

# Engineering for Ethics, Privacy, and Fairness in Computer Systems

CMSC 25910 (“CS 259”)

Winter 2026

The University of Chicago



THE UNIVERSITY OF  
CHICAGO

# Course Overview

# Course Description

This course takes a **technical approach** to understanding **ethical issues** in the design and implementation of computer systems. Technologies like machine learning systems, large language models, the web, ubiquitous sensing, algorithmic personalization/targeting, and surveillance systems all raise numerous ethical concerns. **Tensions** often arise between a computer system's utility and its privacy-invasiveness, between its robustness and its flexibility, and between its ability to leverage existing data and existing data's tendency to encode biases. The course will demonstrate how computer systems can violate individuals' privacy and agency, impact sub-populations in disparate ways, and harm both society and the environment. It will also introduce computational approaches to privacy, fairness, transparency, anonymity, internationalization, and auditing. Through hands-on programming assignments and a final project, students will design and implement computer systems that reflect both ethics and privacy by design. They will also wrestle with fundamental questions about who bears responsibility for a system's shortcomings, how to balance different stakeholders' goals, and **what societal values computer systems should embed**.

# Course Staff



Blase Ur  
(Instructor)



Madison Pickering  
(TA)

# Office Hours

- Mondays 4:30pm – 5:30pm (Blase, JCL 363)
- Tuesdays 10:30am – 12:00pm (Madison, JCL Common Area 3C)
- Thursdays 2:15pm – 3:45pm (Madison, JCL Common Area 3C)
- ...or by appointment

# Coursework / Grades

- **Lectures:** interactive; attendance required
- **Assignments:**  $7 \times 7\% = 49\%$
- **Reading responses:**  $7 \times 1\% = 7\%$
- **Written, in-class midterm:** 16%
- **Final project:** 24%
- **Class participation:** 4%

# Communication

- **Course website (linked from Canvas):** Syllabus, schedule
- **Canvas:** Distribution of assignments and reading responses
- **Ed:** Questions, announcements, requests; **don't email us**
- **Gradescope:** Submission of prose (single PDF), code, and data for assignments
- **Gradescope:** Submission of reading responses
- **Gradescope:** Posting grades, regrade requests

# Course Policies

- **P/F grading:** Post on Ed with “P/F request” by end of ninth week
- **Late submission:** Up to 24 hours late with -15 point penalty
  - Applies to both assignments and reading responses
  - Not permitted for project due to grading deadlines
- **Extensions:** Granted only for medical/personal emergencies
  - Not granted for other classes, interviews, travel, RSOs/sports
- **Wellness:** Reach out in a private Ed post to the course staff
  - Emails to Blase are also ok



# Academic Integrity

- Detailed on syllabus
- All work submitted must be your own
- You may speak in general terms about approach, but not share code; **do not look at each other's code**
- Encouraged to talk to classmates and form study groups
- On each Gradescope assignment submission, you **must document everyone in the class with whom you discussed the assignment, as well as every major resource you consulted other than what we provide**

# Academic Integrity

- Example for the top of your Gradescope submission:
  - “I discussed the whole assignment with Jane Smith. We also discussed Part 3 with John Doe. I consulted:  
*<https://www.helpfuldomain.com/helpfulpage.html>* to understand the fetch() API and I used two lines from *<https://www.other.com/page.html>* in Part 3.”
- Code reuse from websites, Stack Overflow, and other published resources only allowed if **all** of the following apply:
  - Around 4 lines of code or fewer
  - Doesn't solve the **intellectual point** of that part of the assignment
  - Documented at top (see above) or as comments
  - Exception: If the assignment itself points you directly to a tutorial, it's ok to reuse larger code fragments (with attribution)

# Academic Integrity: LLMs

- LLMs may not be used to produce **any prose** in this class
- For **LLMs**, you must include the LLM **and prompt(s)** you used
- Code generated by LLMs only allowed if **all** of the following apply:
  - Around 4 lines of code or fewer
  - Doesn't solve the **intellectual point** of that part of the assignment
  - Documented at top or as comments
  - Exception: If the assignment specifically outlines a different LLM policy

# Course Topics and Schedule

[https://www.classes.cs.uchicago.edu/  
archive/2026/winter/25910-  
1/schedule.html](https://www.classes.cs.uchicago.edu/archive/2026/winter/25910-1/schedule.html)

# Class Introduction

- 1) First name
- 2) Class year and major (e.g., third-year CS major)
- 3) Topic you are most interested in learning about

