Class 1: Introduction

CS 190-1: People, Technology, and Privacy   Fall 2024

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

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Schedule

Week	Day	Date	Topic	Paper Milestone
1	Tue	Aug 27	Introduction	Intro Survey
Pair Presentations				
2	Tue	Sept 3	Privacy Labels [Kelley et al. 2009]	
3	Tue	Sept 10	Privacy Policies [Linden et al. 2020]	M0 - LaTeX Exercise
4	Tue	Sept 17	Cookie Consent [Bielova et al. 2024]	
5	Tue	Sept 24	Right to Access [Bowyer et al. 2022]	M1 - Topic Proposal
6	Tue	Oct 1	IPS [Tseng et al. 2020] **Content Notice**	
7	Tue	Oct 8	AI Code Assistants [Perry et al. 2023]	M2 - Bibliography
8	Tue	Oct 15	*Fall Break*	
Individual Presentations				
9	Tue	Oct 22	TBD	M3 - Annotitated 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

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https://pomona.az1.qualtrics.com/jfe/form/SV_aUWQsreGgO0lc4C

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
  - Any necessary 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?

https://docs.google.com/document/d/1ghn-QAuTG8Gw5i8A-NjUOlGqXitHElKqjqJe04tDgF4/edit

Data Safety vs. App Privacy: Comparing the Usability of Android and iOS Privacy Labels

Yanzi Lin, Jaideep Juneja, Eleanor Birrell (Pomona College), Lorrie Faith Cranor

PETS 2024 Bristol, UK

CyLab Carnegie Mellon University
Security and Privacy Institute

"Data Safety" vs. "App Privacy"

July 2022

December 2020

We Studied:

- Usability of iOS labels

- Usability of Android labels

- 5 key design differences → user comprehension and perceptions of the labels

1. Location and formatting of links

2. Data collection groups

Data safety →

Safety starts with understanding how developers collect and share your data. Data privacy and security practices may vary based on your use, region, and age. The developer provided this information and may update it over time.

This app may share these data types with third parties
Location, Financial info and 3 others

This app may collect these data types
Location, Personal info and 4 others

Data is encrypted in transit

You can request that data be deleted

See details

App Privacy   See Details

The developer, **Ubisoft**, indicated that the app's privacy practices may include handling of data as described below. For more information, see the developer's privacy policy.

Data Used to Track You
The following data may be used to track you across apps and websites owned by other companies:

Purchases   Location
User Content   Identifiers
Usage Data   Diagnostics

Data Linked to You
The following data may be collected and linked to your identity:

Purchases   Location
User Content   Identifiers
Usage Data   Diagnostics

Data Not Linked to You
The following data may be collected but it is not linked to your identity:
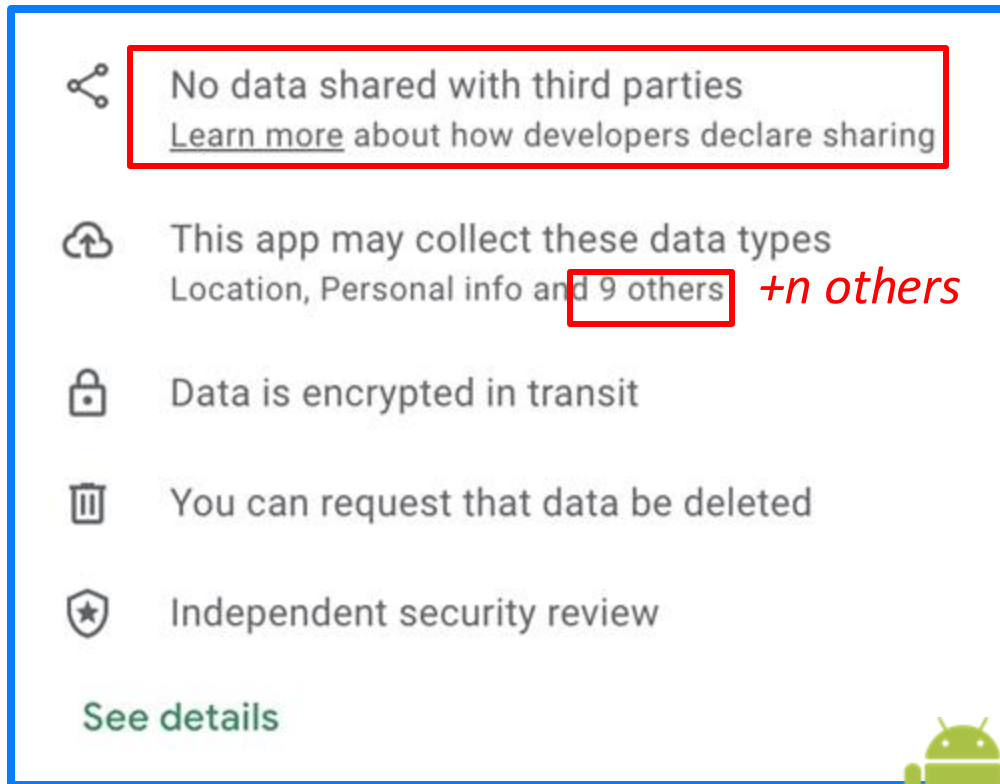
Health & Fitness   Diagnostics

