

# 2-2: Preferences and Ratings

# Introduction

- To recommend, we need to data (what users like, what goes together, etc.)
- Data comes from users, is collected somehow
- This lecture's topic: what data we collect, how, and what it means

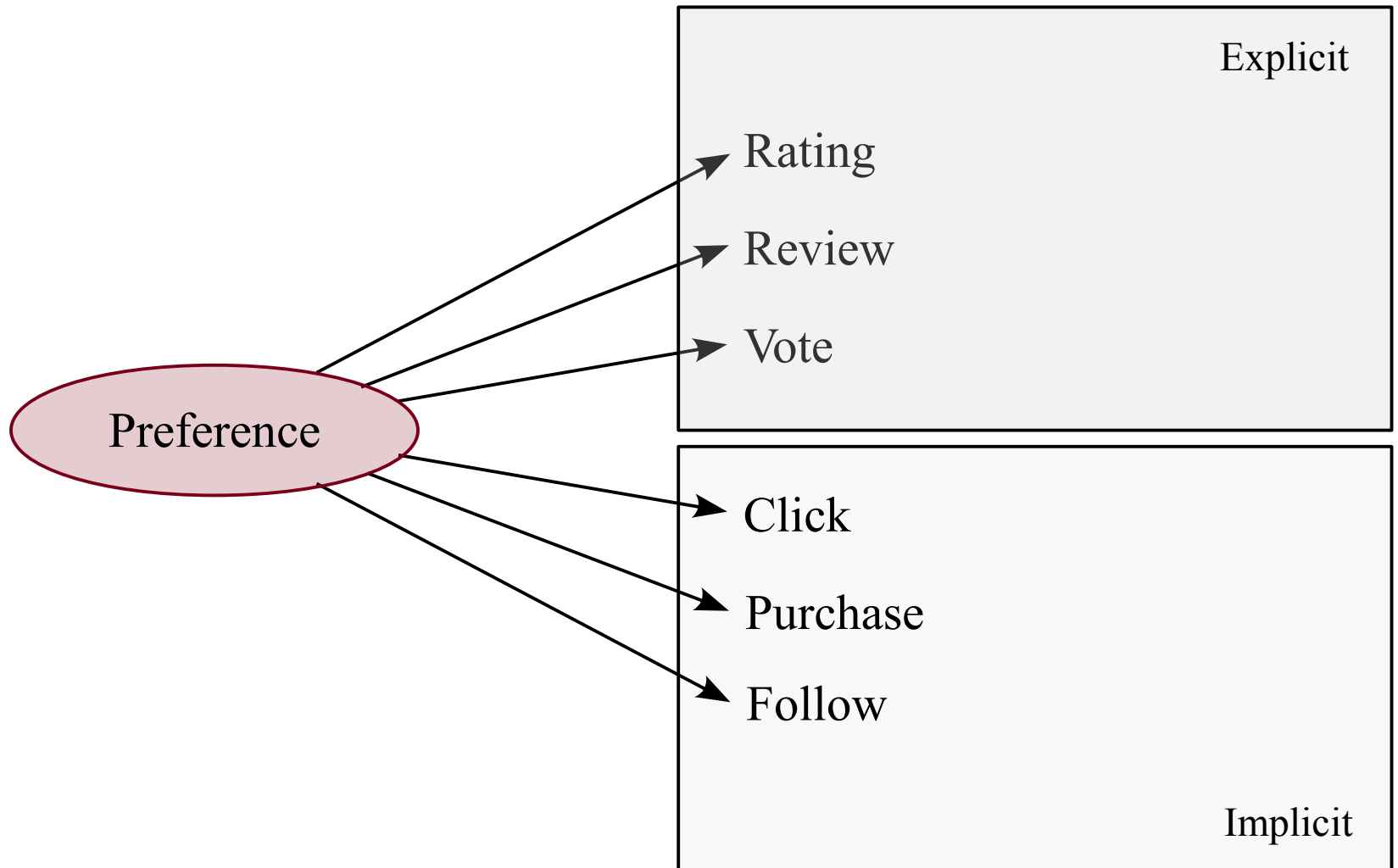
# Learning Objectives

- Understand what data recommenders can use to learn what users like
- Identify types of data collected from users
- Understand when different data types are possible and appropriate
- Be able to identify types of preference data likely used in a system

# Preference and Ratings

- We want to know: what do users like?
  - Or: what goes together?
- We can observe
  - What users tell us (ratings)
  - What users do (actions)
- These are *noisy measurements* of preference

# Preference Model



# Explicit Ratings

Just ask the users what they think!

