



Self-actualization

Adaptive Decision Support Systems



Self-actualization

How can we overcome the consequences of the filter bubble?

Break the cycle of “behaviorism” focused on short-term desires

Help users develop, explore, and understand their preferences

Early attempts to break the bubble (and how they fail)

Novel attempts to break the bubble (a look ahead)



Breaking behaviorism

Towards a focus on long-term goals



Filter bubbles

Auto propaganda that indoctrinates us with our own ideas

Caused by a focus on consumption

What I do, not what I like

Reinforced by heuristic decision-making

Preferences are constructed on the fly

Consequence: Identity feedback loops

Recommendations are based on your preferences, but they also shape your preferences



Behavioral data

Behavioral data creates a focus on short-term goals

While behavioral data rightly plays a significant role in recommendation, we must not neglect users' stated preferences and ambitions

Is [the recommender] providing recommendations that help the user achieve the goals they have for their life, or is it reinforcing behavior that detracts from those goals?

(Ekstrand and Willemssen, 2016)



Behavioral data

Boyd (2009): “the psychological equivalent of obesity”

Recommended content is the cerebral equivalent of junk food

Lanier (2010: Backlash? No!

We’ve been trained to lower our standards, so that we fit in with the algorithm

We run the risk of getting locked in by the feedback loop

If so, recommenders do not just inhibit discovery and learning, they actively work against it



Behavioral data

**How do we bring users back
to their longer-term goals?**



A focus on preferences

Helping users develop, explore, and understand them



Are algorithms bad?

Seaver (2018), on reconfiguring our captivating social infrastructures:

The question to ask of traps may not be how to escape from them, but rather how to recapture them and turn them to new ends in the service of new worlds





Are algorithms bad?

Two solutions:

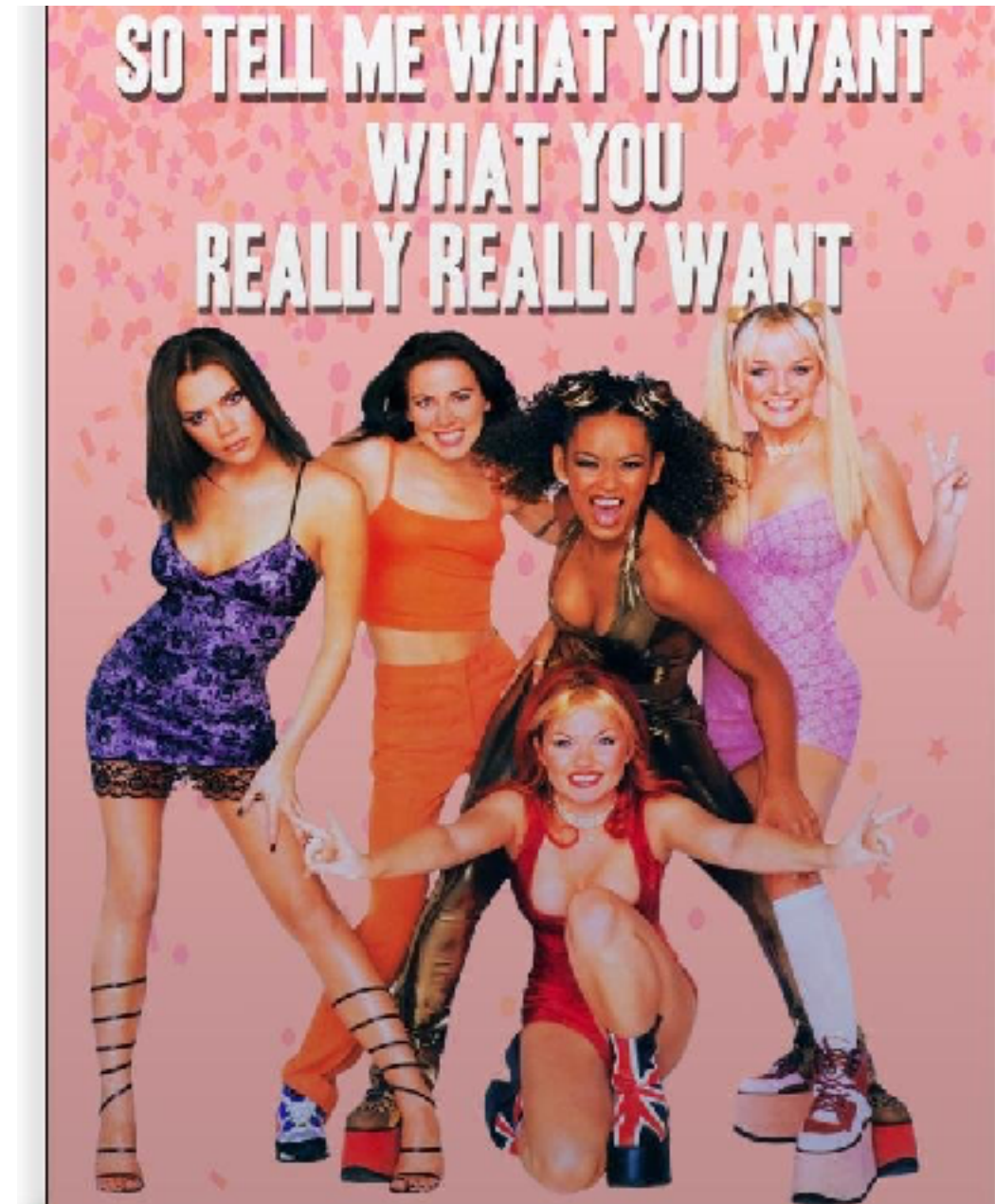
Ekstrand & Willemssen, 2016:

Build a recommender that
asks users what they want

Help them work towards
these long-term goals

Knijnenburg et al. 2016:

Help users understand
what they want





Preferences?

