

Quiz 1 Debrief and Ethics

Welcome back to CS 2100!

Prof. Rasika Bhalerao

First: let's go over Quiz 1

Notes for next topic attempt:

- Just because something *can* have the type `Optional[]`, doesn't mean it *should*
 - If the value cannot be `None`, its type shouldn't be `Optional[]`
- Unit testing: Negative cases are where the function doesn't give you what you wanted
 - Not always raising an error
 - Could be that it returns `None` when you wanted something else specifically

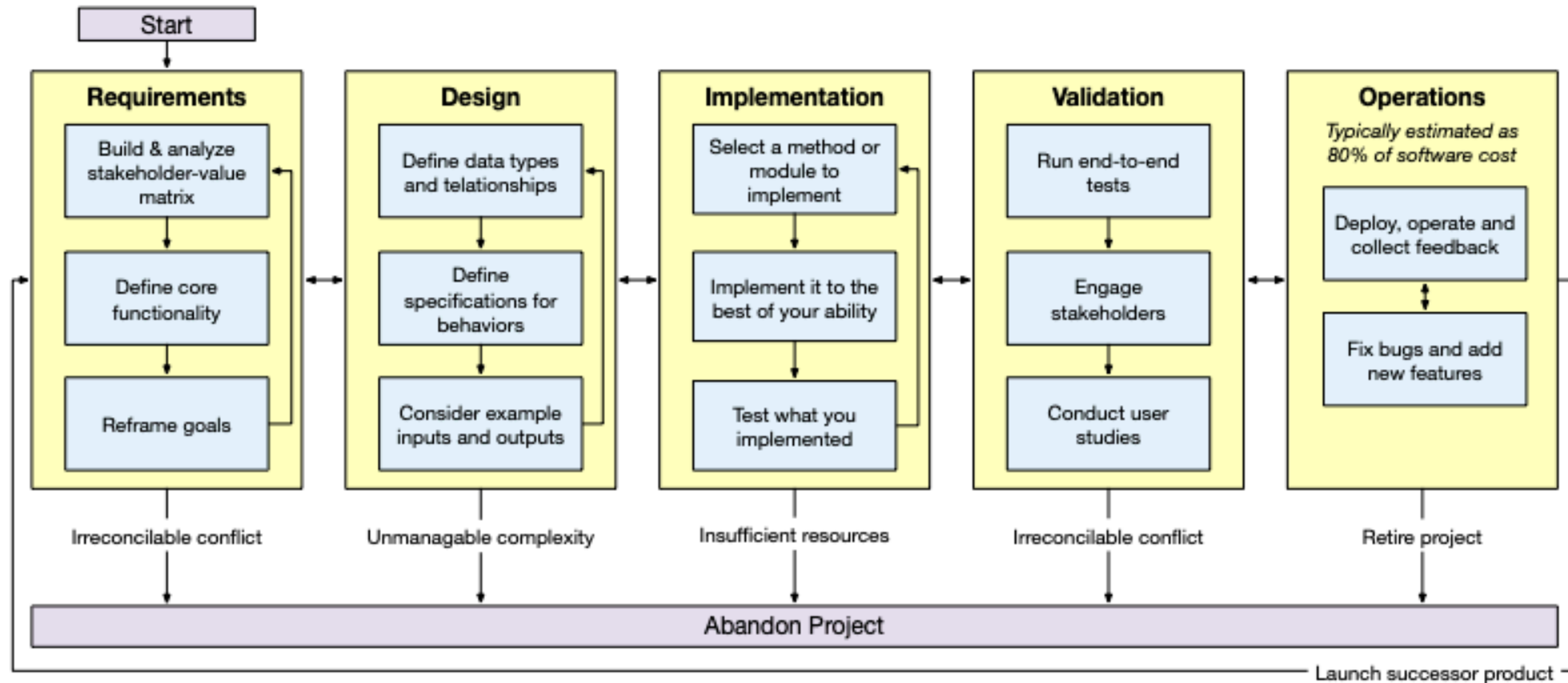
Ethics Lecture learning outcomes:

- Identify pros and cons of using given data to solve the desired problem
- Identify and defend privacy issues
 - Eventually, do this without being told there is a privacy issue to identify
- Identify stakeholders, and values and interests at stake for each stakeholder
 - Identify and discuss conflicts of values
 - Identify modifications that would mitigate conflicts of values

NOT learning outcomes:

- Tell students what to think / which opinions they should hold

The Program Design and Implementation Process



VSD happens at the beginning (helps shape the core functionality)

Open-ended poll:

What would happen if we directly jumped to the Implementation phase, skipping the Requirements and Design phases? I.e., what would happen if we started by writing code without first designing the project and planning out its pieces?

Why Value-Sensitive Design?