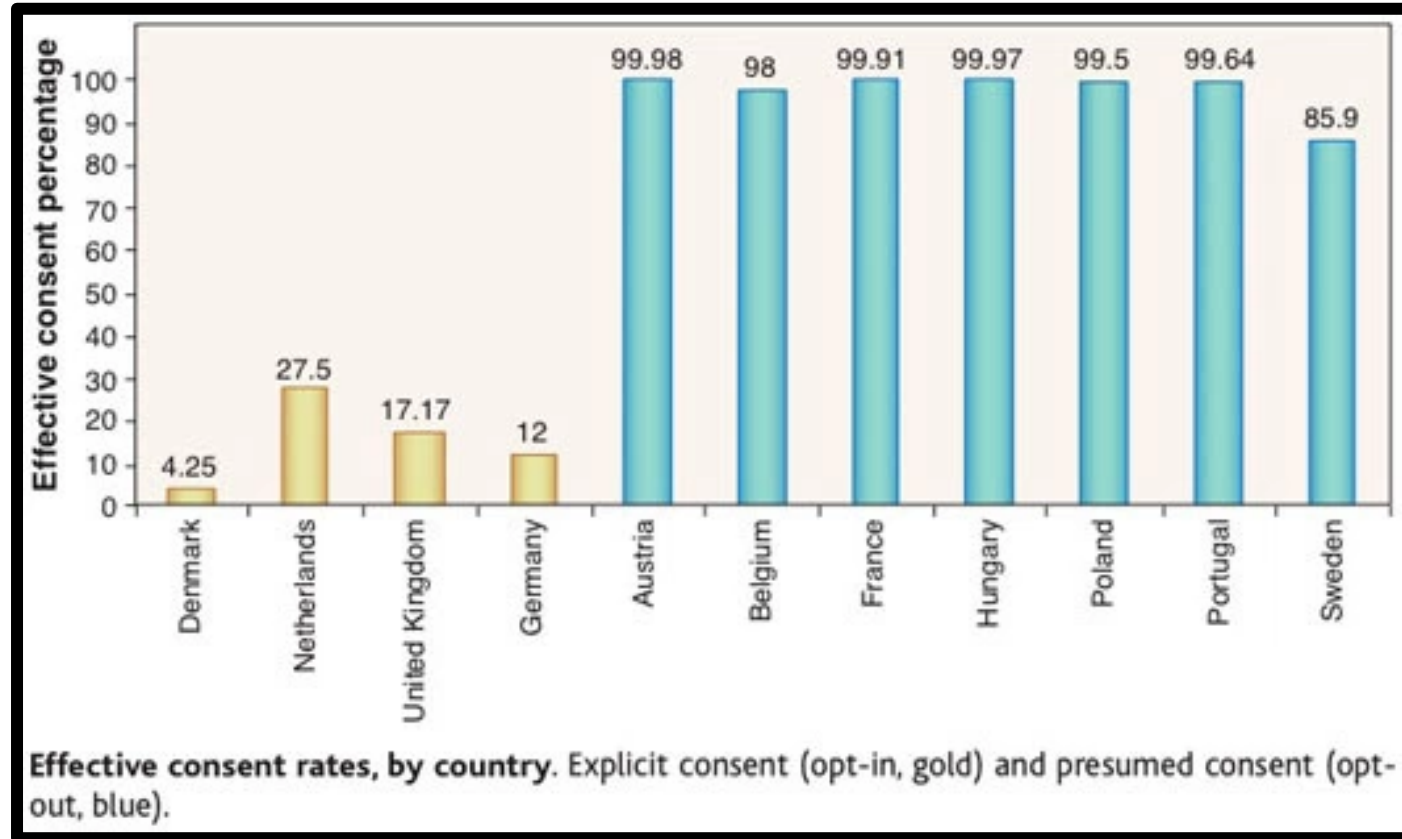
# Responsible and Respectful User Interfaces

