

# Mapping the Design Space of Teachable Social Media Feed Experiences



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\* equal contribution



In 2006...



# facebook

[home](#) [search](#) [browse](#) [share](#) [invite](#) [help](#) [logout](#)

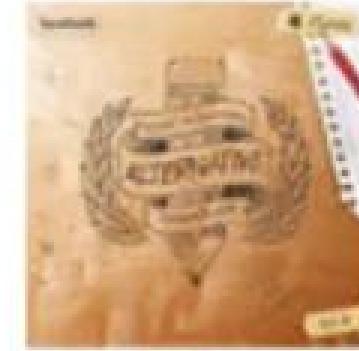
## Welcome Matt!

[My Profile](#) [edit](#)  
[My Friends](#)  
[My Photos](#)  
[My Notes](#)  
[My Groups](#)  
[My Events](#)  
[My Messages](#)  
[My Account](#)  
[My Privacy](#)

Search

### News Feed

Sponsored: iTunes is the Shit! 4:00pm



Boy howdy it is! I thought it was so damn coool i  
couln't fdafdaf dfafdfda feeidken eidhtoen djierfnf  
idfjeif

Athalie Laguerre and Meredith Chin commented on the note tab  
energy: an anomoly in my life. 3:59pm

Carrie Peterson joined the group Marvel: Ultimate Alliance – The  
World's Largest Army of Super Heroes. 3:39pm

Payam Imani added new photos. 3:30pm

[Share](#) [Save](#)



[Gotham City: Chicago – 58 photos](#)

by Payam Imani

Location: Chicago, IL

In this album: Payam Imani

Steve Wickenkamp created a group. 2:59pm

### Requests

1 group invitation

### My Status

[edit](#)



Keep your friends  
updated on your  
current status.

### Shared with You

[see all](#)

ShowBizSpy – Movies  
From Eddie Lim

Microsoft launches the  
Zune! – Engadget  
From Soleio

Drew Hamlin  
From Soleio

### Birthdays

[see all](#)

Today's Birthdays

Kyle Foote

October 7th Birthdays

Joe Silberschmidt

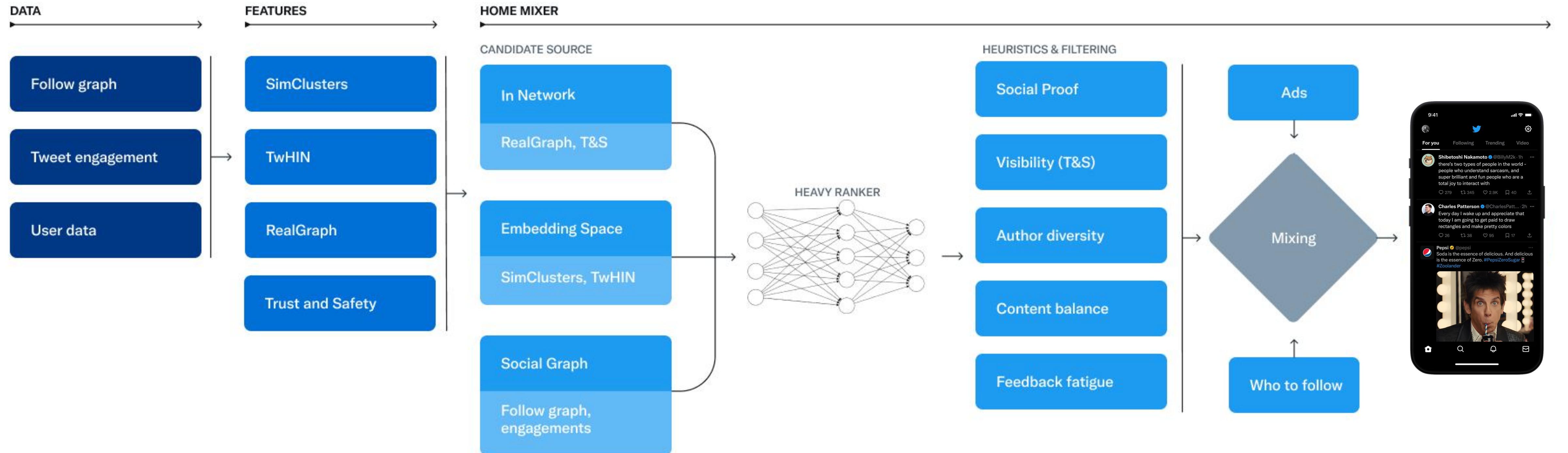
Alisha Roeder

Nick Amosson

October 8th Birthdays

Image: CNET

Fast forward to now...



via Twitter/X's Engineering Blog



Photo: Hugh Han on Unsplash

# User agency is in decline

User agency is in decline  
and users want to reclaim it.

