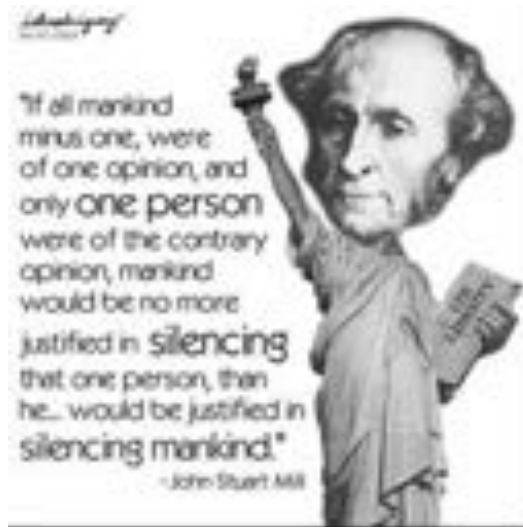




*"I'd like to meet the algorithm that thought we'd be a good match."*

IRS Audits Fraud Detection  
**Political Messaging** Urban Planning  
Credit Scores **AirBnb Pricing** Predictive Policing  
**Yelp Reviews** Copyright Infringement Student Matching Net Neutrality  
Comment Moderation College Rankings Twitter Trends Advertising  
**Government Censorship** Welfare Management **News Personalization**  
Automatically Generated Content **Teacher Rankings** Romance & Dating  
**Criminal Sentencing** Search Rankings & Completions  
**Human Resources** **News Layout**  
Recommender Systems





## Modern Marketplace of Ideas

Stronger or weaker?

**Publication + Distribution =  
Marketplace of Ideas**

# 'I Am Adam Lanza's Mother': A Mom's Perspective On The Mental Illness Conversation In America

Posted 10/22/14 10:45am EDT | Updated 10/22/14 11:45am EDT



GET READY TO ASK US THIS

QUESTION

ANSWER

Health | Healing | Inspiring | Family | Home | Pets | Ideas | Inspiration | More

**FOLLOW** Autism | News | Adoptions | National Geographic | School Shooting | Blueberries | Connecticut Shooting | The Adam Lanza Mother | Life Long | World News | National School Shooting | Space News





**“News will find me.”**



## Algorithmic Accountability

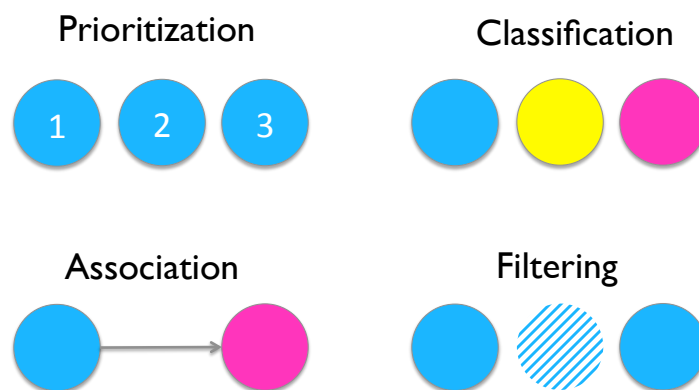
How can we characterize the bias or power of an algorithm?

When might algorithms be wronging us, or making consequential decisions?

What role might journalists play in holding algorithmic power to account?

N. Diakopoulos. Algorithmic Accountability Reporting: On the Investigation of Black Boxes. Tow Center Report, Columbia University. Feb., 2014.

## Algorithmic Power: Decisions





“ “ We must stop thinking of the new filters and algorithmic practices ... as unproblematic, objective, and naturally superior to the filters and practices that preceded them. These new filters might be faster, cheaper, and more efficient, but speed, cost and efficiency are only peripherally related to the **civic roles that these filters and algorithms will be playing in our lives.**

– Evgeny Morozov



**New York Kitchen & Bath Corporation**

★ ★ ★ ★ ★ 10 reviews [Rating Details](#)

**67 Filtered Reviews for New York Kitchen & Bath Corporation**

Note: The reviews below are not factored into the business's overall star rating.

