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.

Come and sit in the front. I won’t pick on you. :D
Outline

Introduction to CS 245
  Let’s get acquainted
Roadmap
Logistics
Succeeding in CS 245
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

<table>
<thead>
<tr>
<th>On your index card, write</th>
<th>An example</th>
</tr>
</thead>
<tbody>
<tr>
<td>Your name</td>
<td>Xi Gao</td>
</tr>
<tr>
<td>Your preferred name and tips for pronunciation</td>
<td>Alice Gao</td>
</tr>
<tr>
<td>Student number</td>
<td>15270036</td>
</tr>
<tr>
<td>Something interesting about you</td>
<td>I once had a pet hedgehog named Ebbie.</td>
</tr>
</tbody>
</table>
Did you bring your clicker today?
The reputation of this course

This course doesn’t have a very good reputation...

Do you expect this course to be ...

(A) Amazing
(B) Good
(C) Average
(D) Not good
(E) Terrible

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

First-order logic:
- a formal language that we can use to model real world scenarios and to perform inference and deduction.

Applications:
- Program verification: Prove that a program meets a specification.
- Undecidability: Prove that a problem cannot be solved by algorithms.
Logic from two perspectives: a practitioner and a logician

**A practitioner** cares about:
- Use logic to model specific things
- Determining if two formulas are equivalent
- Deduct a conclusion from a set of premises

**A logician** cares about:
- Does every well-formed formula have a unique construction?
- Can this set of connectives 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

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

- **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

Lectures:
- Learning goals
- Clicker questions
- In-class problem solving

Course materials:
- Learning goals
- Problems and solutions

Office hours: Thursday after class and Monday morning or afternoon?
What I suggest you do to succeed

▶ Engage with the materials in lectures and tutorials.
▶ Complete the assignments by yourself.
▶ Make a plan and test yourself based on the learning goals.
▶ Struggling is necessary for learning.