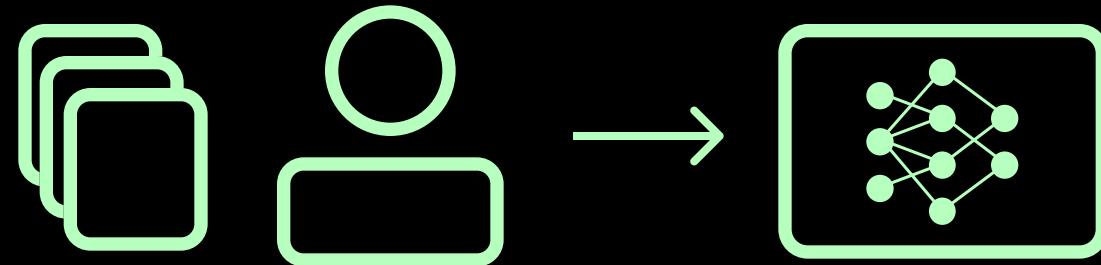
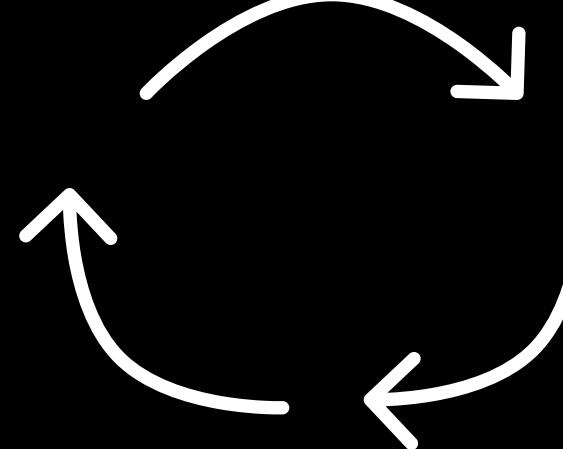
Users develop algorithmic folk theories and “teach”  
their feeds how to behave:

- Frequently visiting specific Facebook profiles [Eslami et al., 2016]
- Repeatedly liking and sharing TikTok videos [Karizat et al., 2021]
- Selectively sharing content with certain words omitted [Burrell et al., 2019]

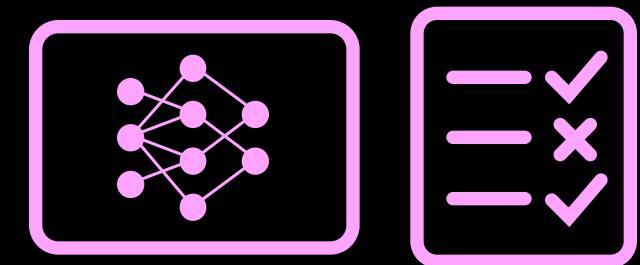
# Interactive Machine Teaching (IMT) is...



Curriculum Construction  
via collecting small  
illustrative data samples



Concept Explanation  
via a teaching  
language (interface)



Learner Assessment  
via algorithm evaluation

How can we *integrate machine teaching*  
*as a central interaction* in feeds?

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*as a central interaction* in feeds?

What are the most *important pieces*  
*of information* for users to determine  
the value of content in their feeds?

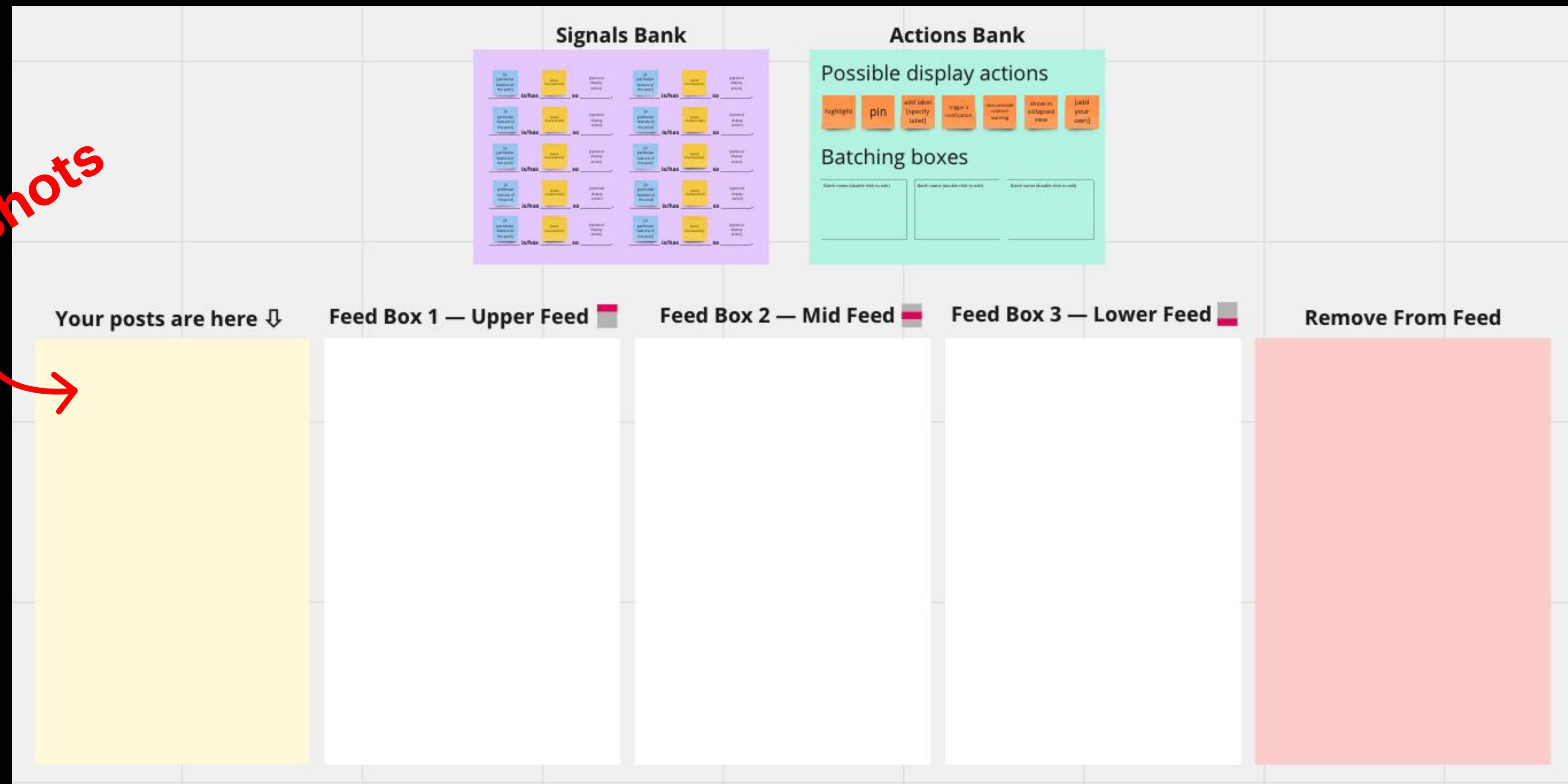
We conducted a study with 24 regular users of social media across 4 platforms.