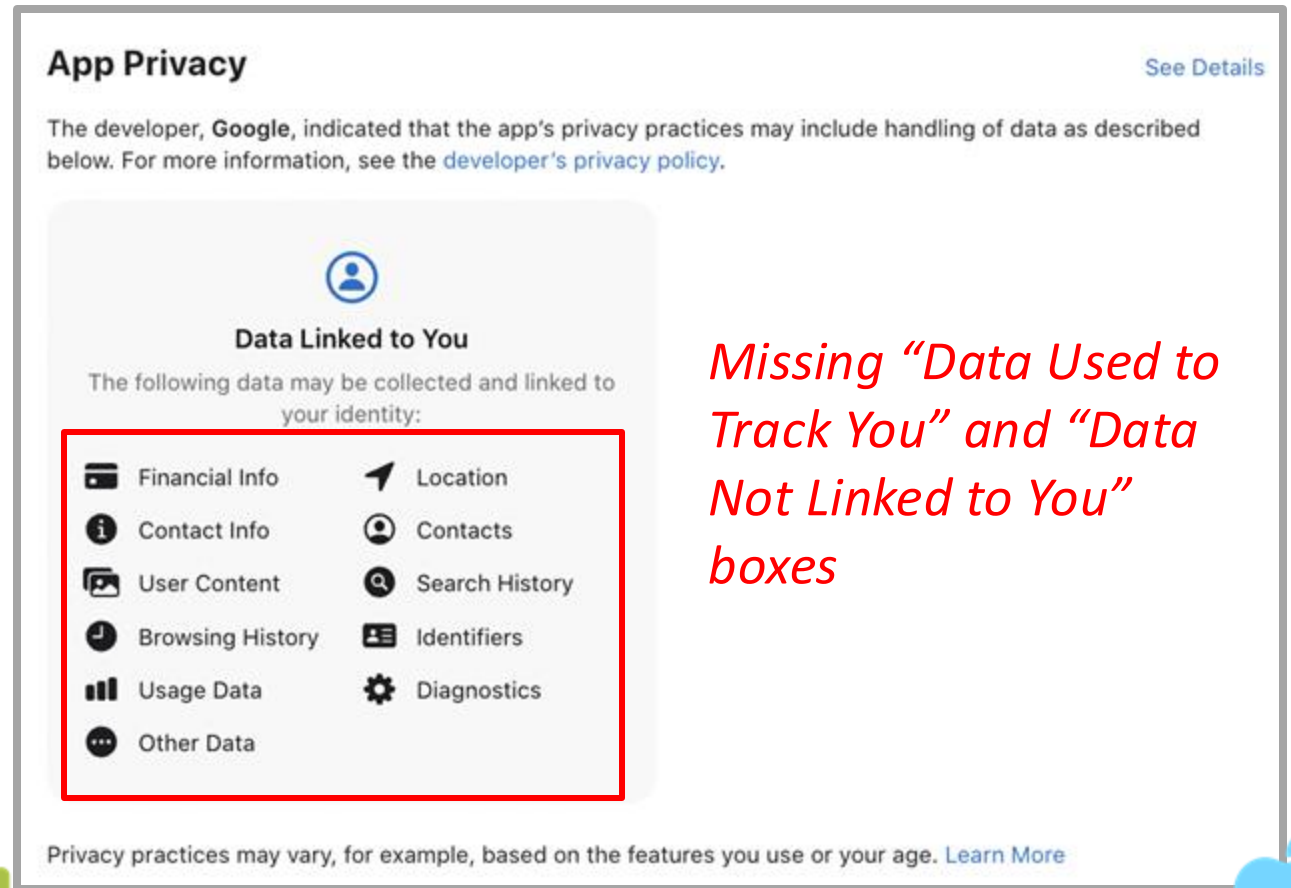Privacy practices may vary, for example, based on the features you use or your age. Learn More

