

From Filter Bubbles to Self Actualization via Preference-Based Visualizations

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Recommender Systems for Self Actualization (Knijnenburg et al, 2016)

Recommender Systems

Heuristically constructed → Infer preference

→ Make Specific Recommendations

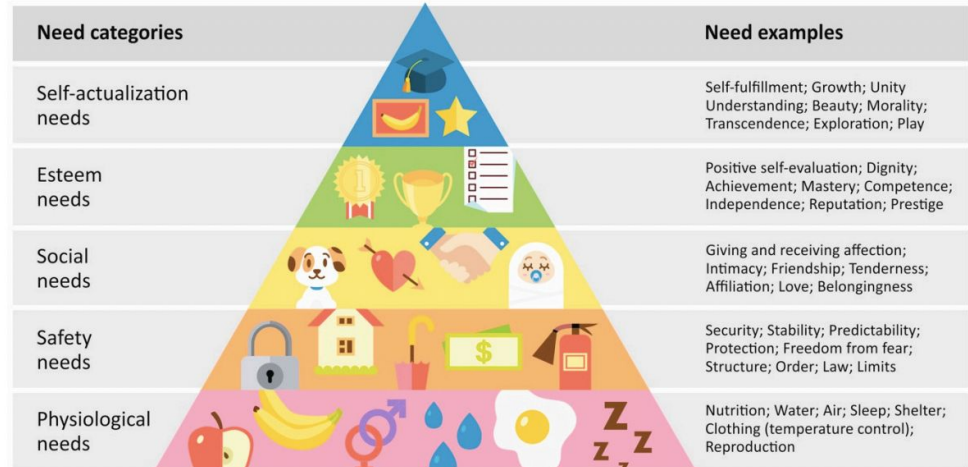
Specific Recommendation → Isolating



Self Actualization

Focus on Self Development

Maximize potential, personal growth, and meaning making



Recommender Systems for Self Actualization (Knijnenburg et al, 2016)

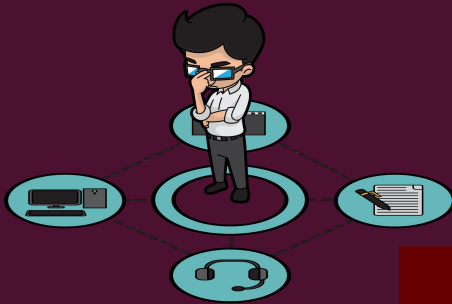
“rather than have people choose the easiest option, we wish to have them develop a strong sense of determination of having selected the right path”

Guo, 2018 implements RSSA roadmap developed by Knijnenburg et al., 2016

1. Things you will hate
2. Things you have no clue about
3. Things that are controversial
4. Things you will be the first to try

Filter Bubbles

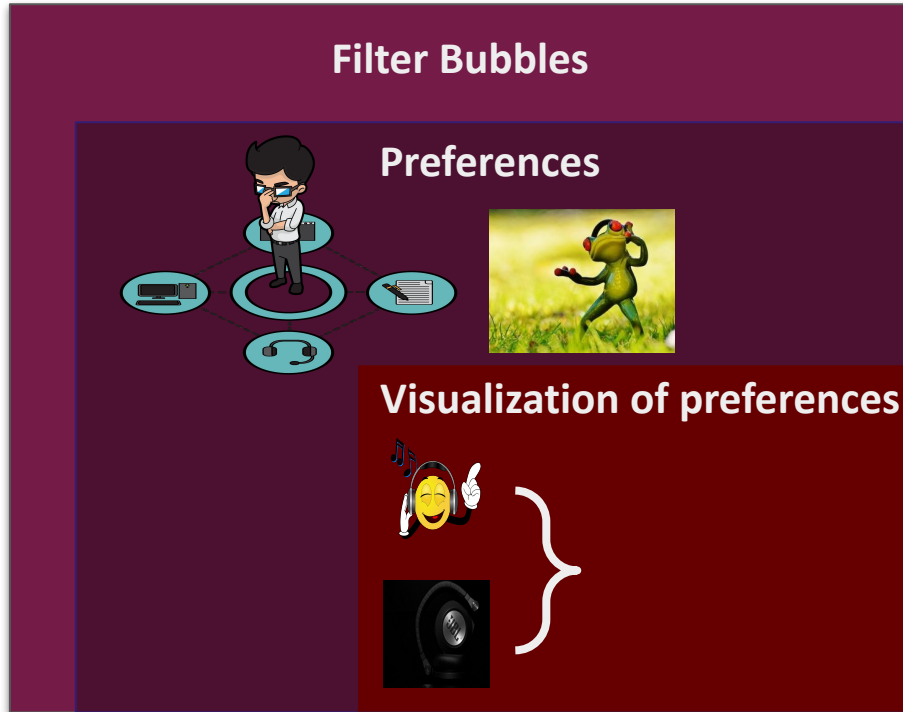
Preferences



Ads based on preferences



Ads are in a way... your preferences, visualized?