# We conducted a study with 24 regular users of social media across 4 platforms.



10 screenshots



A *signal* is an information unit consisting of a *feature*, *characteristic*, and an optional *action*.

[a particular feature of the post]

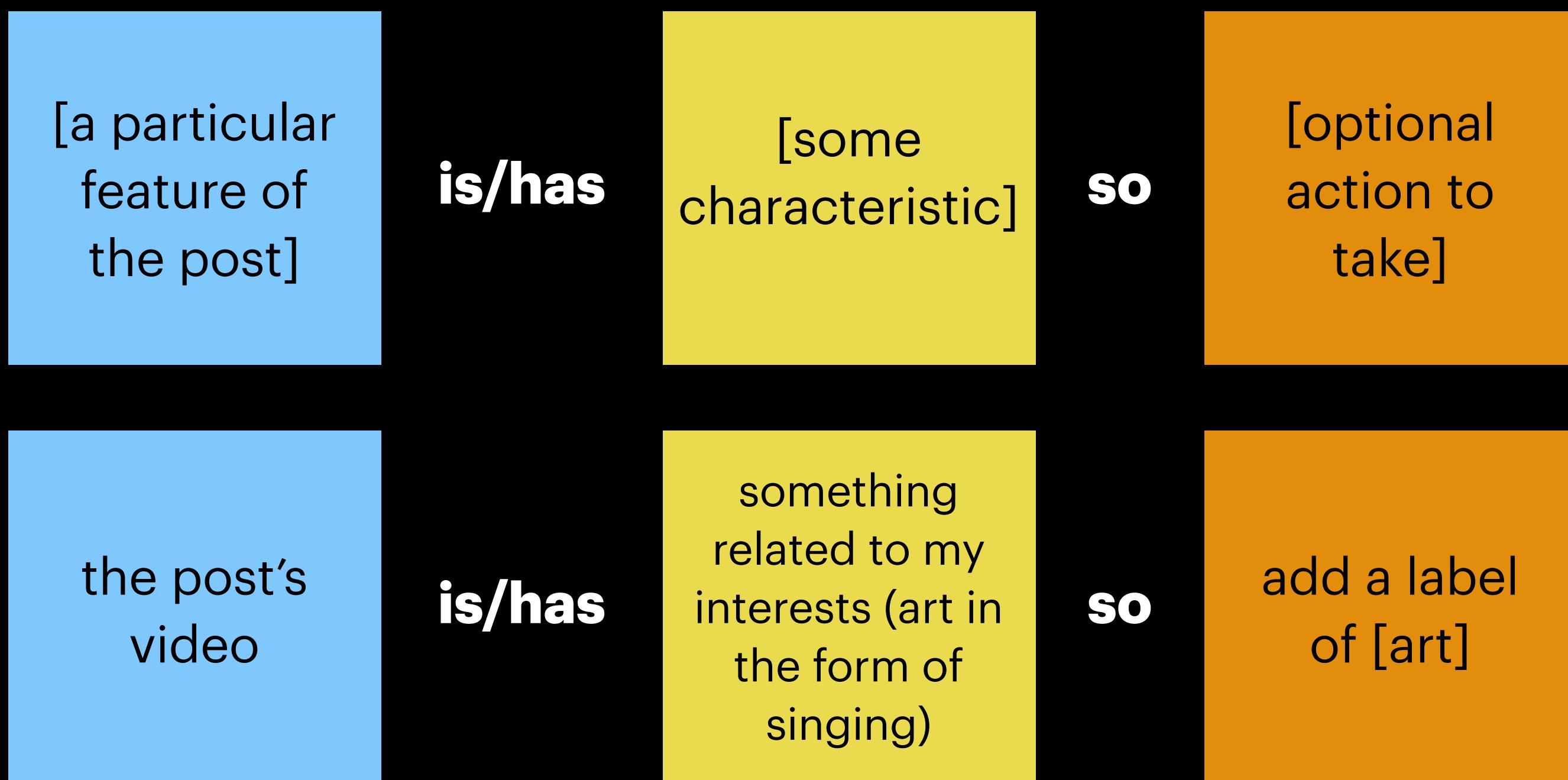
**is/has**

[some characteristic]

**so**

[optional action to take]

A *signal* is an information unit consisting of a *feature*, *characteristic*, and an optional *action*.