***Should a Technology  
Product Express an  
Opinion?***

# **The Power of Defaults**

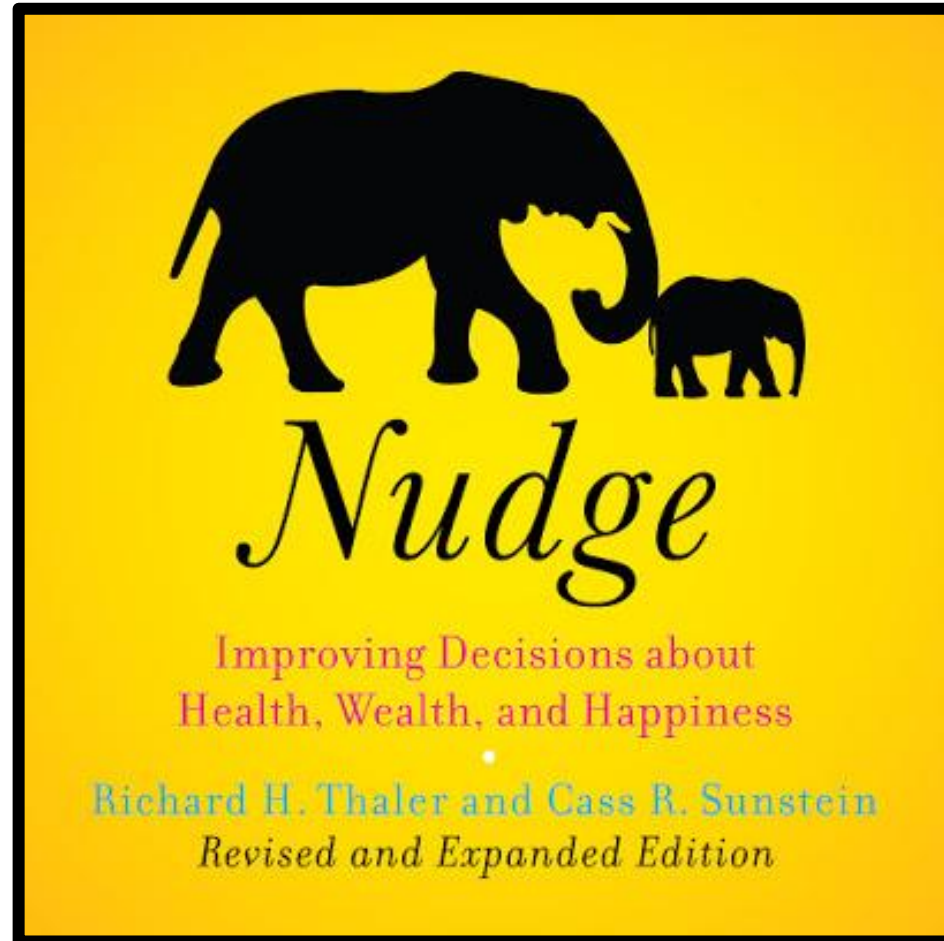


# The Power of Defaults (Organ Donation)



# **Interfaces That Influence**

# Behavioral Nudging



# **Deceptive Design (AKA Dark Patterns)**

# Examples from [www.darkpatterns.org](http://www.darkpatterns.org)

The image shows a comparison of two pricing plans. The left plan is 'Pro Monthly' at £11.99/mo, with an annual total of £143.88. The right plan is 'Pro Monthly Plan + Discount' at £6.0/mo, with an annual total of £101.92. A green box highlights the right plan, and a green banner at the top of this box says '50% OFF 3 Months'. Below the plans are two buttons: 'No, I don't like savings' and 'Yes, Take Offer'.

Plan	Monthly Price	Annual Price
Pro Monthly	<del>£11.99/mo</del>	£143.88 billed annually
Pro Monthly Plan + Discount	£6.0/mo	£101.92 billed annually / per license

50% OFF 3 Months

Save £ 17.99 per license

No, I don't like savings

Yes, Take Offer

# Examples from [www.darkpatterns.org](http://www.darkpatterns.org)

amazon.co.uk

WELCOME ADDRESS ITEMS WRAP DISPATCH PAY CONFIRM

**Benedict Evans, we're giving you immediate access to all Prime benefits with a 30-day FREE trial**

**Try 30 days of Prime for free. You can cancel anytime.**

		Without Prime
Prime Video	Included	Unavailable
Amazon Music	Included	Unavailable
Fast delivery on Prime eligible items	FREE	From £4.99

[Order without Prime. Decline free trial](#)

**Order Now with Prime**

Pay later

# Examples from [www.darkpatterns.org](http://www.darkpatterns.org)



patrick weiss sent you a  
Direct Message.