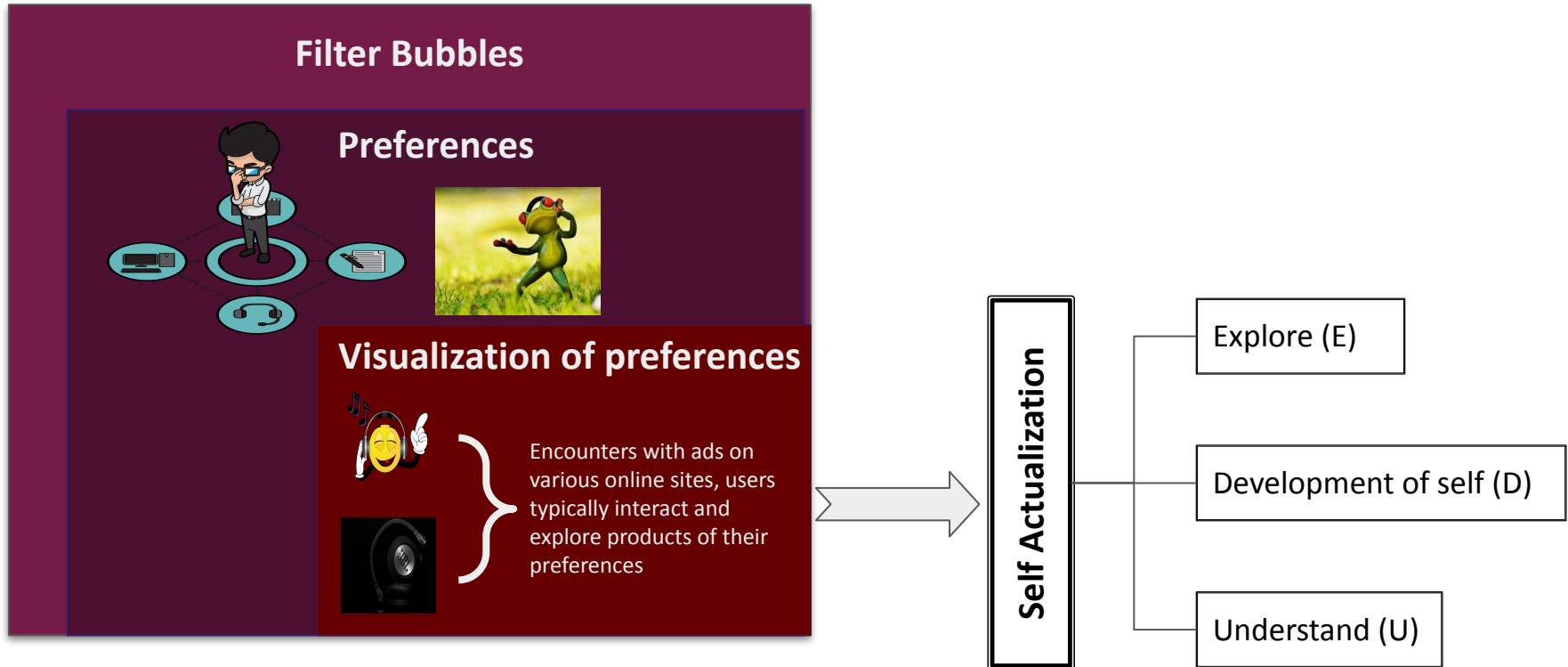


Encounters ads on online sites
Typically interact with and
explore preferred products

Exploration → finding new
products under the broader
umbrella of preference and
developing liking for those

Newly developed
interests lead to
understanding
preferences

So, it isn't outrageous to say, you are actualizing...