3. Completeness of compact label groups and category lists

+n others

Missing "Data Used to Track You" and "Data Not Linked to You" boxes

4. Expanded label structure

5. Representation of security and data deletion

- data encryption
- data deletion
- independent security review
- compliance with Play Families Policy (apps for kids)

No analogous information provided in iOS labels

Semi-structured interview protocol

- 24 US participants from Prolific
  - 12 Android, 12 iOS users

- Semi-structured 1-hr interviews

- Looked at and discussed 3 privacy labels
  - Just Dance Now, Google Maps, and Tumblr

RESULTS

Incompleteness of compact labels led to confusion about what was collected

This app may collect these data types
Location, Personal info and 9 others
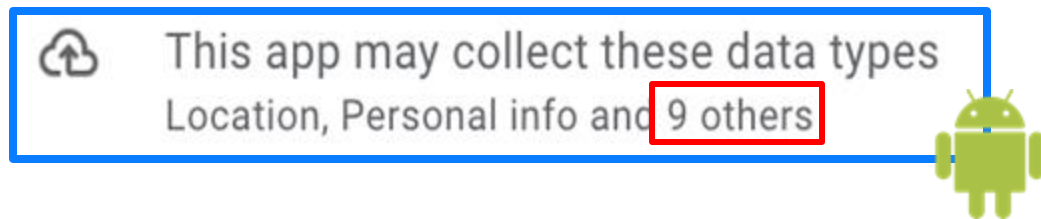
A8: "I'd like to know the nine other data types they're collecting"

I8 suggested adding "a clear, bold statement that specifically [says] no other data is being collected" to the compact label.

App Privacy   See Details

The developer, **Google**, indicated that the app's privacy practices may include handling of data as described below. For more information, see the developer's privacy policy.

Data Linked to You
The following data may be collected and linked to your identity:

Financial Info   Location
Contact Info   Contacts
User Content   Search History
Browsing History   Identifiers
Usage Data   Diagnostics
Other Data

Privacy practices may vary, for example, based on the features you use or your age. Learn More

