

Class 1: Introduction

CS 190-2: Systems and Security

Fall 2024

<https://cs.pomona.edu/classes/cs190/>



Course Goals

- In-depth study of current area of computer science
- Learn how to learn from research papers
- Develop skill of speaking about technical material

The Course in a Nutshell

- 12 assigned readings
 - half chosen by me, half chosen by you
 - reading reflections on one paper each week (written, video, audio, ...)
- 3 presentations
 - one pair presentation about a research paper
 - one solo presentation about a research paper
 - one presentation about your 190 paper
- Weekly discussions



Readings

file:///Users/ebac2018/Documents/Teaching/190/section2.html

CS 190 : Senior Seminar Home Section 1 **Section 2** Section 3 Section 4 Section 5 Section 6 Final Paper Fall 2024

Section 2: Systems and Security

This section will focus on the design, implementation, and security of computer systems. Topics may include systems security, software vulnerabilities, operating systems, distributed systems, and the ethical conduct of research.

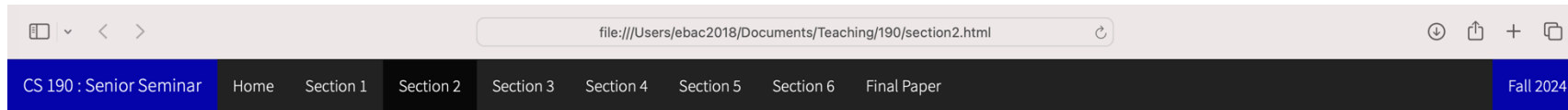
Schedule

Week	Day	Date	Topic	Paper Milestone
1	Tue	Aug 27	Introduction	Intro Survey
Pair Presentations				
2	Tue	Sept 3	Open-Source Software [Wu and Lu 2021]	
3	Tue	Sept 10	Passwords [Weir et al. 2010]	M0 - LaTeX Exercise
4	Tue	Sept 17	Facial Recognition [Sharif et al. 2016]	
5	Tue	Sept 24	Permissions [Reardon et al. 2019]	M1 - Topic Proposal
6	Tue	Oct 1	Spectre [Kocher et al. 2019]	
7	Tue	Oct 8	AI Code Assistants [Pearce et al. 2022]	M2 - Bibliography
8	Tue	Oct 15	Fall Break	
Individual Presentations				
9	Tue	Oct 22	TBD	M3 - Annotated Bib
10	Tue	Oct 29	TBD	
11	Tue	Nov 5	TBD	M4 - Intro + Outline
12	Tue	Nov 12	TBD	
13	Tue	Nov 19	Peer Reviews	M5 - Full Paper Draft
14	Tue	Nov 26	TBD	
15	Mon	Dec 3	TBD	M6 - Final Paper
16	Wed	Dec 11	Final Paper Presentations	

Reading Reflections

- The format of the reflection is up to you: it can be written essay, a powerpoint slide dec, a video, or an audio recording
- Each reflection must include the following:
 - 1-2 sentence summary of the paper.
 - A deeper, more extensive outline of the main points of the paper.
 - Any limitations or extensions
 - Your opinion of the paper
 - 1-3 questions you have about this paper
 - How long you spent on the reflection (including time spent reading the paper)
- Only complete a reflection for weeks when you are **not** presenting

Presentation Preferences



Section 2: Systems and Security

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https://pomona.az1.qualtrics.com/jfe/form/SV_3k0Fat52ICRAhim



Presentations

- **Pair presentation**
 - Sept 3 – Oct 8
 - ~30 minutes
 - on research paper I chose
- **Individual presentation**
 - Oct 22 – Dec 2
 - ~15-20 minutes
 - on research paper you chose
- **Individual presentation**
 - Dec 11
 - ~10 minutes
 - on your 190 paper
- **Schedule a pre- and post- meeting:** at least 1 week prior
- **Prepare for the pre-meeting:** read paper + slidedeck draft
- **Pre-meeting:** Meet with me (Wed-Friday prior)
- **Submit your presentation:** Monday 11:59pm
- **Give your presentation!**
 - Paper motivation + research problem
 - Necessary technical background
 - Methodology
 - Key Results
 - 2-3 discussion questions. ≥ 1 technical, ≥ 1 societal/ethical
 - lead discussion
- **Post-presentation reflection**
- **Post-meeting:** Meet with me

Presentation Rubric

- What makes a good presentation?