## 16% of reviews filtered as fake

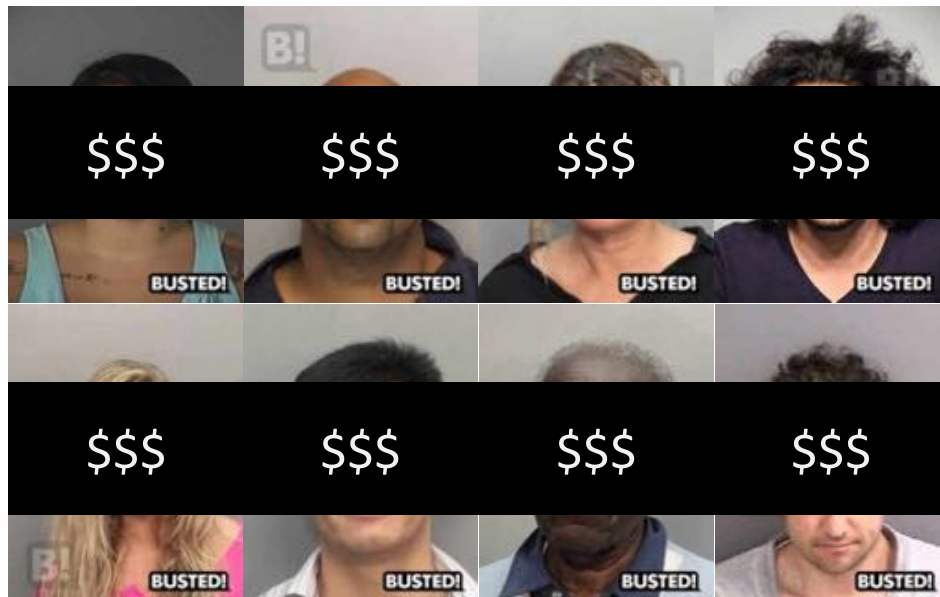
### An Imperfect Filter

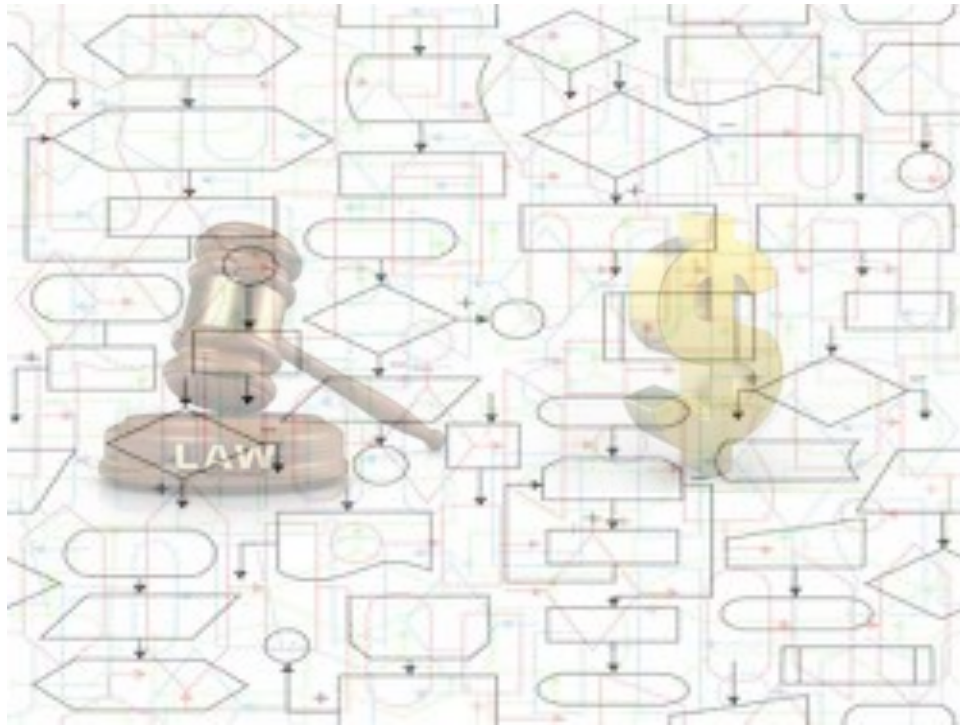
De-emphasize Legitimate Reviews

Leave Fake Reviews Intact

+1 ★ → 5-9% increase in revenue

### Intentional manipulation of review visibility?



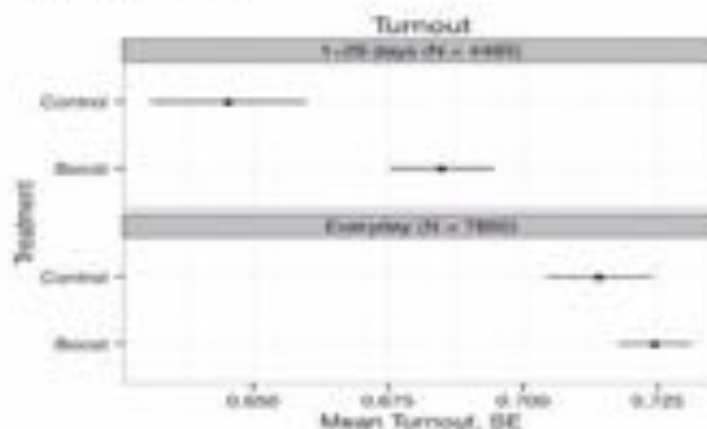


**62.5%** of users unaware of algorithm

**26.5%** think they might be seeing everything from friends

## Facebook News Exposure

Turnout  
(Survey, Nov 7-19)



Credit: Solomon Messing, Facebook

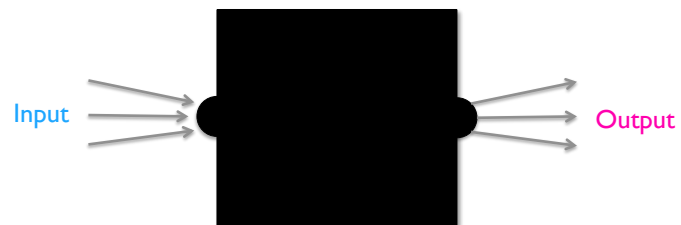
## Click-bait Headlines

Time Away After Click

Ratio of Clicks to Discussion



## Input-Output of an Algorithm



# WSJ Price Discrimination

Do different people pay different prices depending on their geography or browser history?



Jennifer Valentino-DeVries, Jeremy Singer-Vine, and Ashkan Soltani. Websites Vary Prices, Deals Based on Users' Information. Wall Street Journal. Dec, 2012.

Likelihood of receiving higher prices, by ZIP code





## Other Stories from Algorithms

Discriminatory / Unfair

Mistake that denies a service

Censorship

Breaks law or social norm

False Prediction

# Algorithm Auditing

## Code Audit

Requires specialized knowledge, versioning, system setup, FOIA access, data access

