Privacy Wedges: Area-Based Audience Selection for Social Network Posts

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Motivation
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OMG I HATE MY JOB!! My boss is a total pervy wanker always making me do shit stuff just to piss me off!! WANKER!

Yesterday at 18:03 · Comment · Like
Motivation

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Yesterday at 18:03 · Comment · Like

Hi [redacted], i guess you forgot about adding me on here? Firstly, don't flatter yourself. Secondly, you've worked here 5 months and didn't work out that i'm gay? I know i don't prance around the office like a queen, but it's not exactly a secret. Thirdly, that 'shit stuff' is called your 'job', you know, what i pay you to do. But the fact that you seem able to fuck-up the simplest of tasks might contribute to how you feel about it. And lastly, you also seem to have forgotten that you have 2 weeks left on your 6 month trial period. Don't bother coming in tomorrow. I'll pop your P45 in the post, and you can come in whenever you like to pick up any stuff you've left here. And yes, i'm serious.
Yesterday at 22:53

... oops! :(
Motivation

+ Share with

These people or lists:

[Names]

X Don't share with

These people or lists:

[Choose]

Anyone you include here or have on your restricted list won't be able to see this post unless you tag them. We don't let people know when you choose to not share something with them.
Motivation
Motivation
“Privacy Slider”

Selection based on intersocial connectedness
Privacy Wedges

Radar metaphor

Friend groups <=> Wedges

Distance from center <=> Tie strength
Privacy Wedges

A – Circle selection

All friends up to specific tie strength are selected, neglecting friend groups

Example use-case:

A family trip to the amusement park
Privacy Wedges

All friends up to specific tie strength *inside a group* are selected

Example use-case:

*Pictures of me at a university party*

B – Wedge selection
Privacy Wedges

All friends inside a group **beginning at a specific tie strength** are selected

Example use-case:

A rock band member asks for some nice techno events

C – Excluding selection
Privacy Wedges

All friends inside a group inside a specific tie strength interval are selected

Example use-case:

A rock band member asks for some nice techno events

D – Sickle selection
Privacy Wedges

All friends inside a group inside multiple tie strength intervals are selected

Example use-case:

A picture of illegal fireworks you bought in a foreign country

E – Multi layer selection
Privacy Wedges

The *clicked friend* is added to the selection

Example use-case:

A picture of your new girlfriend

F – Single selection
Privacy Wedges – Demo
User study

Goal:

Compare Privacy Wedges to the current standard (e.g. Facebook) in terms of

- Performance (e.g. error rate)

- Usability and user experience
User study

**Goal:**

Compare Privacy Wedges to the current standard (e.g. Facebook) in terms of

- *Performance* (e.g. error rate)
  → calculate false positives / false negatives with example posts compared to ground truth

- *Usability and user experience*
  → AttrackDiff questionnaire
Procedure

- 1 Week before experiment: User hands in a list of his Facebook friends, ordered by tie strength and categorized in friend lists.

- User has to select the audience using Privacy Wedges or Facebook for 12 potentially dangerous facebook posts, given by the examiner.

- Number of selectable friends is increased after each task.

„Share the post with the eight closest university friends“

While attending a costume party, a friend takes a photo like the one below with your mobile phone. Share the photo on facebook and select the recipients.
Procedure

- Attrakdiff questionnaire after each condition.

- 1 Week after experiment:
  - Examiner asks for each post in the experiment, and each friend in the friend list, whether this friend should actually have received the post or not (ground truth)
  - For each post, participant is asked to score the severity of an unwanted disclosurement (false positive) or missed opportunity (false negative)
Participants

- 26 volunteers
- 18 to 54 years old (mean 24)
- 9 female, 15 male
- Different occupations (Business / Finance, Engineers, students..)
Results – error rate

<table>
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<tr>
<th>Phase Measure</th>
<th>Wedges Mean</th>
<th>Wedges SD</th>
<th>Facebook Mean</th>
<th>Facebook SD</th>
<th>T</th>
<th>p</th>
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</table>

Mean FN severity: 6.03 (1=highest, 10=lowest)
Mean FP severity: 2.48 (1=highest, 10=lowest)

- *Significantly lower false positives for Privacy Wedges*
- *Significantly lower false positives for Facebook!*
- *But: FP scored more severe than FN*
Results - UX
Results - UX

Mean of single attributes of PQ
-3 -2 -1 0 1 2 3

technic - human
complicated - simple
in practical - practical
cumbersome - straightforward
unpredictable - predictable
confusing - clearly structured
unruly - manageable

Mean of single attributes of HQS
-3 -2 -1 0 1 2 3

conventional - inventive
unimaginative - creative
cautious - bold
conservative - innovative
dull - challenging
understanding - challenging
ordinary - novel

Mean of single attributes of ATT
-3 -2 -1 0 1 2 3

unpleasant - pleasant
ugly - attractive
disagreeable - likeable
rejecting - inviting
bad - good
repelling - appealing
discouraging - motivating

Mean of single attributes of HQI
-3 -2 -1 0 1 2 3

isolating - connective
unprofessional - professional
tacky - stylish
cheap - premium
alienating - integrating
separates me - brings closer
unpresentable - presentable

Facebook
Wedges
Limitations

- Small sample set, used convenience sampling
- Limited scalability due to limited space in the UI
Future work & Other applications

• Use incremental magnifying to place all friends in the UI

• Visualize audience of already published posts with Privacy Wedges
Conclusion

• Proposed UI for audience selection for Facebook posts, using a radar metaphor and tie strength as a criterion.

• Results show that unwanted disclosures are reduced at the cost of missed opportunities.

• Future versions should address the scalability issue.