Two Steps Forward and One Step Back: The Right to Opt-out of Sale under CPRA



Jan Charatan and Eleanor Birrell (Pomona College)

California Privacy Laws



CCPA

Signed: June 28, 2018

Effective: January 1, 2020

Enforced: July 1, 2020

1. Right to know
2. Right to delete
3. Right to opt-out of sale
4. Right to non-discrimination

sale and **personal information** were broadly defined

CPRA

Passed: November 3, 2020

Effective: January 1, 2023

Enforced: July 1, 2023

- + Right to limit use of sensitive personal information
- + Right to correct
- + No dark patterns
- + GPC signals are valid opt-out

} **Codified**

- Reduced mechanisms
- Reduced scope
- Didn't improve visibility

} **Measurement study**

← **User study**

Measurement Study

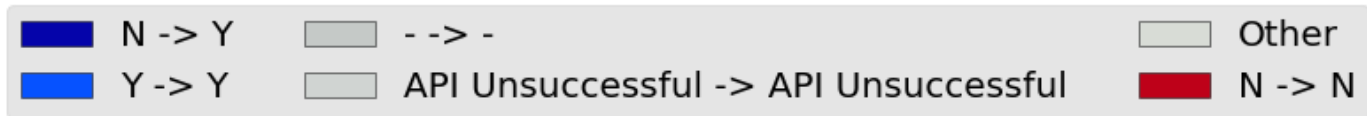
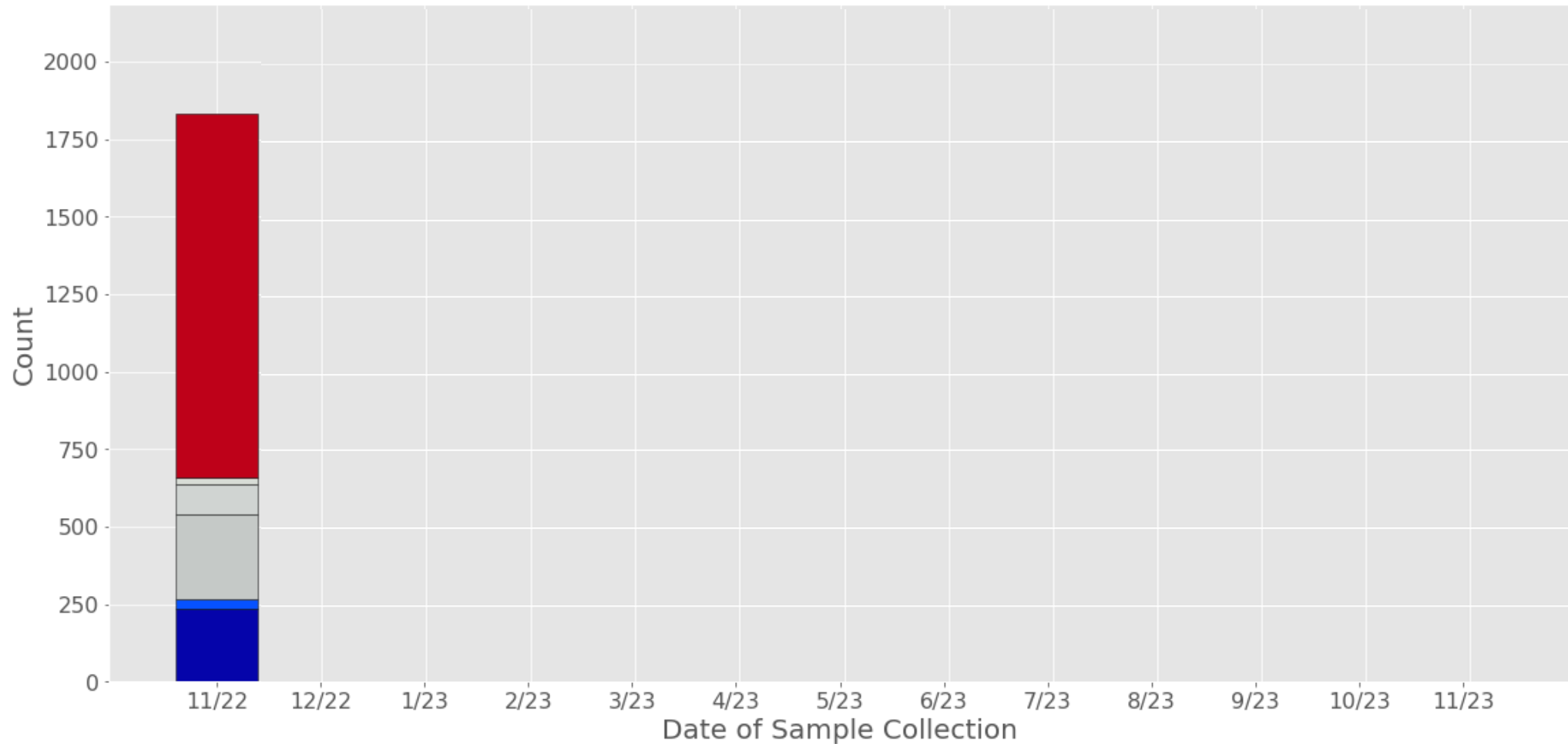
- Crawled 25,000 websites from Tranco top website list
- Recorded:
 - Response to GPC signal
 - US Privacy String when GPC is not enabled
 - US Privacy String when GPC is enabled
 - Presence/absence of CCPA opt-out of sale link on homepage
 - Privacy policy language
 - Presence/absence of /.well-know/gpc.json file
- Conducted monthly crawls between November 2022 and November 2023