Hi there 🙌

Reply



1 new message awaits  
your response



**Patrick Weiss**  
Co-Founder at LDM

View message

# Examples from [www.darkpatterns.org](http://www.darkpatterns.org)

CHRISTIE'S

Privacy preference centre

When you visit any website, it may store or retrieve information on your browser, mostly in the form of cookies. This information might be about you, your preferences or your device and is mostly used to make the site work as you expect it to. The information does not usually directly identify you, but it can give you a more personalised web experience.

Because we respect your right to privacy, you can choose not to allow some types of cookies. Click on the different category headings to find out more and change our default settings. However, blocking some types of cookies may impact your experience of the site and the services we are able to offer. [More information](#)

Allow all

Manage consent preferences

+ Functional cookies

☒

+ Strictly necessary cookies

Always active

+ Performance cookies

☐

Confirm my choices

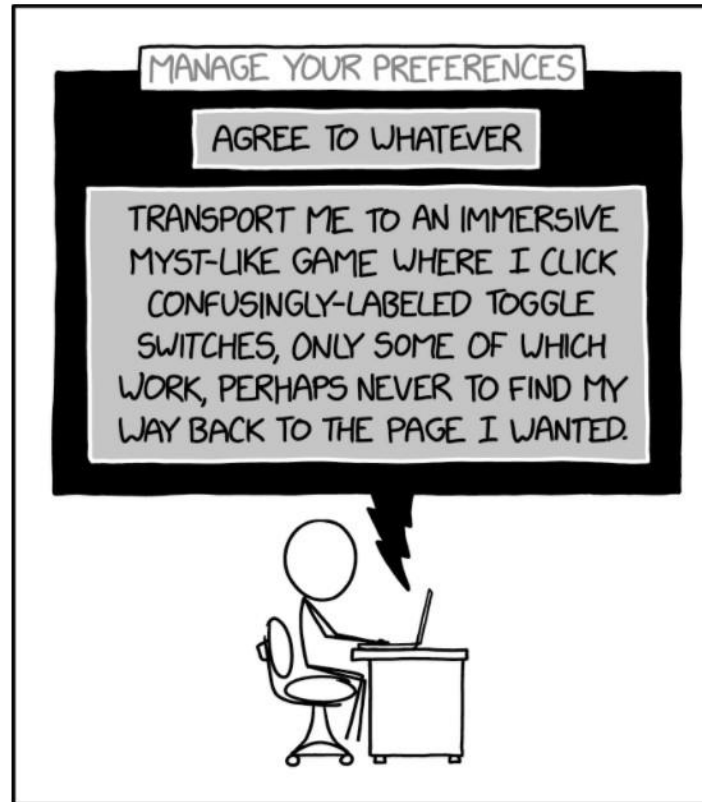
Powered by OneTrust



# Meta-example from xkcd

## MANAGE YOUR PREFERENCES

|< < PREV RANDOM NEXT > >|



|< < PREV RANDOM NEXT > >|

***Is Deceptive Design  
Always Bad?***

# Security Dark Pattern



## This Connection is Untrusted

You have asked Firefox to connect securely to **grey-dev.ece.cmu.edu**, but we can't confirm that your connection is secure.

Normally, when you try to connect securely, sites will present trusted identification to prove that you are going to the right place. However, this site's identity can't be verified.

### What Should I Do?

If you usually connect to this site without problems, this error could mean that someone is trying to impersonate the site, and you shouldn't continue.

Get me out of here!

- ▶ **Technical Details**
- ▶ **I Understand the Risks**

# Security Dark Pattern

Normally, when you try to connect securely, sites will present trusted identification to prove that you are going to the right place. However, this site's identity can't be verified.

## What Should I Do?

If you usually connect to this site without problems, this error could mean that someone is trying to impersonate the site, and you shouldn't continue.

Get me out of here!

## ▼ Technical Details

grey-dev.ece.cmu.edu uses an invalid security certificate.

The certificate is not trusted because it is self-signed.

(Error code: sec\_error\_untrusted\_issuer)

## ▼ I Understand the Risks

If you understand what's going on, you can tell Firefox to start trusting this site's identification. **Even if you trust the site, this error could mean that someone is tampering with your connection.**

Don't add an exception unless you know there's a good reason why this site doesn't use trusted identification.

Add Exception...

# **Interfaces That Incentivize Behaviors**

# Who Sets Policies?

- Slack organizational policies about names

<b>Display Name Guidelines</b>	Expand
Explain the guidelines you want members to follow when they set their display names.	
<b>Name Display</b>	Expand
If you'd like, Slack can show your members' full names instead of their shorter display names.	
<b>Email Display</b>	Expand
Choose whether to display members' email addresses in their Slack profiles.	
<b>Do Not Disturb</b>	Expand
Set default <a href="#">Do Not Disturb</a> hours for members of your workspace.	

