Introduction to CS 245

Alice Gao
Lecture 0

Based on work by many people with special thanks to Collin
Roberts, Jonathan Buss, Lila Kari and Anna Lubiw.

Please come and sit in the front. I won't pick on you.

Outline

Who am I?

My name is Alice Gao. I grew up in Beijing, China, and have lived in Vancouver, Toronto, Boston, Cambridge (UK), New York City, and Kitchener.

Research: artificial intelligence, game theory, education, and peer grading.

My work/education history:

- Lecturer, Computer Science, University of Waterloo.
- Postdoc, Computer Science, UBC.
- Ph.D., Computer Science, Harvard University.
- Undergraduate, Computer Science and Mathematics, UBC.

Hobbies: board games, escape room games, hiking, swimming, and traveling.

Meet your peers

In the next 2 minutes, introduce yourself to someone you don't know.

Talk about courses, co-op, summer activities, dorms, extracurricular activities...

I encourage you to sit in a different section of the classroom every lecture and get to know the people around you.

I'd like to learn your names

The reputation of this course

This course doesn't have a very good reputation...
What is your expectation of this course?

(a) Wonderful

(b) Good

(c) Average

(d) Not good

(e) Horrible

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Within my power and constraints, I've done a few things to make your experience better: roadmap, learning goals, interactive lectures, and applications.

A roadmap of CS 245

Propositional and predicate logic:

- a formal language that we can use to model real world scenarios and to perform inference and deduction based on facts.

Applications:

- Program verification: Prove that a program meets a specification.
- Undecidability: Prove that a problem cannot be solved using computer algorithms.

Logic from two perspectives

Logic from two perspectives: a practitioner and a logician

A practitioner cares about:

- How can I use logic to model specific things?
- How do I determine whether two formulas are logically equivalent?
- How do I prove that a conclusion logically follows a set of premises?

A logician cares about:

- Does every well-formed formula have a unique construction?
- Which set of connectives is adequate to construct any formula?
- Is every formula I can prove true? Can I prove every true formula?

Besides logic, this course is also about

- Thinking and communicating precisely
- Problem solving
- Creative thinking
- Critical thinking

Components of this course

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- Lecture (clicker questions 5%)
- Tutorial
- Weekly Assignments (20%)
- Midterm (25%) (July 7)
- Final exam (50%)

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- Course website: things that do not change, e.g. office hours, schedule, assignments (submission and remark instructions) and study exercises.
- Piazza: things that do change, e.g. important announcements, questions, and discussions.
- Learn: tutorial notes, assignment solutions, exam solutions, and marks.

What I do to help you succeed in this course

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Lectures:

- ▶ Learning goals
- ▶ Clicker questions
- ▶ In-class problem solving

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Course materials:

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- ► Problems and solutions

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Office hours:

How do you succeed in this course

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- Attend lectures and tutorials.
- Complete the assignments by yourself.
- Test yourself based on the learning goals.