Missing "Data Used to Track You" and "Data Not Linked to You" boxes

Data use purposes were hard for Android users to find

To find data use purposes,
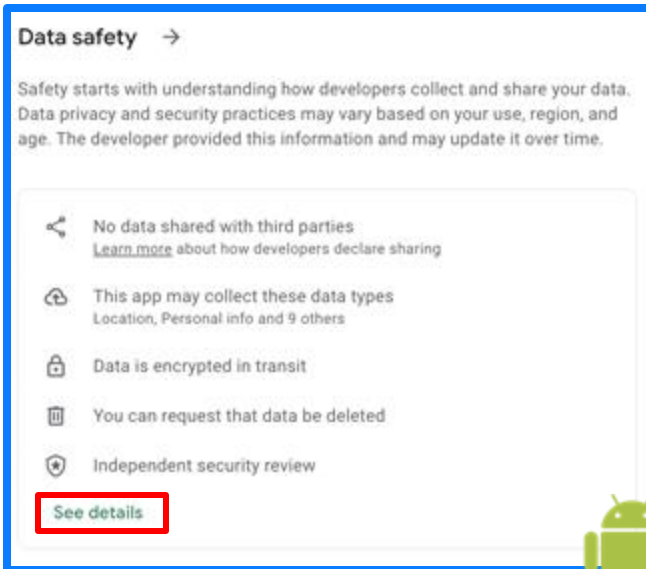
1) Compact Label
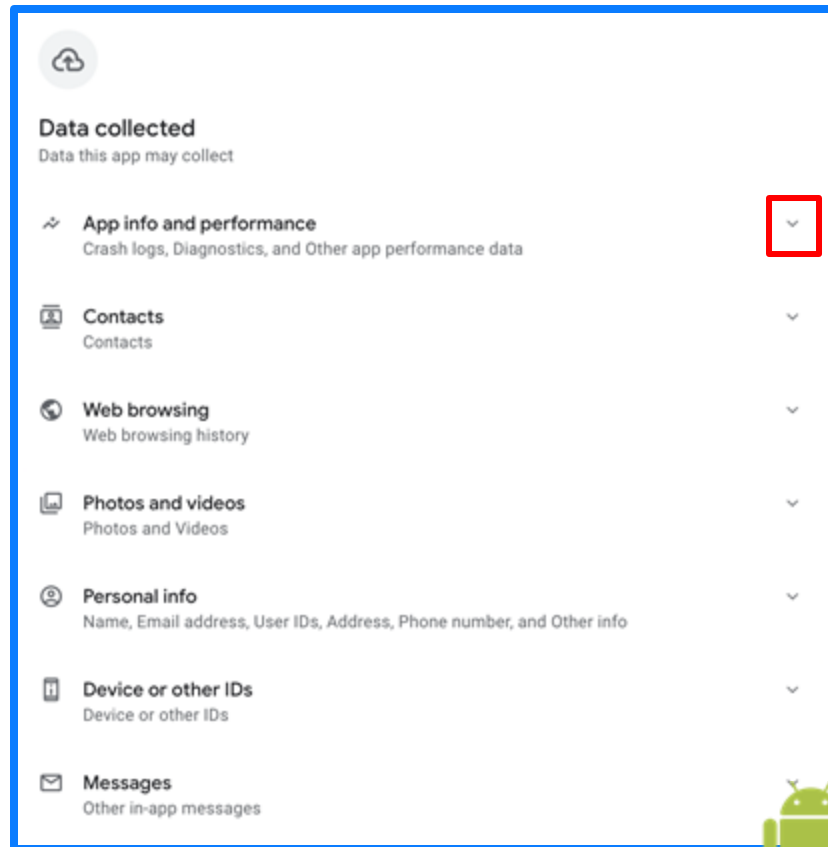
2) Expanded Label
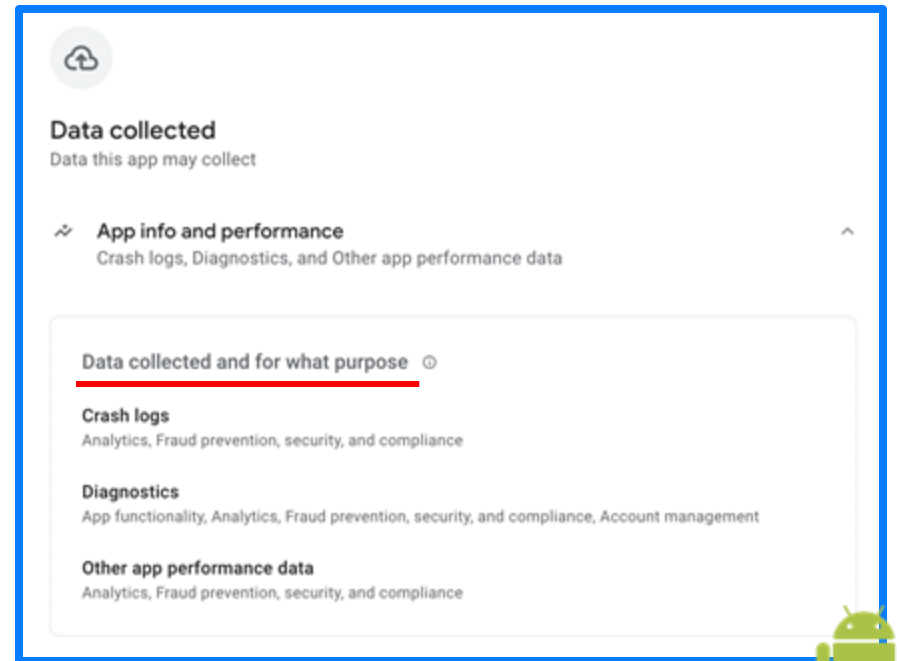
3) Use Purposes Dropdown