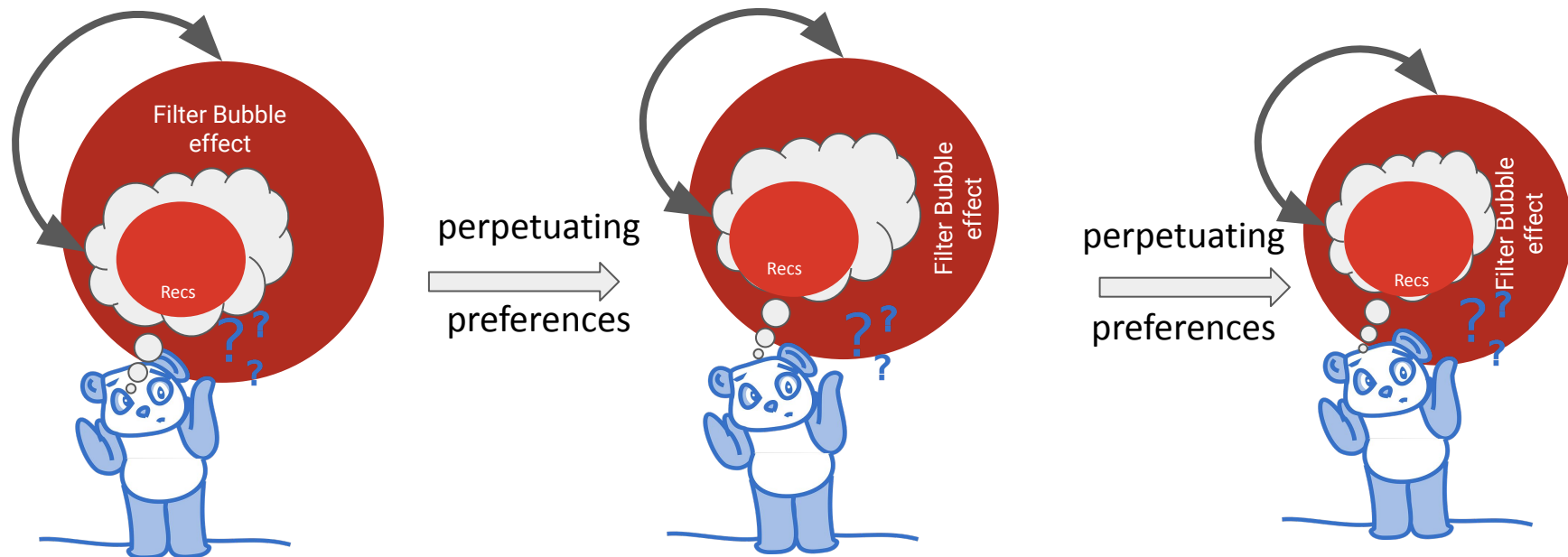


**Interacting with
recommended ads does not
promote self actualization.
Why?**

#3252341

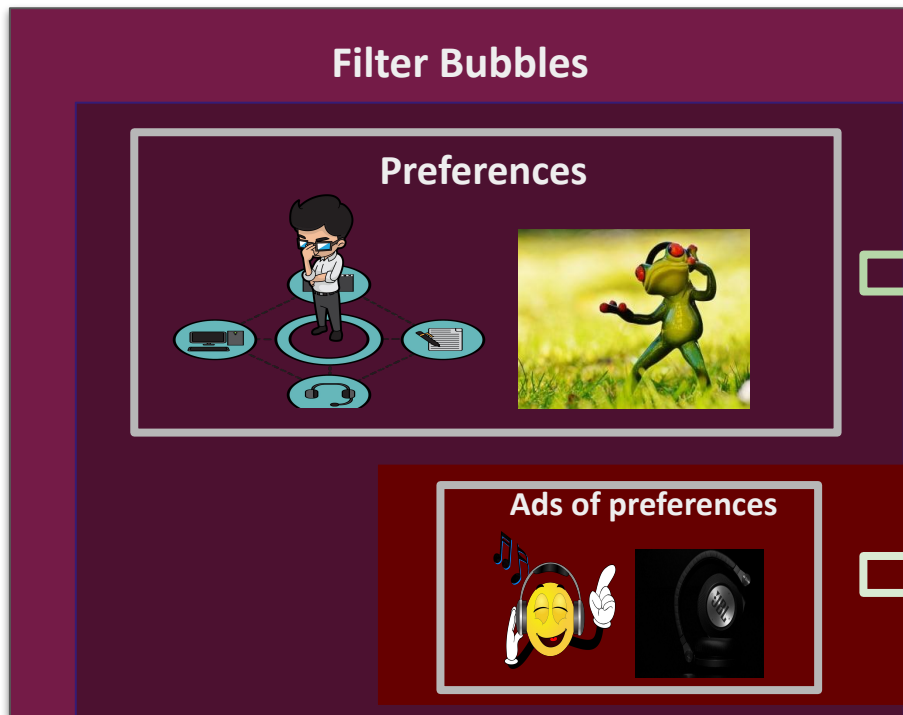
① Start presenting to display the poll results on this slide.