# Star Ratings

- Widely-used interface
- Several design decisions
  - 5? 7? 10?
  - Half-stars?
  - Provide meaning/calibration?
  - More not necessarily better
- 5, with or without  $\frac{1}{2}$ , very common



*NetFlix*

# More Star Examples



*GoodReads*

## Start here

1 How do you rate this Item? ★★★★★

2 Please enter a title for your review:

*Amazon.com*

★★★★★ = Must See  
★★★★☆ = Will Enjoy  
★★★☆☆ = It's OK  
★★☆☆☆ = Fairly Bad  
★☆☆☆☆ = Awful

*MovieLens*



# Thumbs and Likes

- Vote up/down
- Or just ‘Like’/‘+1’
- Common with ephemeral items
  - News aggregation (Reddit, Digg)
  - Q&A (StackOverflow)
  - YouTube
- Very low cost to rate



*Pandora*



*StackOverflow*

Nextly Reddit app: Browse Reddit posts and comments side by side - try /r/funny! or your favorite sub-reddit ;) (nextly.com)  
promoted by nextly  
8 comments share pocket



sponsored link what's this?

search reddit

username password  
☐ remember me reset password login

Submit a new link

Submit a new text post

WHERE DO YOU STAND?

Take a stand for an Open Internet

reddit.com/r/stand

discuss this ad on reddit

reddit gold: for that special someone. yes, you can give it to yourself.

1 4881



Grand Theft Auto V: Official Gameplay Video (youtube.com)  
submitted 2 hours ago by SpaceMILK to gaming  
2883 comments share pocket

2 2982



TIL The SEC was repeatedly and explicitly warned about the Madoff Ponzi scheme for 10 years by a forensic accountant. Over and over again they ignored the warnings and did nothing. (npr.org)  
submitted 3 hours ago by Bluest\_waters to todayilearned  
382 comments share pocket

3 6526



Remember this guy? (imgur.com)  
submitted 3 hours ago by saturn\_ to pics  
1620 comments share pocket

4 2406



Forever Torrenting. (imgur.com)  
submitted 2 hours ago by thejarimteam to AdviceAnimals  
246 comments share pocket

5 4126

James Bamford: "The NSA has no constitutional right to secretly obtain the telephone records of every American citizen on a daily basis, subject them to sophisticated data mining and store them forever. It's time government officials are charged with criminal conduct, including lying to Congress" (blog.sfgate.com)  
submitted 5 hours ago by trot-trot to politics  
1074 comments share pocket

6 2110

Hero Fukushima ex-manager who foiled nuclear disaster dies of cancer: It was Yoshida's own decision to disobey HQ orders to stop using seawater to cool the reactors. Instead he continued to do so and saved the active zones from overheating and exploding (rt.com)  
submitted 3 hours ago by Carnival666 to worldnews  
234 comments share pocket

7 2271



Am I doing it right? (imgur.com)  
submitted 3 hours ago by mizzykid to funny  
66 comments share pocket

8 1683



He's sat on this chair since he was a puppy. I guess he doesn't realize how big he's gotten... (i.imgur.com)  
submitted 2 hours ago by wr3stler to aww  
86 comments share pocket

9 1615



Official Grand Theft Auto V Gameplay video. (youtube.com)  
submitted 2 hours ago by konvickarl to videos  
517 comments share pocket


# Other Interfaces


- Continuous scales
- Pairwise preference
- Hybrid (e.g. 1-100 + never again)
- Temporary (e.g. Pandora 30-day suspend)

# When are ratings provided?

- *Consumption* — during or immediately after experiencing the item
- *Memory* — some time after experience
- *Expectation* — the item has not been experienced

# Joke ratings

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## Customer Reviews

### AudioQuest K2 Terminated Speaker Cable - UST 2.44 m Plugs 8' Pair

**232 Reviews**  

5 star:		(128)
4 star:		(40)
3 star:		(20)
2 star:		(12)
1 star:		(32)

**Average Customer Review**  
★★★★☆ (232 customer reviews)  
Share your thoughts with other customers  
[Create your own review](#)

**Questions? Get fast answers from reviewers**  
  
[See 1 question & its answers](#) [Ask](#)

#### The most helpful favorable review

1,955 of 2,005 people found the following review helpful

★★★★☆ **If only Heracles had such power!**  
If there is one cable I would whole-heartedly trust to my Chimera-hunting needs, this would be the cable. No other cable has the tensile strength to properly and efficiently garrote a lycanthrope, asphyxiate an Esquilax or even gag a mermaid. Last week, using my trusty AudioQuest K2 (retrofitted with lead weights, bright orange latex paint and a generous coating of...

[Read the full review >](#)  
Published on March 19, 2009 by Valannin

> See more [5 star](#), [4 star](#) reviews

#### The most helpful critical review

7,816 of 7,923 people found the following review helpful

★☆☆☆☆ **I have only a little time...**  
We live underground. We speak with our hands. We wear the earplugs all our lives.

PLEASE! You must listen! We cannot maintain the link for long... I will type as fast as I can.


**DO NOT USE THE CABLES!**

We were fools, fools to develop such a thing! Sound was never meant to be this clear, this pure, this... accurate. For a few short days, we...