iOS users confused by expanded label data uses

- Half of the participants were confused about data use purposes (Analytics, Product Personalization, App Functionality, etc.)

Data Linked to You

The following data, which may be collected and linked to your identity, may be used for the following purposes:

Analytics

💼 Purchases
Purchase History

Product Personalization

💼 Purchases
Purchase History

App Functionality

💼 Purchases
Purchase History
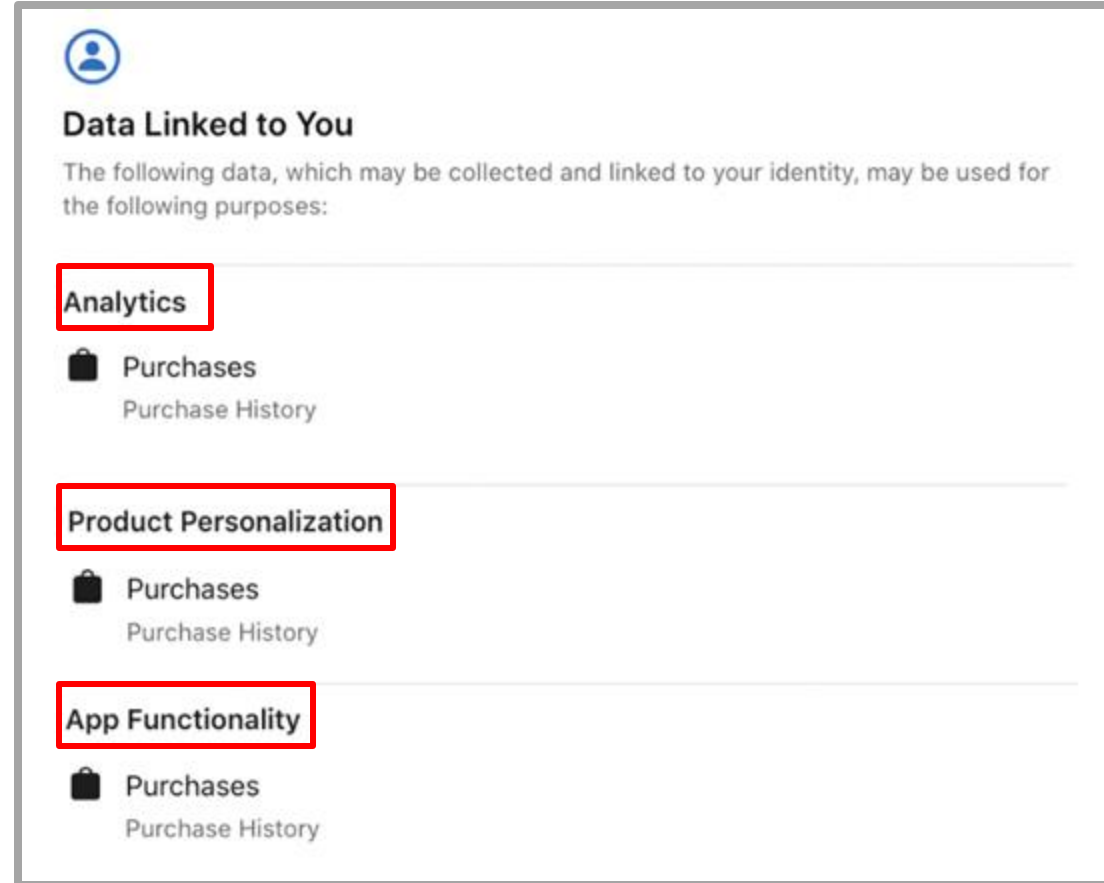
(Abbreviated "Data Linked to You" section in Just Dance Now's expanded label)