# Respecting Time

# Expectations About Notifications

- Email vs. text vs. in-app notification
- Are notifications *push* or *pull*?
- Does your device make a sound? Does it buzz?
- Is there an unread number on your screen?





# Slack Pausing Notifications

## Pause notifications with Do Not Disturb

If you need focus time or time away from work, you can pause your [notifications in Slack](#) with Do Not Disturb (DND). Use DND as needed to help you concentrate, and even set a DND schedule for routine times you'd prefer not to be notified.

### How does DND work?

- All notifications and @mentions will be paused. Once you resume notifications, you can review everything you received while in DND.
- Members will see a 🚫 **Do Not Disturb icon** next to your name. When sending a direct message, they can override DND to notify you of urgent messages.

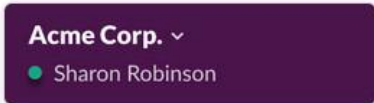
### Pause notifications

Desktop

iOS

Android

#### Turn on DND

- 1 From your desktop, click your workspace name in the top left.  

- 2 Hover over **Pause notifications**.
- 3 Choose a time frame from the menu or select **Custom** to set your own.

# Slack Scheduling Notification Pauses

## Set a DND schedule

For the times you're routinely offline, you can set a Do Not Disturb schedule. With a schedule in place, your notifications will pause every day between the hours you've specified. Keep in mind that Workspace Owners and Admins can [set a default Do Not Disturb schedule](#) for their members.

Desktop

iOS

Android

1

From your desktop, click your workspace name in the top left.

Acme Corp. ▾


● Sharon Robinson

2

Hover over **Pause notifications**, then select **Do Not Disturb schedule** from the menu.

3

Under **Do Not Disturb**, check the box next to **Automatically disable notifications** and select a start and end time. Your settings will automatically save, so click the **✕ close icon** when you're done.



**Tip:** To set yourself to DND over the weekend, pause your notifications until the time and date you'll be back at work. There isn't currently a way to automatically pause notifications every weekend.

# Online Status Indicators (OSIs)

- Note that users and Slack organizations can disable OSIs



# Visibility of Audit Logs

- Organizations might want to know who is clocking in/out
- Zoom lets meeting hosts know when it is backgrounded

# **Funding and Financing**

# Software Licensing

	Free and open (software must have source code provided)			Non-free		
	Public domain	Permissive license	Copyleft (protective license)	Noncommercial license	Proprietary license	Trade secret
Description	Grants all rights	Grants use rights, including right to relicense (allows <a href="#">proprietization</a> , <a href="#">license compatibility</a> )	Grants use rights, forbids <a href="#">proprietization</a>	Grants rights for noncommercial use only. May be combined with copyleft.	Traditional use of <a href="#">copyright</a> ; no rights need be granted	No information made public
Software	PD, CC0	<a href="#">MIT</a> , <a href="#">Apache</a> , <a href="#">MPL</a>	<a href="#">GPL</a> , <a href="#">AGPL</a>	<a href="#">JRL</a> , <a href="#">AFPL</a>	<a href="#">Proprietary software</a> , no public license	Private, internal software
Other creative works	PD, CC0	<a href="#">CC-BY</a>	<a href="#">CC-BY-SA</a>	<a href="#">CC-BY-NC</a>	<a href="#">Copyright</a> , no public license	Unpublished

Table from [https://en.wikipedia.org/wiki/Software\\_license](https://en.wikipedia.org/wiki/Software_license)

# Funding Models for Technology

- Who is funding technology?
- What are their goals?
- Who will benefit?
- How will the workforce be affected?

# Oversight of Technology

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
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AI • REGULATION


Actor Joseph Gordon-Levitt wonders why AI companies don't have to 'follow any laws'

By Nick Lichtenberg  
Business Editor

[Add us on](#) 



December 15, 2025, 2:06 PM ET



Joseph Gordon-Levitt at Fortune's Brainstorm AI conference.  
PHOTOGRAPH BY STUART ISETT/FORTUNE



# What Will YOU Do?

- **Real-world scenarios rarely have a perfect decision. Instead, you'll make and participate in myriad decisions that, together, will have consequences, good and bad.**