INSPECTABILITY AND CONTROL IN SOCIAL RECOMMENDERS
IF DIGITAL AUDIO QUALITY HAS A HIGHER
STILL USE VINYL?

WHY DO DJ'S THEN
INSPECTABILITY
CONTROL
IF BIG DATA QUALITY LEADS TO HIGHER RMSE RECOMMENDATIONS
Why should we use social recommenders?
INSPECTABILITY
Recommended based on your interest in:

- Reservoir Dogs
- The Big Lebowski
- Lock, Stock and Two Smoking Barrels

Member Reviews

Reviewed voted most helpful

***** Fabulously entertaining piece of documentary seamlessly blended with performance art. Beautiful "can’t take your eyes away" street art blends with the suspense of artists engaging in physically dangerous and "gray area" (Smith's) acts of anti-art.

You found this review helpful: [Helpful] [Not helpful]

Recommended based on your interest in:

INSPECTABILITY
<table>
<thead>
<tr>
<th>Svetlin's music</th>
<th>Friends</th>
<th>Recommendations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queen</td>
<td>Veselin Kostadinov</td>
<td>Guns N' Roses</td>
</tr>
<tr>
<td>U2</td>
<td>Zlatina Radeva</td>
<td>Nirvana</td>
</tr>
<tr>
<td>Dream Theater</td>
<td>Sharang Mugev</td>
<td>Nickelback</td>
</tr>
<tr>
<td>Prodigy</td>
<td>Kamal Agarwal</td>
<td>Moby</td>
</tr>
<tr>
<td>Linkin Park</td>
<td>Annie Todorova</td>
<td>Audioslave</td>
</tr>
<tr>
<td>Metallica</td>
<td>Dave Grant</td>
<td>System Of A Down</td>
</tr>
<tr>
<td>Pendulum</td>
<td>Ahsan Ashraf</td>
<td>Depeche Mode</td>
</tr>
<tr>
<td>311</td>
<td>Anastasia Poliakova</td>
<td>Pearl Jam</td>
</tr>
<tr>
<td></td>
<td>Plamen Dimitrov</td>
<td>Aventura</td>
</tr>
<tr>
<td></td>
<td>Chavdar Chenkov</td>
<td>Killers</td>
</tr>
</tbody>
</table>
CONTROL
To find similar products with better values than this one

**Canon PowerShot S2 IS Digital Camera**

$424.15

Canon, 5.3 M pixels, 12x optical zoom, 16 MB memory, 1.8 in screen size, 2.97 in thickness, 404.7 g weight. [detail](#)

### Would you like to improve some values?

<table>
<thead>
<tr>
<th></th>
<th>Keep</th>
<th>Improve</th>
<th>Take any suggestion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer</td>
<td>Canon</td>
<td>Sony</td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>$424.15</td>
<td>less expensive</td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>5.3 M pixels</td>
<td>less expensive</td>
<td></td>
</tr>
<tr>
<td>Optical Zoom</td>
<td>12x</td>
<td>$200 cheaper</td>
<td></td>
</tr>
<tr>
<td>Removable Flash Memory</td>
<td>16 MB</td>
<td>more memory</td>
<td></td>
</tr>
<tr>
<td>LCD Screen Size</td>
<td>1.8 in</td>
<td>larger</td>
<td></td>
</tr>
<tr>
<td>Thickness</td>
<td>2.97 in</td>
<td>thinner</td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>404.7 g</td>
<td>lighter</td>
<td></td>
</tr>
</tbody>
</table>

[Show Results](#)  [Reset](#)
CONTROL
HYPOTHESIS:

INSPECTABILITY AND CONTROL INCREASE SATISFACTION
ONLINE USER EXPERIMENT
PARTICIPANTS

267 participants

MTurk + Craigslist

At least 5 music “likes” and overlap with at least 5 friends at least 10 recommendations

lists limited to 10 to avoid cognitive overload

Demographics similar to Facebook user population
PROCEDURE

STEP 1: Log in to Facebook
System collects your music “likes”
System collects your friends’ music likes
PROCEDURE

STEP 2: Control

3 conditions, between subjects

<skip> vs

NOTHING vs WEIGH ITEMS vs WEIGH FRIENDS

drag these sliders

Svetlin’s music
- Queen
- Metallica
- U2
- Linkin Park
- Prodigy
- 311
- Pendulum
- Dream Theater

drag these sliders

Friends
- Veselin Kostadinov
- Sharang Mugve
- Kamal Agarwal
- Ziaira Radeva
- Annie Todorova
- Dave Grant
- Ahsan Ashraf
- Anastasia Polakova
PROCEDURE

**STEP 3:** Inspection

2 conditions, between subjects

**LIST ONLY**

**FULL GRAPH**
**PROCEDURE**

**STEP 4: Evaluation**

For each recommendation:

Do you know this band/artist?

