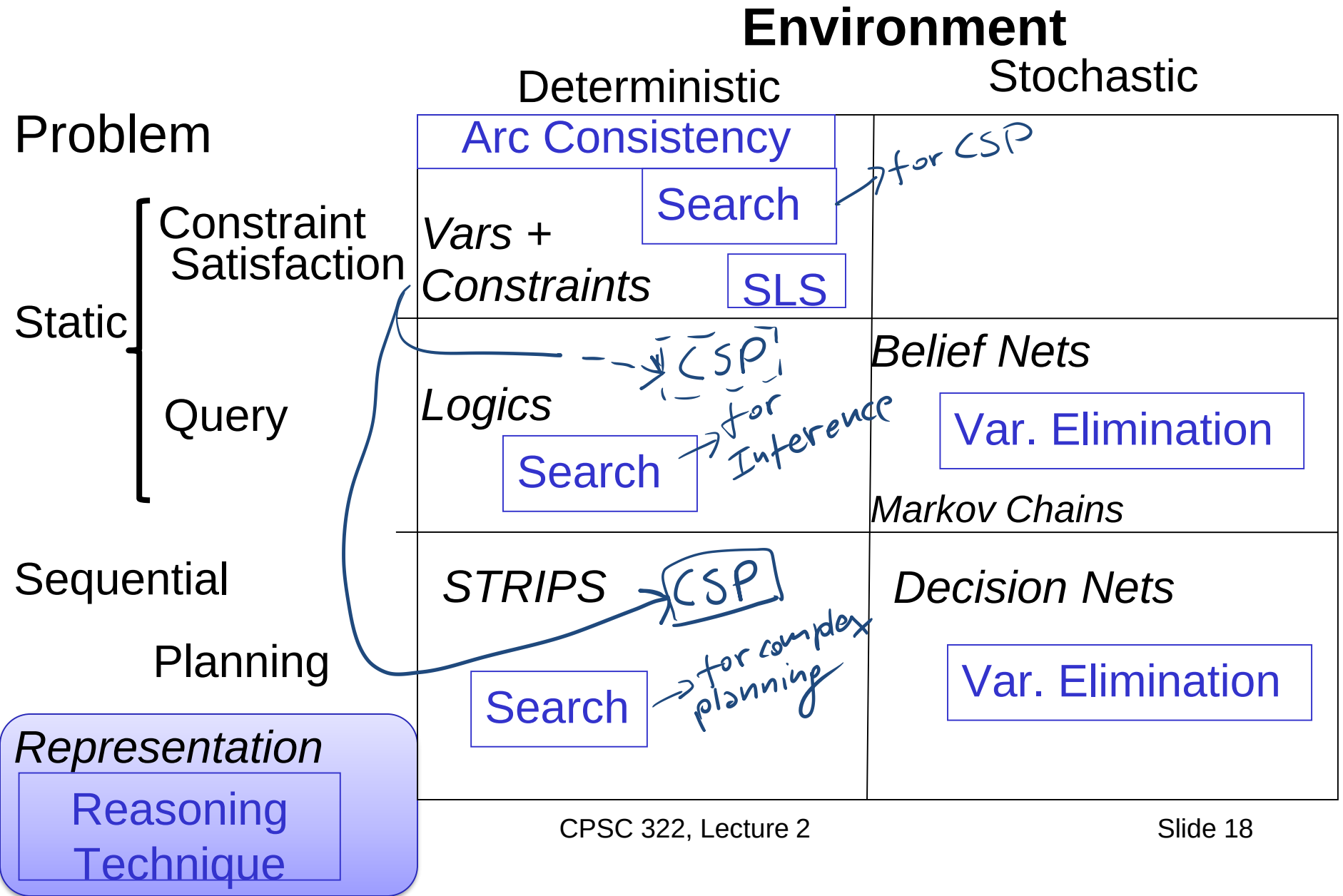
I took Machine Learning (340) previously

A. ***yes*** **B.** ***no***

Agents acting in an environment



Cpsc 322 Big Picture



422 big picture

StarAI (statistical relational AI)

Hybrid: Det +Sto

Prob CFG

Prob Relational Models

Markov Logics

Deterministic | **Stochastic**

Query

Logics

First Order Logics

Ontologies

- **Full Resolution**
- **SAT**

Belief Nets

Approx. : Gibbs

Markov Chains and HMMs

Forward, Viterbi….

Approx. : Particle Filtering

Undirected Graphical Models

Markov Networks

Conditional Random Fields

Planning

Markov Decision Processes and Partially Observable MDP

- **Value Iteration**
- **Approx. Inference**

Reinforcement Learning

Applications of AI

Representation

Reasoning Technique

"How is this this course compared to 322?"

- More challenging material (obviously)
- More **mathematical**
  - Lots of probabilistic operations (i.e. sums of products)
  - Important to be able to look at an expression and be able to figure out "what's going on"
- More **programming**
  - Most (if not all) assignments will have a programming component to them
  - Usually you may use the language(s) of your choice

Core Values in 322

- **Conceptual understanding** over **Memorization**
- Sometimes things will be left **underspecified**
  - Eg. I may ask you to solve a problem without telling you the precise steps to follow or what formats to use
  - This is usually **intentional**
- Best answers are:
  - **Correct**
  - **Easy to read**
  - As **short** as possible while including **important** information

CPSC 322 Review "Exam"

https://forms.gle/SpQwrXfonTZrVf4P7

Based on CPSC 322 material

- Logic
- Uncertainty
- Decision Theory

Review material (e.g., 322 slides from 2017):

https://www.cs.ubc.ca/~carenini/TEACHING/CPSC322-17S/index.html

TODO

- **Review CPSC 322 material**
- **Read textbook 9.4**
- **Read textbook 9.5**
  - **9.5.1 Value of a Policy**