## Noninvasive User Audit

User surveys about their experience. Non-experimental, sampling issues, self-report

## Scraping Audit

Analyze input / output. EULA, CFAA issues

## Sock Puppet

Impersonate users with programs. Ethics of deception

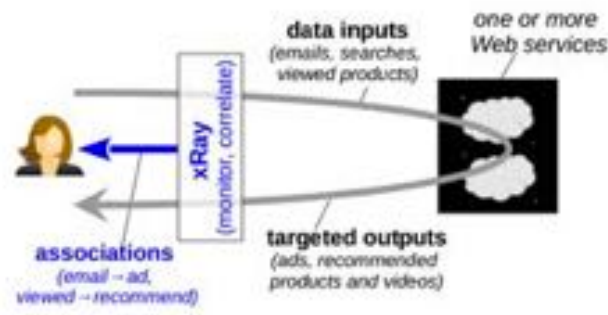
## Crowdsourced Audit

Have real users report back data about platform. Combine with software reporting.



Christian Sandvig, Kevin Hamilton, Karrie Karahalios, Cedric Langbort. Auditing Algorithms: Research Methods for Detecting Discrimination on Internet Platforms. ICA 2014.

# Automated Monitoring: XRay



Mathias Lécuyer, et al. XRay: Enhancing the Web's Transparency with Differential Correlation. Proceedings of the USENIX Security Symposium. 2014



## Methods of Accountability

Internal transparency

Regulation

Reverse engineering

Public education

## Challenges

Teaching journalists to do algorithmic accountability

It's messy and hard!

Legal issues

EULAs, DMCA, Computer Fraud and Abuse Act

Ethical implications of publishing more info

Gaming, individual privacy

Transparency policy

What factors to expose, frequency, format of disclosure

Algorithms in the newsroom

Public editor of future as algorithmic ombudsman?

## Thanks! Questions?

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