U.S. Privacy String:

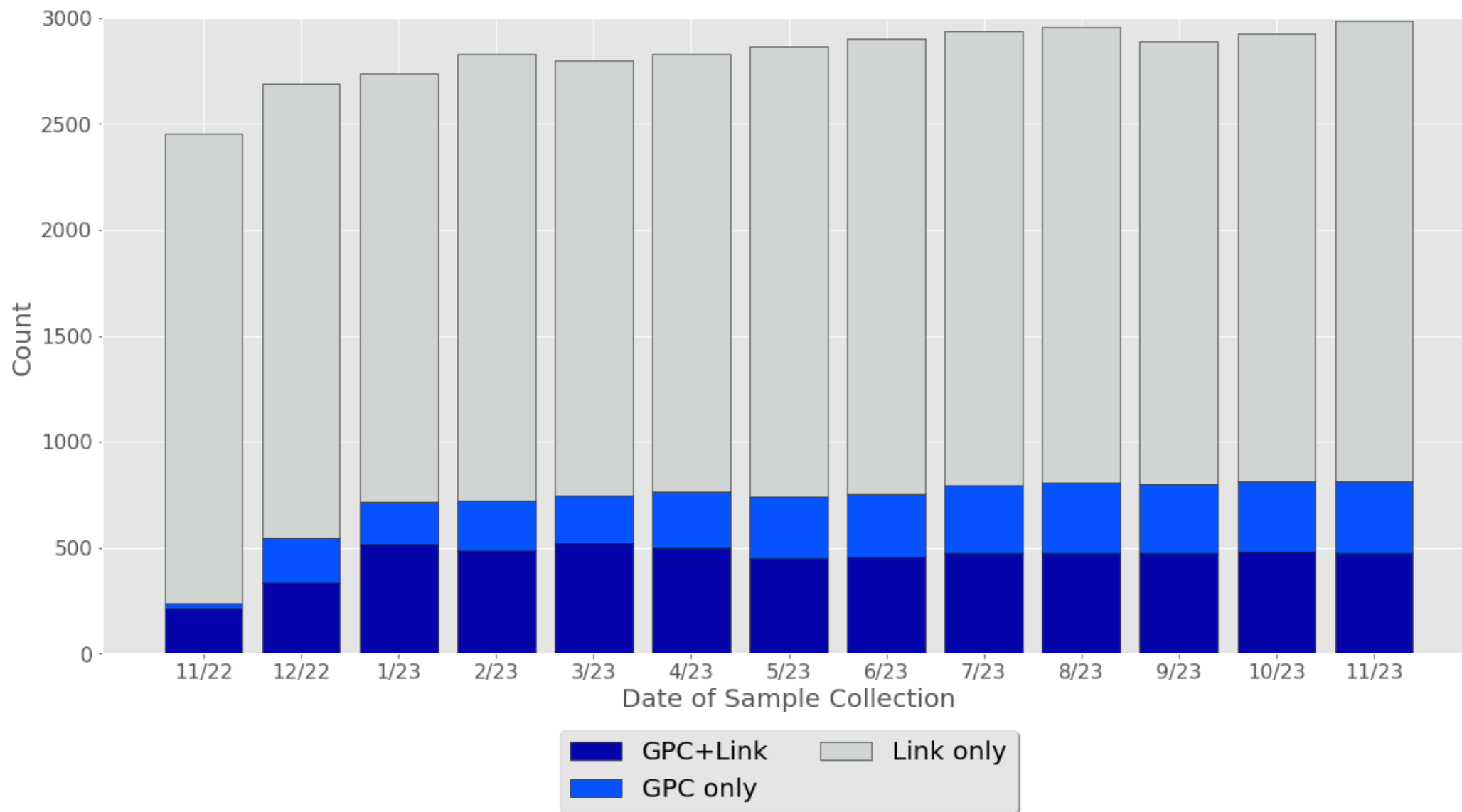
- IAB specification
- 4-character string 1YNN
- sent to 3rd parties
- accessible through API
- supported until 1/1/2024