# A completed board from our study



We affinity mapped all *features* and *characteristics* into 2 taxonomies:

1. Account-based taxonomy using features related to *accounts and people*.
2. Content-based taxonomy using features related to *post content*.

# Account-based taxonomy

	Level of familiarity			Reasons for (not) following				Account behavior		
	knows personally	is a complete stranger	recognizes due to network effects (but does not follow)	following out of specific topical interest	following out of general interest	following due to past enjoyable content	following due to admirable/significant personal trait	has shifted away from being relevant	posts infrequently	posts frequently
All	   									
The original poster	+	-	o	+	+	+	+	-	+	-
The "liker"	+									
The "resharer"				+	+					
The "replier"							+			

	1–4	5–9	10+
Positive	+	+	+
Negative	-	-	-
No consensus	o	o	o

# Account-based taxonomy

*Feature*

The original poster

*Characteristic*

Knows personally  
Is a complete stranger

*Effect on ranking*

Positive

Follows due to past  
enjoyable content

Negative

Has shifted away from  
being relevant

Positive

Posts frequently

Negative

Posts infrequently

Positive

# Account-based taxonomy

*Feature*

**The original poster**

*Characteristic*

**Knows personally  
Is a complete stranger**

*Effect on ranking*

**Positive**

*Follows due to past  
enjoyable content*

**Negative**

*Has shifted away from  
being relevant*

**Positive**

*Posts frequently*

**Negative**

*Posts infrequently*

**Negative**

**Positive**

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# Content-based taxonomy

All 	Dimensions of relevance										Emotional response			Informativeness and quality		Consumption effort	
	contains an existing personal interest	contains an existing professional interest	contains a potential interest (personal or professional)	contains a topic/opinion I want to avoid	is irrelevant to me	is time-sensitive and relevant	related to ads and consumerism	belongs to a notable trend/genre	geographically relevant	is funny	is relatable	invokes positive emotions	invokes negative emotions	is informative and/or educational	lacks information or context	is of low quality and/or repetitive	high (long, cognitively demanding)
Content (all-inclusive/unspecified)	+	+	+	-	-	-	-	+	+	+	+	+	-	+	-	-	+
Body text content	+	+	+	-	-	+	-	+	+	+	+	-	+	-	-	-	-
Image content	+			-	-	+	-			+		-	-	-	-	-	-
Video content	+	+	+	-	-		-	+		+		-	-	-	-	-	-
Multimodal content	+		+	-	-	+	-	+	+	+	+	-	-	-	-	-	+
Topic	+	+	+	-	-	+	-	+	+	+	+	-	+	-	-	-	-
Accounts mentioned	+	+		-	-	+	-		+			-	-	-	-	-	-
Link(s)		+	+	-	-		-					-	-	-	-	-	-
Hashtag(s)	+		+	-	-		-			+							

	1–4	5–9	10+
Positive	+	+	+
Negative	-	-	-

# Content-based taxonomy

*Feature*

**Topic of the post**

*Characteristic*

**Personal interest**

**Professional interest**

**Is unrelated to me**

**Is time sensitive**

**Is geographically relevant**

**Belongs to a notable trend/genre**

*Effect on ranking*

**Positive**

**Positive**

**Negative**

**Positive**

**Positive**

**Positive**

# Content-based taxonomy

*Feature*

**Image content**

**Video content**

**Multimodal (visual +  
text) content**

*Characteristic*

**High consumption  
effort**

*Effect on ranking*

**Negative**

**Negative**

**Positive**

We also qualitatively coded study transcripts to obtain insights that could not be captured through *taxonomies alone*.

# Evaluations of posts were nuanced and multifaceted

[P22, Instagram]: don't want to see similar images in the future, but don't want to mute the poster

feature: original poster  
eval: neutral/positive

feature: image  
eval: negative

# Evaluations of posts were nuanced and multifaceted

[P22, Instagram]: don't want to see similar images in the future, but don't want to mute the poster

feature: image

eval: negative

feature: original poster

eval: neutral/positive

[P16, Mastodon]: wish the text they saw wasn't posted, but it gave info about author and made conversation more genuine

feature: text in post

eval #1: negative

eval #2: positive

# Evaluations of posts were nuanced and multifaceted

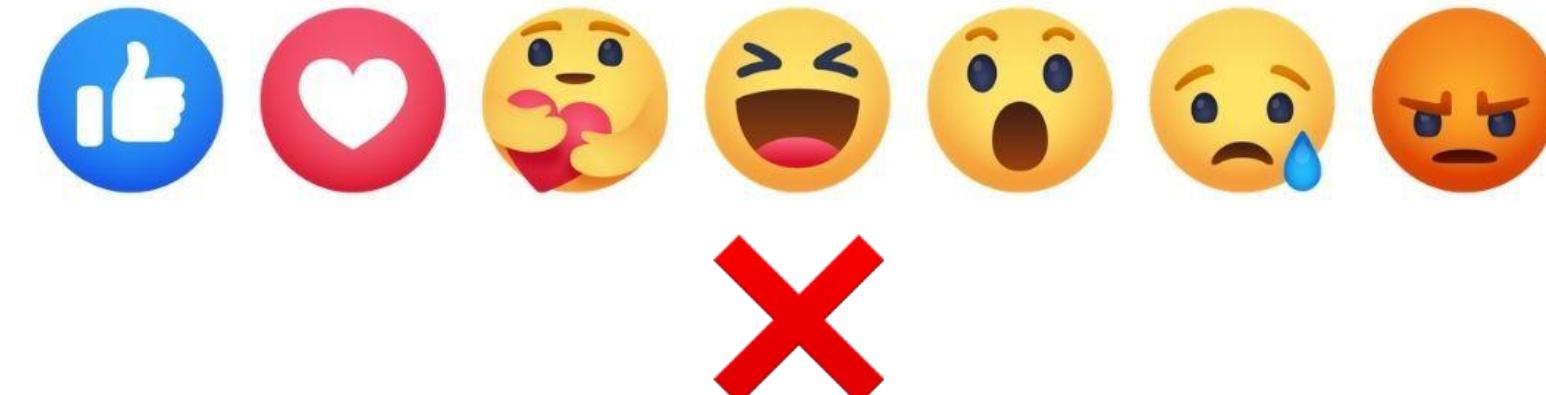
[P22, Instagram]: don't want to see similar images in the future, but don't want to mute the poster