The Recommender's Fallacy: Recommender systems provide recommendations based on our preferences, but do they know what our preferences are?

Do **we** actually know what our preferences are?

Perhaps not... finding out is actually an important part of the ARCADE model!

The recommender system does not care: to make recommendations, **any** preferences will do

Hence, they usually focus on our short-term preferences



Escaping the trap

Recommender Systems for Self-Actualization

Use recommendation technology to support users in developing, exploring, and understanding their preferences based on their long-term goals and ambitions



Early attempts

to escape the myopic filter bubble trap



Early attempts

Inspired by McNee et al., there have been several attempts to move “beyond accuracy”

- Explanation and visualization
- Diversification
- Critiquing

They typically fall short of really bursting the filter bubble



Explanation

Problem: the Filter Bubble happens because the system is opaque

Solution: explain the recommendations

Increases users' understanding of the recommendation process, which helps with self-actualization

Visualization can make this even more intuitive

However, explanations tend to make users overestimate the quality of recommendations

Increases the conformity effect of the Filter Bubble!



Diversification

Problem: the Filter Bubble happens because it is difficult for users to explore a wider range of items

Solution: diversify the recommendations

- Helps overcome choice overload

- Provides more balanced (news) recommendations

However, diversification depends on the system's interpretation of diversity rather than the users'

- Users still run the risk of becoming complacent consumers



Critiquing

Problem: the Filter Bubble happens because it is difficult for users to express their true preferences

Solution: allow users to provide detailed, iterative feedback

Improves users' decision accuracy and confidence

However, the goal of existing critiquing-based recommenders is to hone in on users' preferences

Not to reflect upon these preferences in a more systemic manner



Novel attempts

My current attempts to burst the filter bubble



Self-actualization

Recommender Systems for Self-Actualization

Use recommendation technology to support users in developing, exploring, and understanding their preferences based on their long-term goals and ambitions, by:

- actively covering a broader spectrum of preferences based on long-term goals
- supporting rather than replacing users' decision-making
- focusing users' activities on active exploration rather than passive consumption



Covering all tastes

Users' preferences are not singular, but rather multi-faceted and only loosely connected

A user's taste for Bach may be unrelated to their taste for Nicki Minaj, but they can conceivably hold both of these preferences simultaneously

Traditional recommenders: fit **any** part of users' preferences

RSSAs: help the user discover **all** of these preferences



Supporting decisions

Preferences are fleeting, constructed on the fly and vulnerable to distorting influences

- Users must be in control over this process

- Systems can support the process to avoid distorting influences

Traditional recommenders: treat preferences as well-defined, fixed, and invariant

RSSAs: help users develop and express their preferences



Exploration

Preference construction is an active, exploratory process

It requires users to walk through the ARCADE process

This is a largely exploratory endeavor!

Traditional recommenders: optimize the probability that the user will like the recommendations and consume them

RSSAs: recommendations are “samples” or “pathways” rather than “alternatives” meant for exploration



Example solutions

A few proposed solution approaches:

Alternative algorithms (Nov 14)

Personalized preference profiles (Oct 3)

Preference-based communities (Oct 5)

< your solution here! >



Alternative algos

Going beyond the Top-N

Algorithms that produce alternative lists of items

Going beyond the “things we think you’ll like”

Idea: by exploring items outside the traditional Top-N:

Helps the recommender get a better idea of your tastes
(prevents overspecialization)

Helps the user better understand their own unique tastes



Alternative algos

Things We Think You'll Hate

Allows you to correct potential mistakes

Things We Have No Clue About

Explore under explored preferences

Things You'll Be Among The First To Try

Show new or relatively unpopular items

Things That Are Polarizing

Allow you to move your tastes beyond the mainstream



Preference profiles

Visualization is usually used to explain the recommendations or the recommendation process

Not one's preferences

Personalized preference profiles: use algorithms to create personalized infographics of your inferred preferences

Highlights unique sides of one's identity

Allows for self-reflection

Allows users to realign their preferences with their long-term goals



Preference profiles

Similar to “scrutable” user models

Less focused on correction, more on the development, exploration and understanding of preferences

Opportunities for ARCADE:

Represent the choice situation (visualize recommendations in the context of one’s preferences)

Design the choice situation (realign one’s preferences with one’s longer-term goals)



Communities

Recommender algorithms have been used to recommend people rather than items

Usually focused on finding experts or peers to connect to for help with a specific problem

Preference-based communities: use algorithms to group people around an unexpected common interest

Promote discussion (helps with preference construction)

Reinstate the social and intellectual benefits of traditional advice-giving practices



Communities

Similar to community platforms (Reddit, Digg, Slashdot)

But no pre-defined topics that cause epistemic bubbles

Grouping algorithm: find ppl similar enough to have things in common but diverse enough to learn from one another

Opportunities for ARCADE:

Access information (put users closer to the source of recs)

Advise about processing (ideally, structure interpersonal advice not around “here’s something you might like” but rather “here are things to focus on, given your goals”)

<https://dl.acm.org/doi/10.1145/2959100.2959179>



Before we adjourn

Groups!



Feedback soon

I'll send you feedback on your topic proposals soon!



Questions...