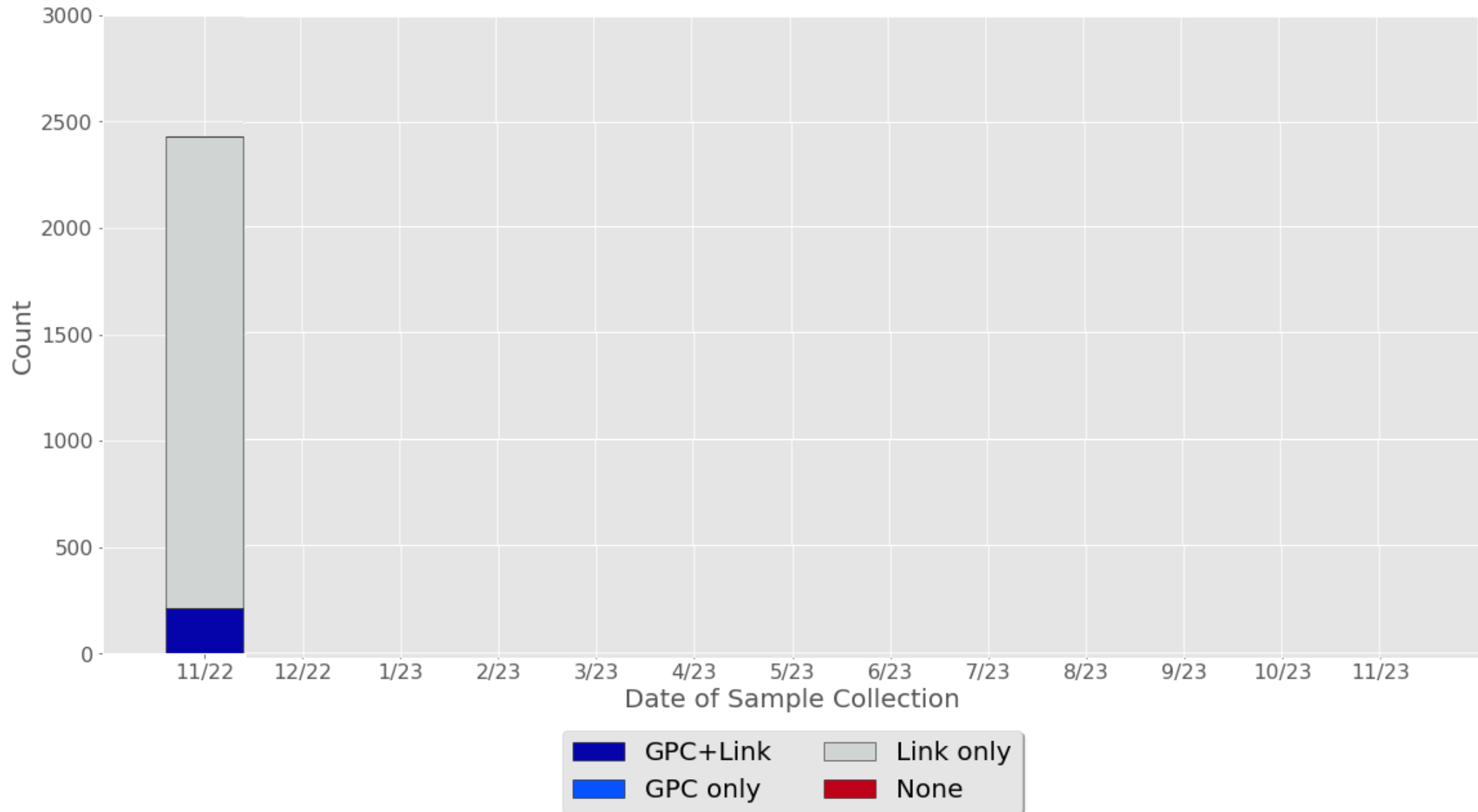
Response to GPC Signals



Prevalence of Opt-out of Sale Mechanisms



Websites that had opt-out links in Nov. 2022



Recommendations

- Laws should require both manual and automated options for invoking rights.
- Browsers should consistently support automated opt-out signals.
- Laws should require companies to clearly identify whether they are subject to the legal regulation.
- Laws need to be complemented by robust enforcement.

Jan Charatan and Eleanor Birrell. Two Steps Forward and One Step Back: The Right to Opt-out of Sale under CPRA . PETS 2024.

Presentation Rubric

- What makes a good presentation?



Discussion

- Begin with presenter's 2-3 discussion questions
- Cover both technical and ethical/societal aspects
- Discussion Norms



Paper

- Survey of one specific research area + proposal for new project in that space

Not Secure — cs.pomona.edu

CS 190 : Senior Seminar Home Section 1 Section 2 Section 3 Section 4 Section 5 Section 6 Final Paper Fall 2024

Paper Milestone Schedule

Milestone	Description	Due Date
M0	LaTeX Exercise	Mon September 9
M1	Topic Proposal	Mon September 23
M2	Bibliography	Mon October 7
M3	Annotated Bibliography	Mon October 21
M4	Intro + Outline	Mon November 4
M5	Full Paper Draft	Mon November 18
M6	Final Paper	Mon December 2
M7	Paper Presentations	Finals Week

Senior Project/Thesis

- Optional
 - Thesis is full-credit course both Fall and Spring
 - Project is .5-credit course in Spring
- Unrestricted topic (Declaration deadline: Sept. 6)
 - must have thesis/project advisor
- 190 proposal topic (Declaration deadline: Dec. 4)
 - subject to approval from me

Grading

- **Research Paper Presentations: 40%**
- **Reading assignments: 10%**
- **Discussion Participation: 10%**
 - Attendance is required
 - At most two excused absences, must notify me in advance
- **Final Project: 40%**

Note: Colloquium attendance affects 190 grade

Course website

<https://cs.pomona.edu/classes/cs190>

- All information is on the course website
- All course materials get posted on the course website
- Links from the course page:
 - Slack (#cs190-2-2024fa), for questions and discussion
 - Gradescope, for submitting assignments and seeing grades
 - Additional resources