feature: original poster  
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eval: negative

[P16, Mastodon]: wish the text they saw wasn't posted, but it gave info about author and made conversation more genuine

feature: text in post  
eval #1: negative  
eval #2: positive



## Teachable feeds

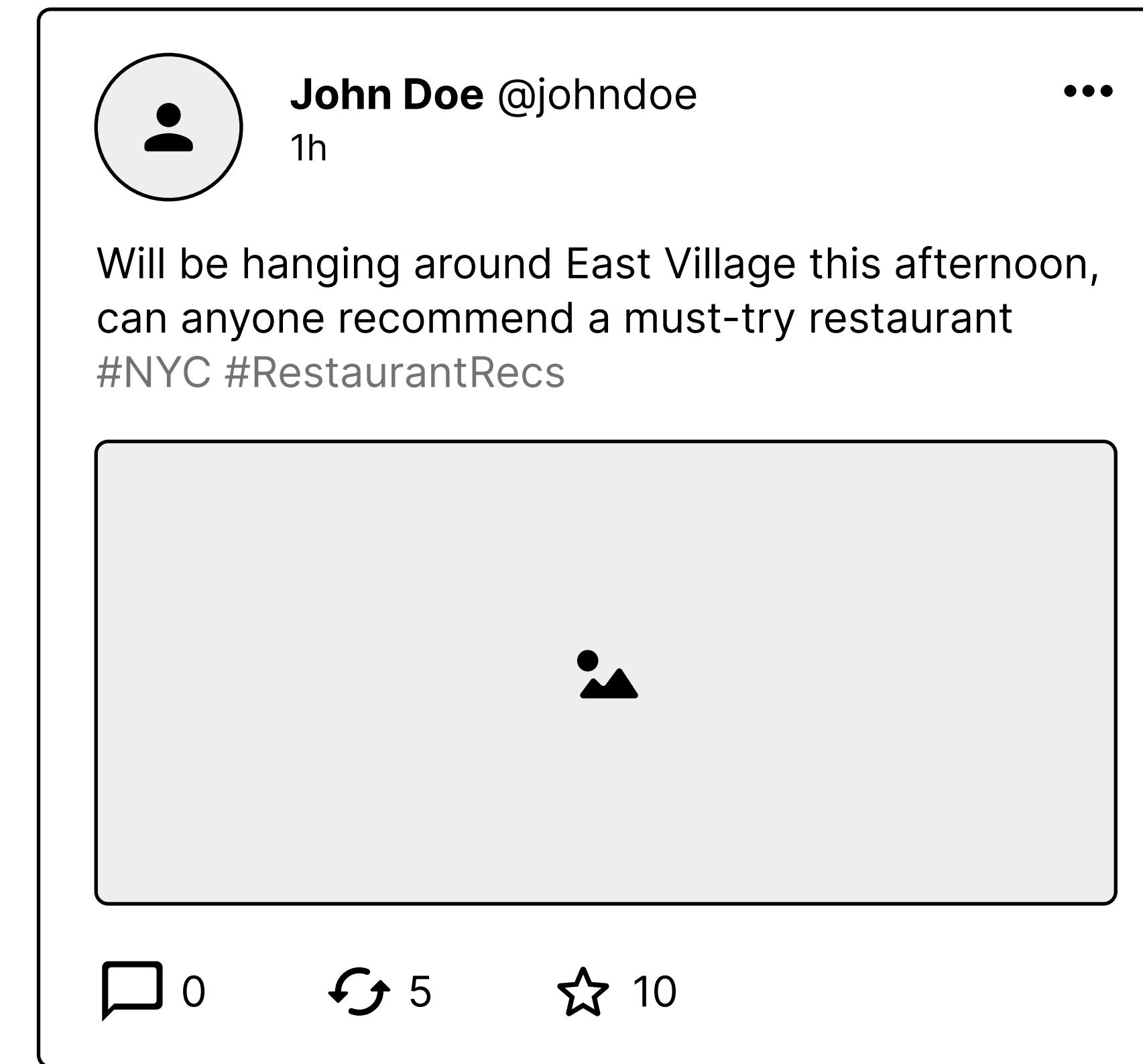


*What do points in this design space actually look like?*

We introduce design concepts for  
teachable feeds to orient future work.