[Read the full review >](#)  
Published on November 15, 2010 by Whisper

> See more [3 star](#), [2 star](#), [1 star](#) reviews

#### This product




[AudioQuest K2 Terminated Speaker Cable - UST 2.44 m Plugs 8' Pair](#) by Audioquest  
Used & New from: **\$13,099.00**


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#### Product Ads from External Websites



**AudioQuest DragonTail USB 2.0 Extender**  
**\$16.79**  
+ \$1.75 Est. Shipping  
**Other World Computing**



**110 Style 4 Pair Patch Plug / 5 Pack**  
**\$15.19**  
+ No Shipping Info  
**CableOrganizers**

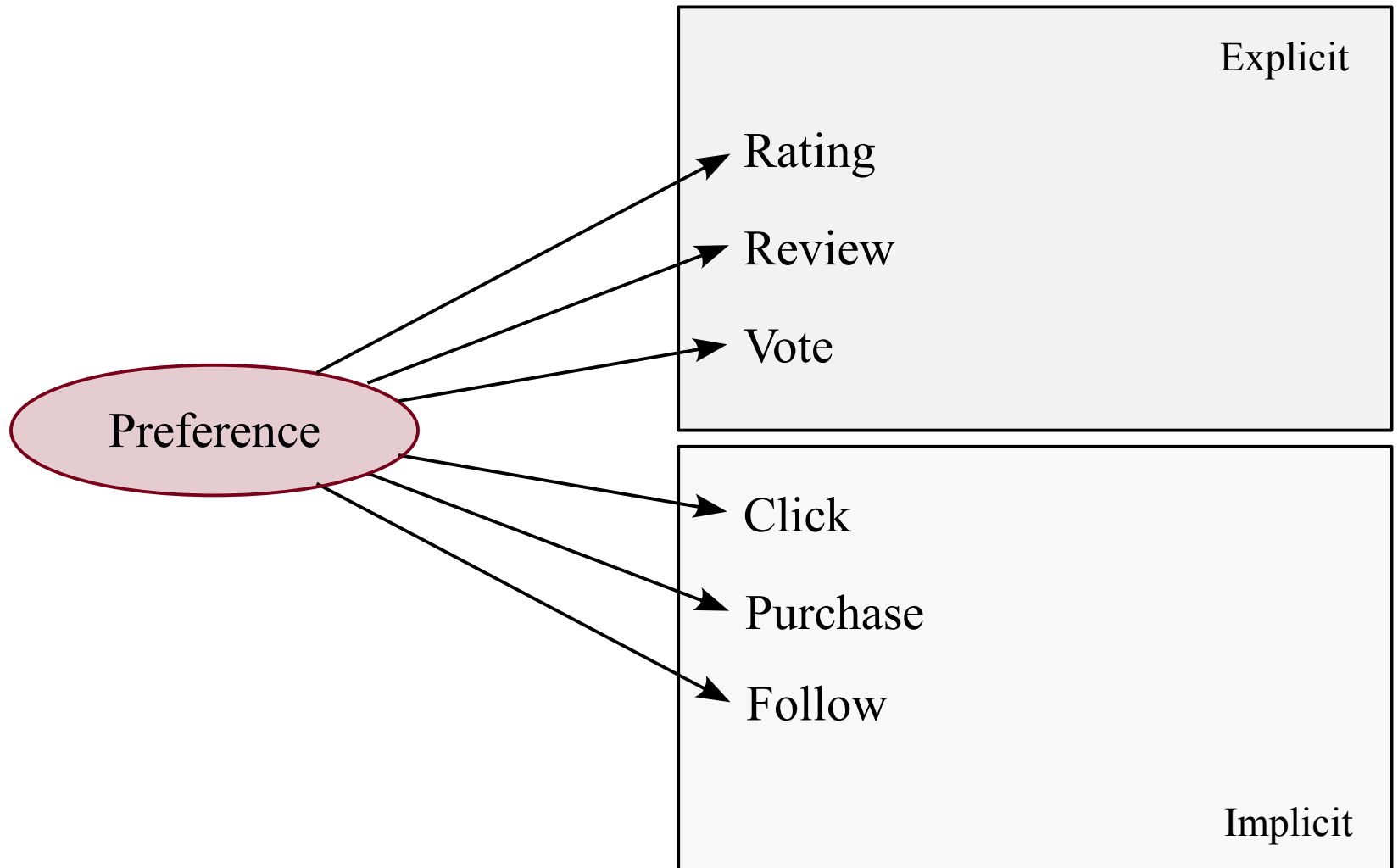
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Introduction to Recommender Systems

# Difficulties with Ratings

- Are ratings reliable and accurate?
- Do user preferences change?
- What does a rating mean?

# Preference Model



# Implicit Data

- Data collected from user actions
- Key difference: user action is for some other purpose, not expressing preference
- Their actions say a lot!



# Reading Time

- Early implicit data: how long did user read?
- Listening and watching
  - IMMS
  - Video services

# Binary actions

- Click on link (ad, result, cross-reference)
- Don't click on link
- Purchase
- Follow/Friend

# Subtleties and Difficulties

- What does the action mean?
  - Purchase: they might still hate it
  - Don't click: expect bad, or didn't see
- How to scale/represent actions?
- Lots of opportunity to be creepy
  - Education may help
  - So can respecting privacy

# Conclusion

- Recommenders mine what users *say* and what they *do* to learn preferences
- Ratings provide explicit expressions of preference
- Implicit data benefits from greater volume

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