CSE 331
Software Design & Implementation
Topic: Ethics Discussion

💬 Discussion: Should I make next lecture a work session?
Reminders

• Will not accept *any* work after Aug. 19 (Friday) at 11pm
• Please fill out course evals ASAP
  • Very valuable to me as a new instructor!

Upcoming Deadlines

• HW9 due Thursday (8/18)
Last Time...

• End-of-quarter timeline
  • Lectures
  • Final Grades
• System Integration

Today’s Agenda

• Short discussion
Lecture Timeline

Last few lectures will be content-sparse. Will have lots of work time during class.

• Today’s lecture is about the high-level ideas needed to build massive systems

• Next lecture will include information on ethics in CS and a class discussion on related topics

• Friday’s lecture will start with student demos and end with a course wrap-up
Grading Timeline

• All work needs to be submitted to us by **Friday** at 11pm

• Course staff will finish grading HW9 and regrades by **Sunday evening**

• Grades will be posted on Canvas on late **Sunday night**
  – You should check that these are consistent with what you expected!

• Soham will calculate final GPA based on these grades on **Monday**
  – This is when I will account for extra credit and special circumstances

• Grades due to the university on **Tuesday at noon**
What’s *still* missing

CSE 331 is about *how* to design and implement software

It’s not about the important topic of *what* to build and *for whom*

- Even *before* the well-understood steps like *requirements analysis* (CSE 403 topic)

This is about our effect on *humans* and *societies*

- Implicit decisions you don’t notice you’re making are still decisions
- Good decision-making benefits from explicit understanding of ethics, values, differences among people/peoples, ...
- [Leaders of our field (e.g., faculty 😊) care a lot about this, but aren’t always good at showing it ☹️]
- See also: CSE 492E
The big stuff you hear about

- Black-box algorithm to assign length of prison sentences??
- Facial recognition technology for job screening??
- Bugs in self-driving cars
- Cameras that only see light-skinned people
- ...

But it is not just the news items – software, like an engineered system – is full of value judgements
Is software inherently amoral?

• Dijkstra’s algorithm can help the elderly complete errands or a thief complete robberies

• Encryption can shield “good guys” or “bad guys”

• Surveillance technology can prevent human trafficking or find political enemies

• ...

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Is this your problem?

• Old view: We’re trained to be engineers – others have to decide proper use
  – Ethicists, politicians, doctors, ...
  – Provocative quotation: “My job is to make sure the missiles go up; somebody else decides where they come down”

• But our understanding of the technology is unique – we have an essential role to play in the conversation
  – Which requires understanding not just the technology, but the people it affects and the tradeoffs
  – Can you communicate your technical choices to decision-makers?
  – Can others communicate their needs to you?
A familiar example

- Consider a simple graphical web app for giving walking directions on the UW campus
  - You know, just hypothetically 😊

- What assumptions that favor some people/peoples over others in your application?
  - Did you notice as you were doing your assignment?
  - What could/should/would you do about it?

- If you’re stuck: *When might someone not prefer the shortest path and why?*
Some of your instructor’s answers

1. Directions may include steps, which excludes people in wheelchairs

2. Directions do not favor well-lit paths, which is important for safety after dark, particularly for statistically-targeted groups (e.g. women or minorities)

3. Your website is not usable by blind users even though the underlying data is text-based

4. Any instructions only in English?

5. Other?
Fixable?

• Some of these issues are unfixable given the underlying data
  – Key idea behind the phrase “data is biased”
  – What you don’t collect is full of value judgments/assumptions!

• Others are fixable but should we require that?
  – The assignment was already difficult
  – There are features and tools for accessible websites
    • See also: CSE340
  – Regulation is an important check on economic incentive but can impede innovation
    • Cell phones didn’t use to support 911
Be explicit about inclusion

• If you don’t spend the time to think about who your software includes, you will exclude more people
  – Diverse teams have an inherent advantage here!

• Embarrassing [?] fact: CSE 331 had “GUI for walking directions on the UW campus” for ten years before someone noticed that the course should include this short lecture
  – Ask your managers in your future projects
  – Ask your instructors in your future courses
  – Most importantly, ask yourself

• You’re going to have a lot of impact on the world
  – Make it positive
Before next class...

1. Work on HW9
   - Let me know if you want to demo extra credit
     • Can be small things like a slightly different layout
     • Can be big things like adding a whole new feature

2. Wrap-up any regrades for HW1-8
   - Won’t accept late work after the last day of class