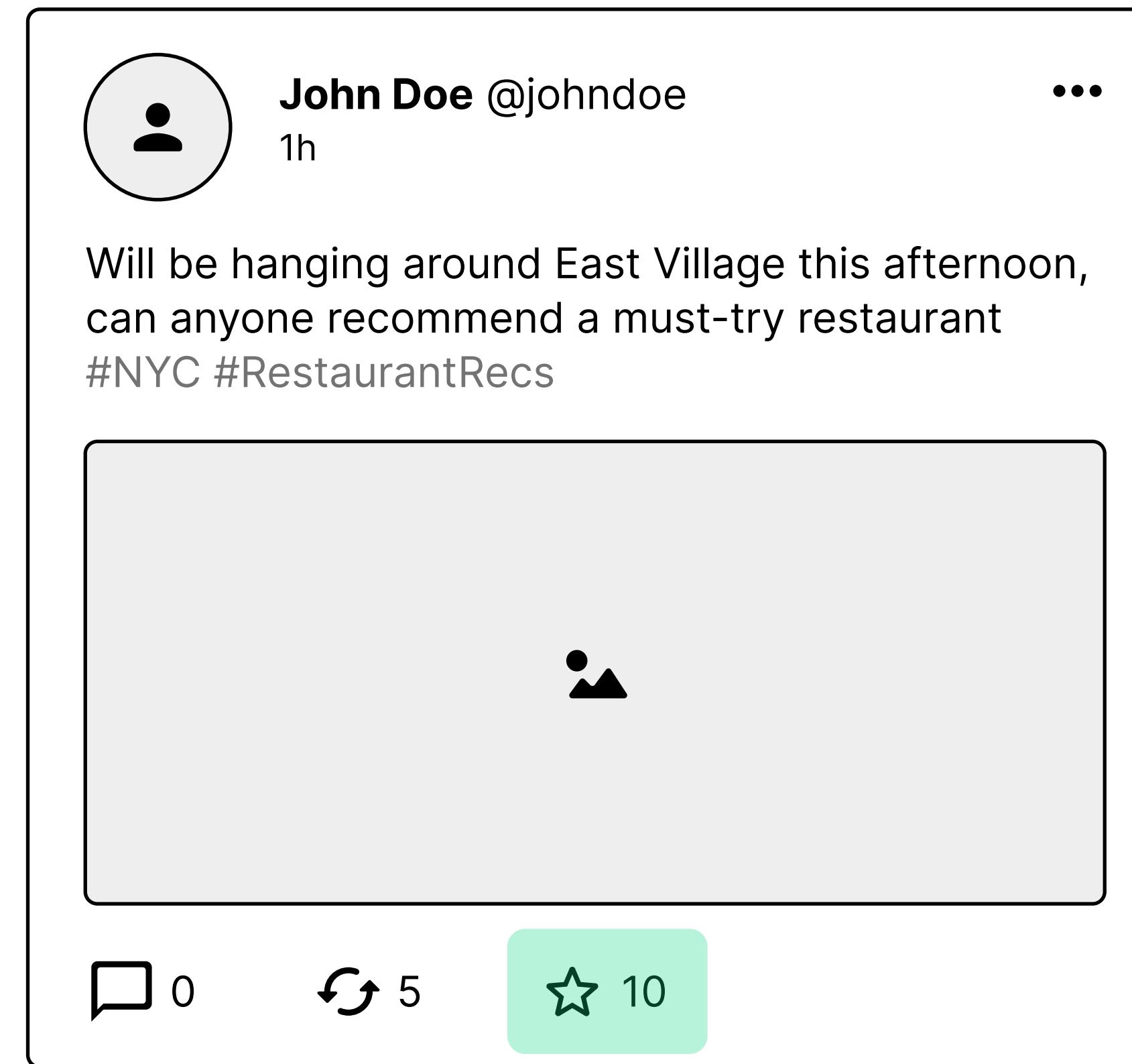
# Exploded UI views

Normal view



# Exploded UI views

User engages  
(e.g., like)



# Exploded UI views

Exploded view  
with taxonomy-informed features

Author



John Doe @johndoe



Text



Will be hanging around East Village this afternoon, can anyone recommend a must-try restaurant?

Images



Hashtags



#NYC



#RestaurantRecs

Topics



New York City



East Village



Restaurants



0



5



11

# Exploded UI views

Exploded view  
with taxonomy-informed features

Author



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Topics



New York City



East Village



Restaurants



0



5



11

# Multi-feed teaching

Feature organization  
to indicate why it's significant

Author

(-) John Doe @johndoe



Friends  
Celebs  
Unsorted

Text

(-) Will be hanging around East Village this afternoon, can anyone recommend a must-try restaurant? (+)

Images



Hashtags

(-) #NYC (+)

(-) #RestaurantRecs (-)

Topics

(-) New York City (+)

(-) East Village (+)

(-) Restaurants (+)



0



5



11

# Multi-feed teaching

Feature organization  
to indicate why it's significant

Author

(-) John Doe @johndoe

(+)

Text

(-) Will be hanging around East Village this afternoon, can anyone recommend a must-try restaurant? (+)

Images



Hashtags

(-) #NYC (+)

(-) #RestaurantRecs (-)

Topics

(-) New York City (+)

(-) East Village (+)

(-) Restaurants (+)