Self Perpetuating rather than constructive reflection



Baseline

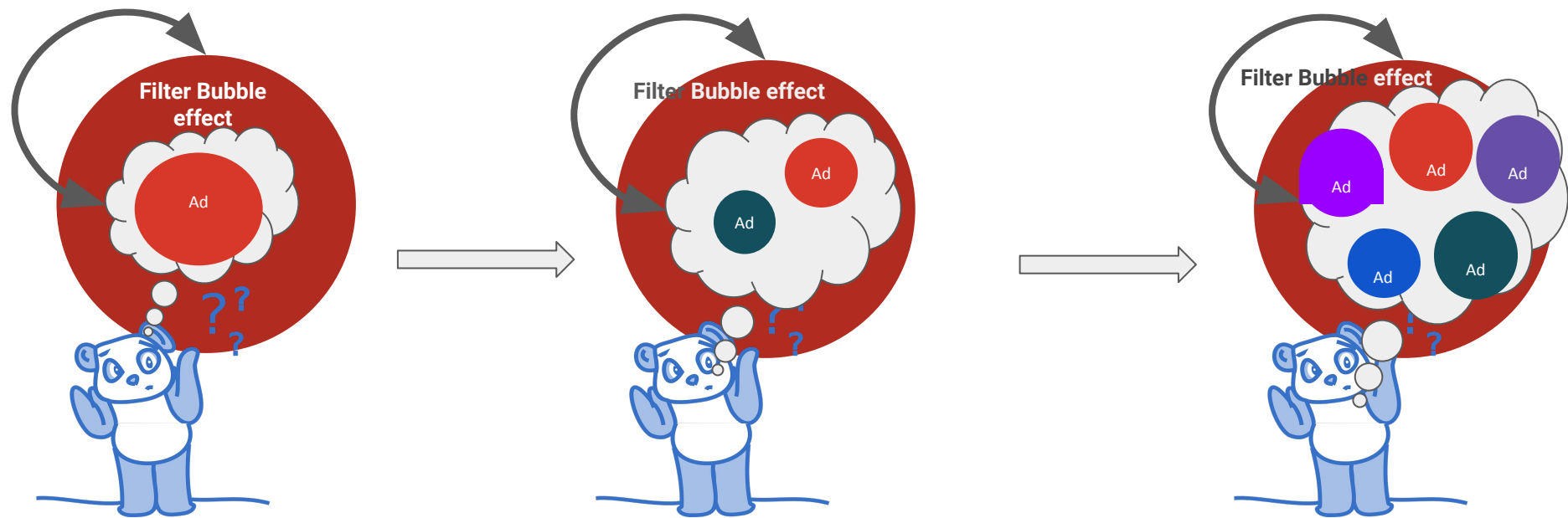
How can you actualize if recommendations **reinforce** your **existing** preferences?



Look beyond your own preferences
→ **explore** your community's preferences and **understand** your position relative to theirs

Recommendations beyond accuracy (guo, 2018) → **understand** your likes, dislikes, indifferences to **develop** preferences

Self actualizing from recommender systems?



Let's look into the “how”

Generate beyond personalized recommendations
[Guo, 2018]

1. "Things we think you will hate"

2. "Things you will be among the first to try"

3. "Things we are not sure about"

4. "Things that are controversial"

Visualize preferences

individual recommendations relative to K-nearest neighbors

Prompts promoting engagement and exploration

Why Visualize?