How do you rate this band/artist?

(link to LastFM page for reference)
PROCEDURE

**STEP 5:** Questionnaires

- understandability
- perceived control
- perceived recommendation quality
- system satisfaction
- music expertise
- familiarity with recommender systems
RESULTS
The recommendation process is clear to me
I understand how TasteWeights came up with the recommendations
I am unsure how the recommendations were generated*

3 items:

- The recommendation process is clear to me
- I understand how TasteWeights came up with the recommendations
- I am unsure how the recommendations were generated*

**SUBJECTIVE**

**INSPECTABILITY**
- full graph
- list only

**UNDERSTANDABILITY**

Control

- no
- item
- friend
SUBJECTIVE

4 items:
- I had limited control over the way TasteWeights made recommendations*
- TasteWeights restricted me in my choice of music*
- Compared to how I normally get recommendations, TasteWeights was very limited*
- I would like to have more control over the recommendations*
6 items:

- I liked the artists/bands recommended by the TasteWeights system
- The recommended artists/bands fitted my preference
- The recommended artists/bands were well chosen
- The recommended artists/bands were relevant
- TasteWeights recommended too many bad artists/bands*
- I didn't like any of the recommended artists/bands*
SUBJECTIVE

7 items:
- I would recommend TasteWeights to others
- TasteWeights is useless*
- TasteWeights makes me more aware of my choice options
- I can make better music choices with TasteWeights
- I can find better music using TasteWeights
- Using TasteWeights is a pleasant experience
- TasteWeights has no real benefit for me*
BEHAVIOR

Time (min:sec) taken in the inspection phase (step 3)
- Including LastFM visits
- Not including the control phase (step 2)
- Not including the evaluation phase (step 4)
BEHAVIOR

Number of artists the participant claims she already knows

Why higher in the full graph condition?

- Link to friends reminds the user how she knows the artist
- “If all my friends know this artist, I should too”
Behavior

Average rating of the 10 recommendations

- Lower when rating items than when rating friends
- Slightly higher in full graph condition
SEM

Objective System Aspects (OSA)
- \( \chi^2(2) = 10.70^{**} \)
  - item: 0.428 (0.207)*
  - friend: 0.668 (0.206)**
- Inspectability
  - full graph vs. list only
    - \( \chi^2(2) = 10.81^{**} \)
      - item: -0.181 (0.097)'
      - friend: -0.389 (0.125)**
- Control
  - item/friend vs. no control
    - 0.459 (0.148)**

Subjective System Aspects (SSA)
- Understandability (\( R^2 = .153 \))
  + 0.166 (0.077)*
  - 0.332 (0.088)**
  + 0.231 (0.114)*
  - 0.210 (0.074)**
  + 0.249 (0.049)**
  + 0.377 (0.074)**

Perceived control (\( R^2 = .311 \))
  - 0.377 (0.074)**
  + 0.249 (0.049)**
  + 0.148 (0.051)**

Perceived recommendation quality (\( R^2 = .512 \))
  + 0.770 (0.094)**
  + 0.148 (0.051)**

User Experience (EXP)
- Satisfaction with the system (\( R^2 = .696 \))
  + 0.410 (0.094)**
  + 0.955 (0.148)**
  - 0.152 (0.063)*

Personal Characteristics (PC)
- Music expertise
  - 0.375 (0.094)**
  + 0.770 (0.094)**
- Trusting propensity
  - 0.205 (0.100)*
  + 0.257 (0.124)*

Interaction (INT)
- Inspection time (min) (\( R^2 = .092 \))
  + 0.288 (0.091)**
- number of known recommendations (\( R^2 = .044 \))
  + 0.695 (0.304)*
- Average rating (\( R^2 = .508 \))
  + 0.323 (0.031)**
  + 0.067 (0.022)**

Control item/friend vs. no control
- 0.428 (0.207)*
- -0.181 (0.097)'
- -0.389 (0.125)**

Music expertise
- 0.375 (0.094)**
- 0.770 (0.094)**

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CONCLUSION
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Inspectability and control work

- Separately
- What about together?
CONCLUSION

Inspectability and control work
- Separately
- What about together?
CONCLUSION

Don’t dismiss the idea of social recommenders!

- They may have a higher RMSE
- But they can give users control and inspectability

Inspectability:

- Increases understandability and perceived control
- Improves recognition of known recommendations

Control:

- Friend control: higher accuracy
- Items control: higher novelty
SOCIAL RECOMMENDERS

LET YOU BE A RECOMMENDATION DJ
THANK YOU!

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