0

5

11

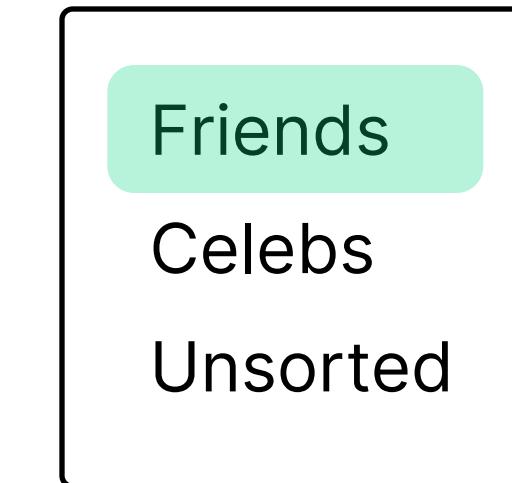
Friends

Celebs

Unsorted

# Multi-feed teaching

Seeds new feed  
that acts as a “curriculum”

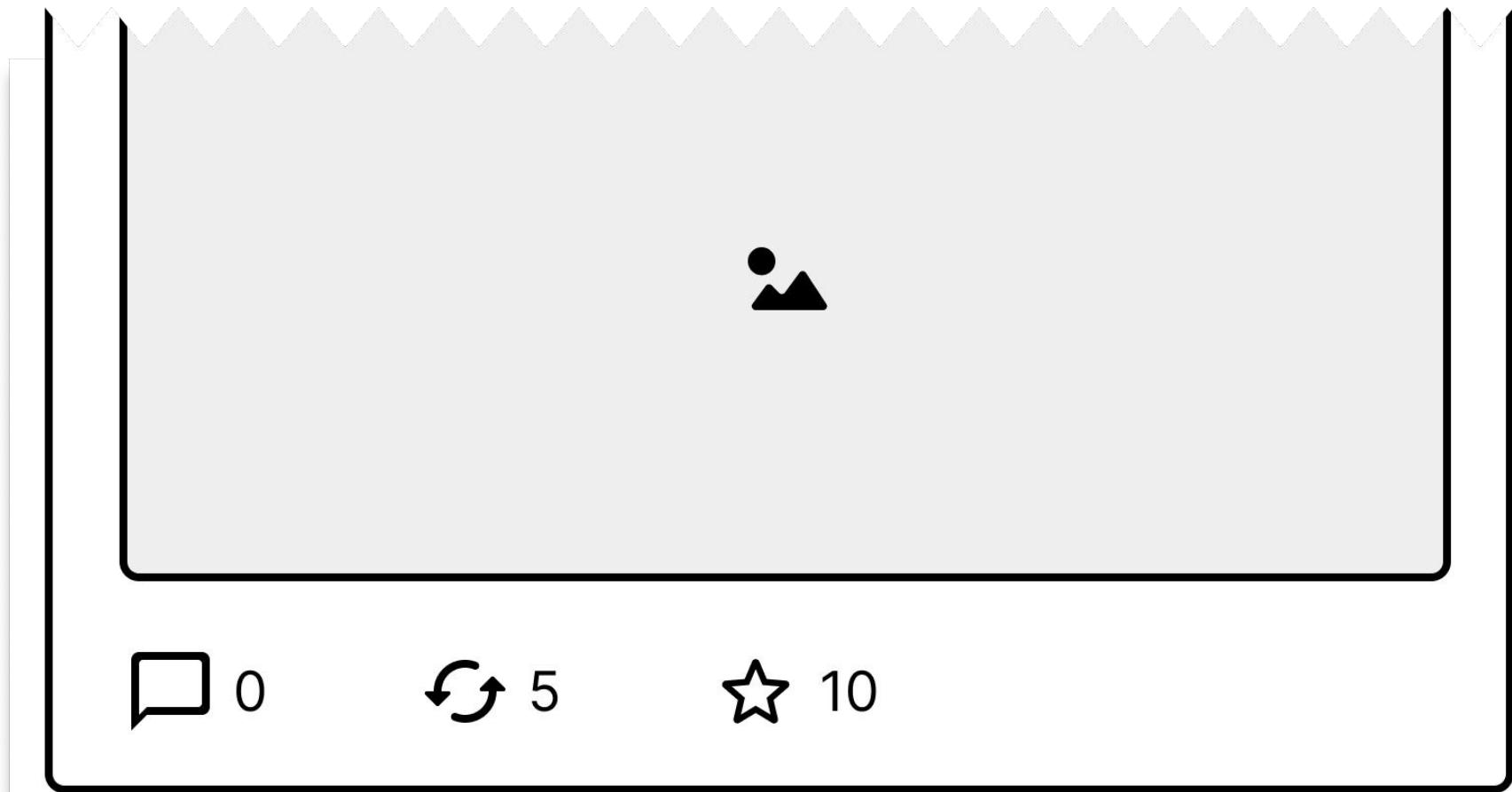
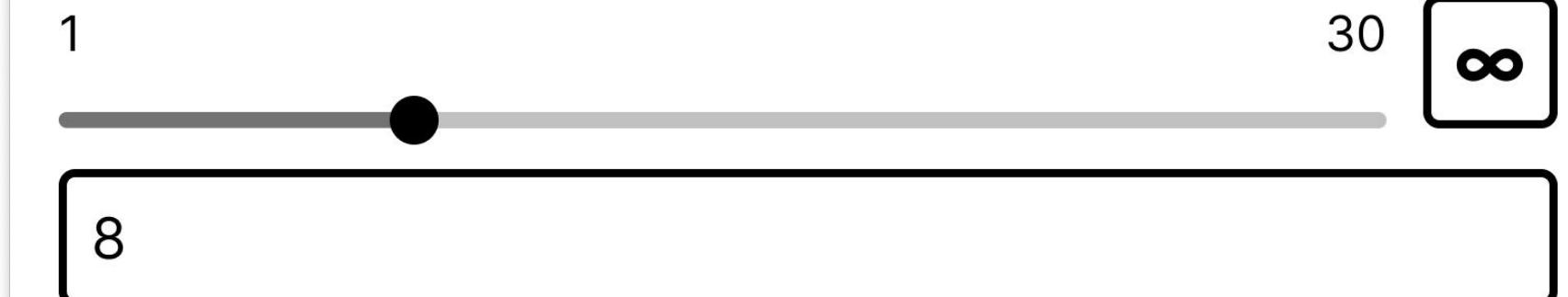