Users appreciate data security practices in labels

Data Deletion

⊖ **Data can't be deleted**
The developer doesn't provide a way for you to request that your data be deleted
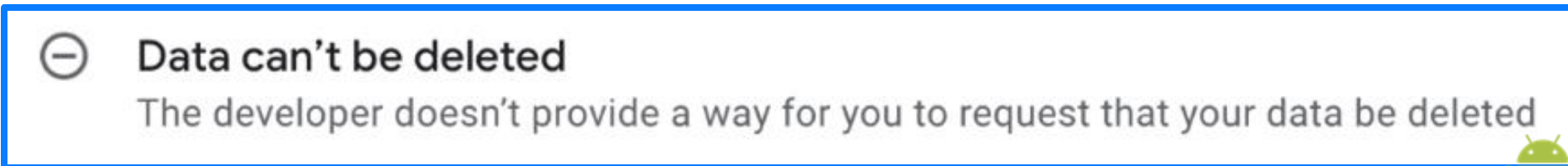
A3:"I definitely don't like the last point with data can't be deleted."

- Most understood "data deleted"
- Most Android and iOS users would be less likely to download an app without data deletion options

I7: "I may still download it, but it definitely affects how much I use it. I would probably still use it to view others' posts but wouldn't post anything myself."

- iOS users wanted this info added

Independent security review impacts decisions

Independent Security Review (ISR)
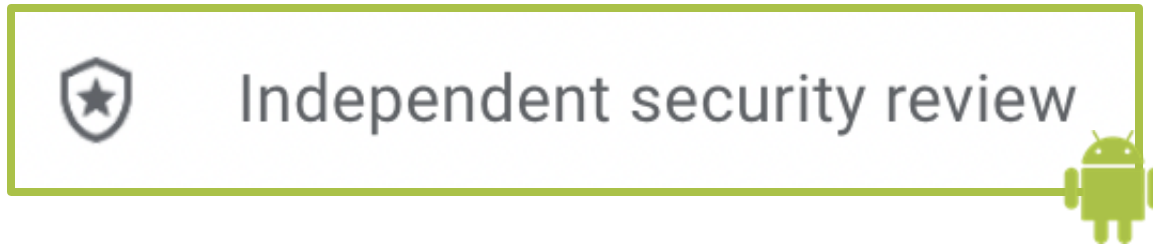
- Android users found ISR helpful and saw risks in downloading without ISR
- Most iOS users felt ISR would make app more secure
- Major concern was **neutrality of an independent third party**

A8: *"It makes me feel like it's safer, whether or not that's true is another story."*

"if a company doesn't have it now that I know it exist, I am like why don't they have that?"

Recommendations

- *Privacy labels should*
  - *use clear, concise design elements to convey critical information about data practices*
  - *explicitly include absent data collection categories*
  - *include information about security practices*
  - use clear, comprehensible terms.
- Groups and categories should not conflate elements with different privacy implications.
- App stores should automatically verify privacy labels.

Presentation Rubric

- What makes a good presentation?
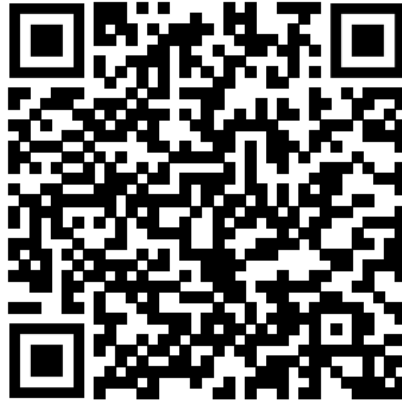
Discussion

- Begin with presenter's 2-3 discussion questions

- Cover both technical and ethical/societal aspects

- Discussion Norms

https://docs.google.com/document/d/1A5Hi54rZJDmYxYFN-TevmFYpkenBKzoO4GFYeUS2g6I/edit

Paper

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

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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 (#cs190-1-2024fa), for questions and discussion
  - Gradescope, for submitting assignments and seeing grades
  - Additional resources