- Cover the vocabulary for moral language to be able to talk with your teammates and advocate for what you think is right
- To debunk the common excuse of "I have nothing to hide"

DANIEL J. SOLOVE



**Nothing
to Hide**

**The False
Tradeoff between
Privacy and
Security**

Example 1: Social media

Social media apps were built to connect communities.

But there are stakeholders with conflicting values:

- The **social media platform** company makes money when more users look at their content (and advertisements) for longer. **Financial values** -> optimize platform to keep users looking at the screen for longer
- Conflicts with **users'** value of **mental health**

Example 2: Prioritizing viewing

Two products:

- reCAPTCHA: verify that users are human
- Duolingo: teach new languages

Conflicting stakeholder values:

- Both use data generated by users to train AI models -> unpaid labor
- Duolingo's financial values also compel them to make users view their app more frequently, leading them to prioritize viewing rather than learning.

Steps to demonstrate Value-Sensitive Design in assignments

1. **Identify the stakeholders:** identify people who are affected by the software in any way
2. **Identify the values:** identify the values at stake for those stakeholders when considering the software
3. **Fill out a stakeholder-value matrix:** create a table, where the columns are the values, and the rows are the stakeholders, and write in how each stakeholder's value relates to the software
4. **Identify and analyze conflicts in the matrix:** for each conflict in the matrix, identify whether and how to address it

VSD Case study: Finder, a dating app

Consider “Finder,” a fictitious dating app (such as [Hinge](#) or [Grindr](#))

Let's:

1. Identify the stakeholders
2. Identify the values
3. Fill out a stakeholder-value matrix
4. Identify and analyze conflicts in the matrix

Step 1: Identify the stakeholders

Users:

- nonbinary people
- transgender people
- people who date people of all genders
- people whose sexual orientation is criminalized in their geographic location
- people who are not legally allowed to be in their geographic location altogether
- sex workers
- survivors of intimate partner violence
- people who are blind
- people who don't speak English
- people whose **names** have apostrophes in them

Step 1: Identify the stakeholders

- **content moderators** (subject to viewing harmful content)
- **software engineers** and all the other **employees** of the company which is building Finder
- **advertisers** (if platform has ads)
- **other customers** of the advertising companies
- **actors and influencers** doing the advertising
- **Governments** and **regulators** (following laws and regulations, protecting the public)
- **Anyone who dates** (dating apps have fundamentally changed the way we date)
- relationships formed with Finder will impact many more stakeholders
- **Stakeholders who will get created** over time

Step 2: Identify the values

- **Privacy:** hide their identity from the government, hide their location from an abusive person
- **Safety** separate value or a subset of privacy
- **Fairness:** valued if we prioritize it. We only want to take into account users' personal preferences, and nothing else, when recommending people as potential dating partners
- **Financial cost** to advertisers and users (depending on Finder's financial model)
- **Reputation**
- **Laws and regulations**

Step 2: Identify the values

- **Accessibility:** different things to different users
 - Nonbinary people may not have access to Finder if we don't include them as a gender option
 - People who are blind or who don't speak English may need us to design Finder so that screen readers and translation apps can work
 - Sex workers are **often unfairly banned** from dating apps, even if they are not doing sex work or soliciting clients through the dating app
 - Need to support a large variety of users' names so that they can create profiles

Step 3: Fill out a stakeholder-value matrix

Matrix:

- columns represent the values
- rows represent the stakeholders
- cells describe how each stakeholder interacts with each value

	Privacy	Accessibility	Fairness	Financial cost	Reputation	
People with criminalized sexual orientations	Hide sexual orientation from government	Able to search profiles of appropriate genders	Should be recommended fairly	Keep costs reasonable		G tc
Survivors of intimate partner violence	Keep location hidden	2FA etc. to prevent account takeover				H al re ac al

	Privacy	Accessibility	Fairness	Financial cost	Reputation	Laws and regulations	to 1 co
People who are blind		Screen readers					
People who are not allowed in their location	Keep location hidden from gov't	Set up profile without gov't ID					

	Privacy	Accessibility	Fairness	Financial cost	Reputation	Laws and regulation
People who don't speak English	Avoid surveillance	Able to use translation apps				
People whose names have apostrophes		Able to set up a profile				

	Privacy	Accessibility	Fairness	Financial cost	Reputation	Law regul
Content moderators	Avoid leaking identity	Access to what they need, nothing more	Training to ensure consistency	Compensated for seeing harmful content	Uphold company reputation	Laws spee perso data
Advertisers	Hide financial details, etc.	Want users' contact information		Reach more audiences for less money	Be seen on good platforms	Follo regul