Let's first talk about why we
propose to visualize

Promotes exploration and engagement

Allows self-reflection

ARCADE → Support R → Representing
choices

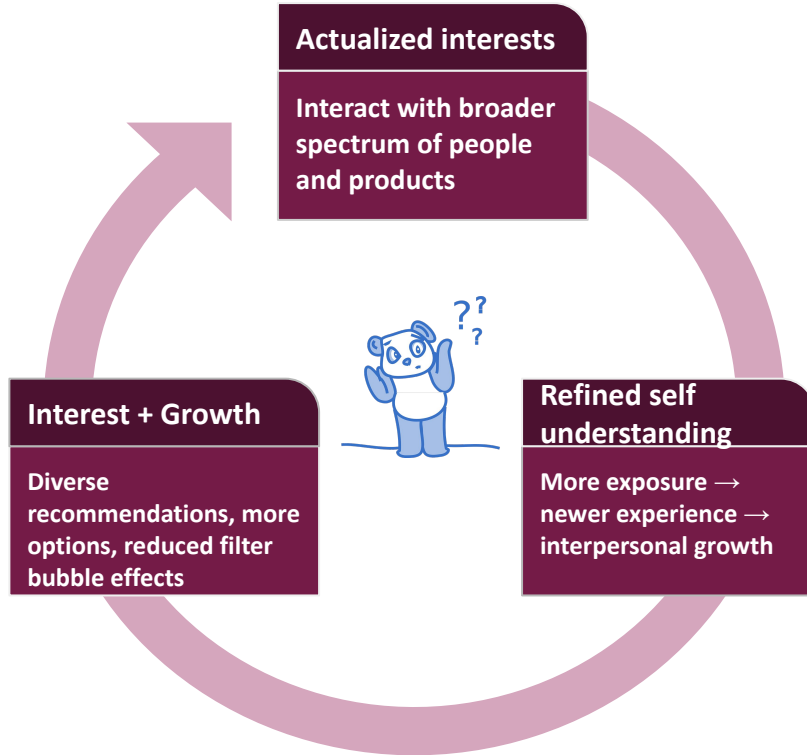
So to summarize...

Interact with visual presentation
of preferences toward self
actualization

Study and Self Actualization Goals

Study 1: Explore, Develop, and Understand

Study 2: Achieve Long Term goals



Study 1

Explore recommendations (your + community) → Preferences(development + understanding)

Study goal: Develop, explore, and understand preferences

Research Question: What types of visualizations increase users' understanding of their own preferences?

Study design

Visualization of individual interest relative to community's

Prompts encouraging engagement and exploration

Procedure:

Data set and Algorithm → MovieLens, Guo, 2018 and Knijnenburg et al., 2016

Evaluation → Conduct experiment with 200 participants

Visualization

Preference scale

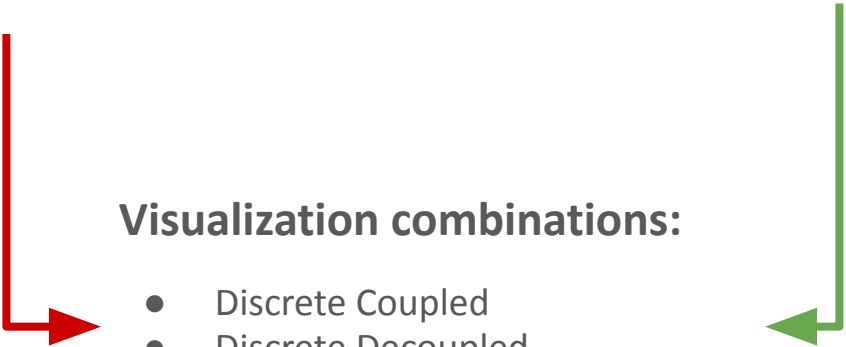
Discrete : Like versus Dislike only

Continuous: Preference on a scale of 1 to 5

User representation

Coupled : One visualization for both user and community

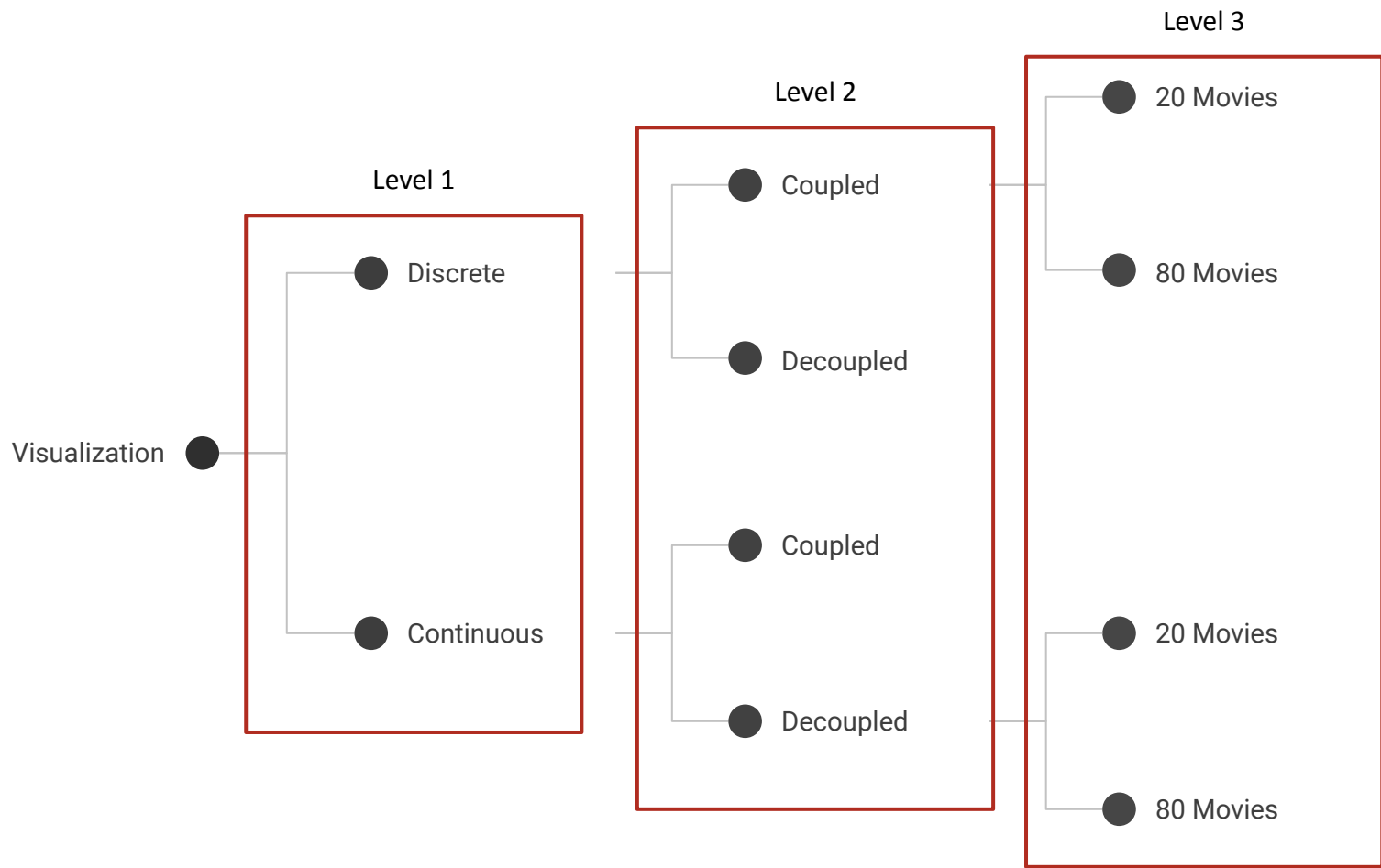
Decoupled: Separate visualization for user and community



The diagram consists of a red L-shaped arrow pointing from the 'Preference scale' section down and then right towards the 'Visualization combinations' list. It also consists of a green L-shaped arrow pointing from the 'User representation' section down and then left towards the same 'Visualization combinations' list.

Visualization combinations:

- Discrete Coupled
- Discrete Decoupled
- Continuous Coupled
- Continuous Decoupled



8 Visualizations

4 for **discrete** →

2 for **discrete coupled** →

20 movies and 80 movies

2 for **discrete decoupled** →

20 movies and 80 Movies

4 for **Continuous** →

2 for **continuous coupled** →

20 movies and 80 movies

2 for **continuous decoupled** →

20 movies and 80 Movies

The coveted visualizations

Visualizations

[Continuous Coupled](#)

[Continuous Decoupled](#)

[Discrete Coupled](#)

[Discrete Decoupled](#)

slido



What is the one thing you would change in any of the visualizations?

① Start presenting to display the poll results on this slide.

