

Ad Transparency

Why you saw this ad

 Only you can see this

Different factors contribute to why you saw an ad, including who the advertiser chooses to reach and your activity. These factors help us predict ads that you might like.



Advertiser choices

View who **Orange Mud** wants to show ads to



Your activity

You interacted with content about social media and more



Advertiser choices

Advertisers want to connect with people who they think will enjoy their products, so they make choices about who to show their ads to. [How this works](#)

Orange Mud wants to show ads to people who may have:



Set their age to 18 and older



A primary location in the United States



Ad Transparency

- Users want to know ad targeting parameters
 - Why is this important?
- Advertiser transparency efforts fall short
 - Why do you think they hide the details?
- Idea: have users detect this collaboratively

Inference Method

- Observe ads being served to an audience
- Correlate observation with user attributes
 - Hypothesis: ad is shown *only* to users who match attributes
- Iterate over pairs of attributes that belong to all users who see ad
 - Evaluate likelihood of seen / not seen sets given targeting formula
- Use expectation-maximization to tune K (ad frequency) parameter

Real-world Experiment

- Run ad experiments with 420 users
 - Sep 2018 to Mar 2019
- Carried out a targeted campaign, narrowed by location & custom audience
 - Custom audience more effective at reaching users
- 45 campaigns reached at least 3 users
- Results:
 - 17 of 29 custom audience guessed correctly
 - 65% correctness for campaigns that reached 10+ users

Simulation

- Create a synthetic audience
 - Using one- and two-attribute marginals
- Generate up to 1M monitored users
- Simulate targeted campaigns, run inference
 - Higher overall accuracy, 86% with 10+ monitored users

Discussion

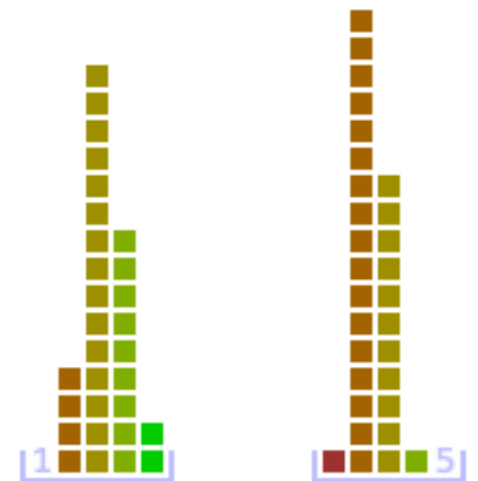
- Is this realistic?
 - Generalizability of small experiment
 - Validity of assumptions (ad model, two-attribute campaigns, ...)
 - Privacy issues for users
- Adversarial actions by advertisers
 - Targeting attributes taken from advertiser
- Is the resulting data good enough to be actionable?

Impressions

- Positive
 - Novel approach for transparency
 - Real-world + simulated experiments
 - Transparent and open source
- Negative
 - Assumptions: two-attribute models, Bernoulli model
 - Privacy issues in data collection

Wrap Up

- Other discussion points?
- What did you find surprising?
- Who really liked this paper? Really hated it?



Defining “Broken”

- Ad- and tracker-blocking tools change website functionality
- What kind of “broken” functionality do users notice, how does it affect them, and what do they do about it?