Step 4: Identify and analyze conflicts in the matrix

- Advertisers want to keep financial costs low, but that may push the financial cost onto the users or the company building Finder
 - Must choose one over the other
- Users want to keep identities / locations private from the gov't, but gov't may want access to that info to enforce laws / protect the public
 - Keep all information private until regulators subpoena
 - Only provide specific info to gov't (not location / sexual orientation)

Step 4: Identify and analyze conflicts in the matrix

- Fairness or accessibility can sometimes unfortunately require risking Finder's reputation, depending on the audience giving reputation-related opinions / how strongly they feel that others don't belong
 - Personally, I think fairness would increase reputation among the right audiences
- Ensuring fairness for users can require collecting personal information, which can then compromise privacy
 - Find a balance of which info to collect
 - Don't share that info (only use it to ensure fairness)
- Criminalized populations want to exist despite being targeted by gov't
 - Don't share info with gov't unless absolutely legally required

Bias and Unfairness (throughout the process)

- We will not solve society's issues with a VSD matrix
 - That's a more challenging and continuous process
- But we can mitigate bias and unfairness in our technology

How bias and unfairness enter our technology

- Tech relies on dataset that doesn't reflect stats of the population it represents
 - E.g. dataset of "the general population" includes zero women
- Tools used to collect data are biased
 - E.g. survey has multiple-choice questions that are impossible to answer correctly
- Technologists misunderstand the data
 - E.g. they don't understand the context in which the data was collected -> dismiss important data points / select the wrong variables
- Technologists make mistakes
 - E.g. many reports of fraud in September -> technologists assume the start of an academic year causes students to commit fraud
- Tech is used for a different purpose than the one for which it was built
 - E.g. platform for communication in vulnerable communities is used to harass them

Bias and unfairness can be created or amplified once the technology is implemented in a particular societal context.

- Tech reflects historical injustices as they unfold and compound
 - E.g. word representations reflect the bias of text on which they are trained
- Users have implicit biases, and tech exacerbates the impact of those biases
 - E.g. it reinforces stereotypes
- Tech has disparate impact given the social context and features outside the model
 - E.g. a tool that is very useful to one population may be harmful or inaccessible to another population
- Unfairness is compounded through feedback loops
 - E.g. social media highlights posts which have already received attention

Polls: Your Case Study: Algorithmic hiring

"Shamazon" (a fictitious company) is looking to hire software engineers, and you have been tasked with designing a tool to filter the submitted resumes and select the ideal candidates for hire.

- Who are the stakeholders?
- What are the values?
- What is in the stakeholder-value matrix?
- What are the conflicts in the matrix? And how can we mitigate them?
- Where are bias and unfairness entering the product? And how can we mitigate them?

Privacy

Privacy is

the ability to determine for ourselves when, how, and to what extent information about us is communicated to others

(Westin, 1967, as summarized in DeCew 2018)

But,

individual privacy often appears to be in conflict with the interests of society or the state: a balance must be struck between public and private interests. For example, people describe a 'tradeoff' between privacy and national security. If privacy is *only* understood in this way, privacy often loses.

(Dr. Katie Creel)

Privacy

So...

- We make decisions about privacy using social models and context
- Help us determine the right tradeoffs

Privacy

Here are the questions that we use throughout this course to help us make those decisions:

Question	Answer
What type of information is shared?	
Who is the subject of the information?	
Who is the sender of the information?	
Who are the potential recipients of the information?	
What principles govern the collection and transmission of this information?	

Privacy Case study: Gaggle, a messaging app for schools

Gaggle, an online platform designed for use in the classroom that seeks to replace communication tools such as blogging software and email clients with similar software equipped with content filters, states that "Gaggle will not distribute to third parties any staff data or student data without the consent of either a parent/guardian or a qualified educational institution except in cases of Possible Student Situations (PSS), which may be reported to law enforcement."

Imagine that a student sent a message to another student at 8pm on a Saturday and Gaggle flagged it as a potential indicator that the student is depressed.

Privacy Case study: Gaggle, a messaging app for schools

What type of information is shared?

Student data (the message, sender, recipient, timestamp, location)

Who is the subject of the information?

The student and their mental health concerns

Privacy Case study: Gaggle, a messaging app for schools

Who is the sender of the information?

The student

Who are the potential recipients of the information?

The other student and Gaggle. If Gaggle alerts the parents, school administration, or law enforcement, then they will also become recipients.

Potential recipients of the information include unintended recipients, such as people looking over the shoulder of school administrators, or any students or teachers who notice the contacting of law enforcement.

What principles govern the collection and transmission of this information?

"Gaggle will not distribute to third parties any staff data or student data without the consent of either a parent/guardian or a qualified educational institution except in cases of Possible Student Situations (PSS), which may be reported to law enforcement."

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Poll:

- 1. What is your main takeaway from today?**
- 2. What would you like to revisit next time?**