Guidelines

Exploration

Find one movie you are predicted to **like much more than the community**

Find one movie you are predicted to like much **less than the community**

Find the part of the visualization **you least agree with**

Find the part of the visualization **you most agree with**

Find something that **surprised** you

Reflection (Trapnell and Campbell, 1999)

Explore my inner self

Understand my **attitude** about things that fascinate me

Helped me **analyze** my preferences

Contemplate on my preferences

Evaluating the Visualizations

Support users in **developing, exploring, and understanding their preferences**

Self Actualization:

Preference **development** potential for self actualization

Preference **Exploring** potential for self actualization (learn something new)

Preference **Understanding** potential for self actualization

Experience with Visualizations:

Experience with visualization

Domain expertise - familiarity with movies

System Satisfaction

Study 2

Long term goal visualization

Immediate desires:

fleeting preferences

impulse consumption

Heuristically constructed

It's a problem because...

At a user level

they tend to reflect users' short-term likes

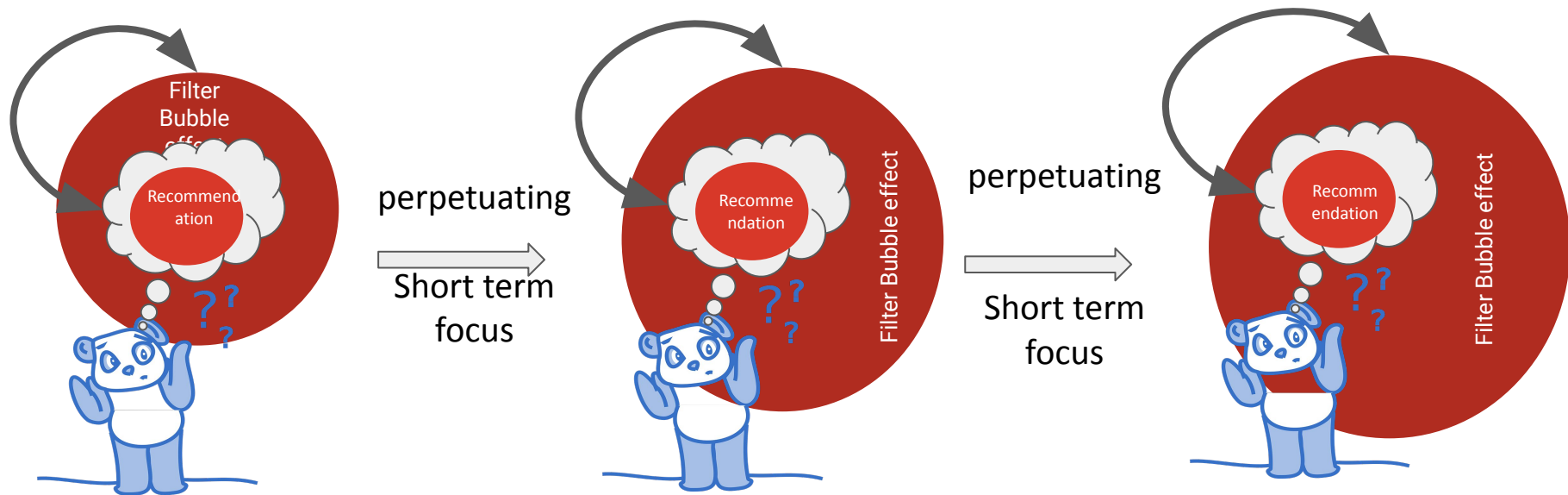
ignoring users' ambitions and their better selves

At an algorithmic level

tuned to optimize user retention or the amount of consumption

recommendation into a kind of trap further reinforcing users' short-term focus.

Bringing us back to



Here is what we propose

The thing about life is, there is always a problem...

What would the underlying
algorithm look like?

What about the dataset ?

How would you use this for
your group project?



Questions?



Thank you so much!

Using Recommender Systems for Self Actualization

Visualize individual recommendations relative to K-nearest neighbors

- What are they
- Effects in day to day life
- How to leverage for better

Active exploration of recommendations

- Develop
- Understand
- Support decision making

Self Actualization

```
graph LR; A[Visualize individual recommendations relative to K-nearest neighbors  
• What are they  
• Effects in day to day life  
• How to leverage for better] --> C[Self Actualization]; B[Active exploration of recommendations  
• Develop  
• Understand  
• Support decision making] --> C;
```

Self Actualization, Filter Bubbles, Recommendations?!