The screenshot shows a mobile application interface with a navigation bar at the top. The "Friends" tab is selected and highlighted in green. Other tabs include "Home", "Celebs", "Manhattan", and "Rec".  
  
The first tweet card is from "John Doe @johndoe" (1h ago). It reads: "Will be hanging around East Village this afternoon, can anyone recommend a must-try restaurant? #NYC #RestaurantRecs". Below the tweet are engagement metrics: 0 comments, 5 retweets, and 10 likes.  
  
The second tweet card is from "Sam Johnson @samj" (3d ago). It reads: "I finally had the chance to visit the new Edge observatory deck! What a view, would highly recommend. Just be there before 6pm to avoid the long lines.". Below the tweet are engagement metrics: 0 comments, 5 retweets, and 10 likes.

# Natural language feedback

Stack size  
for setting frequency  
of feedback

## Stack size



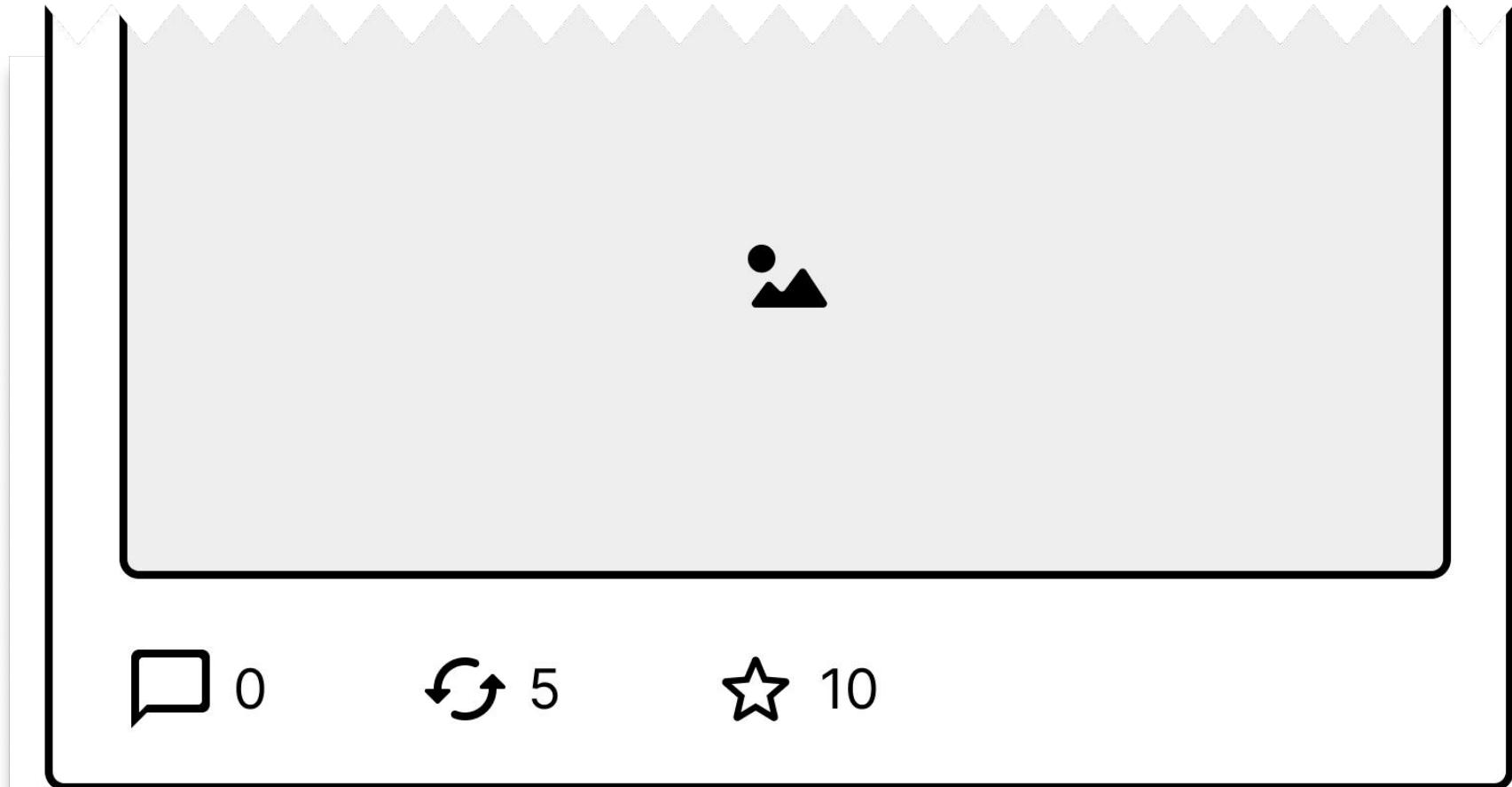
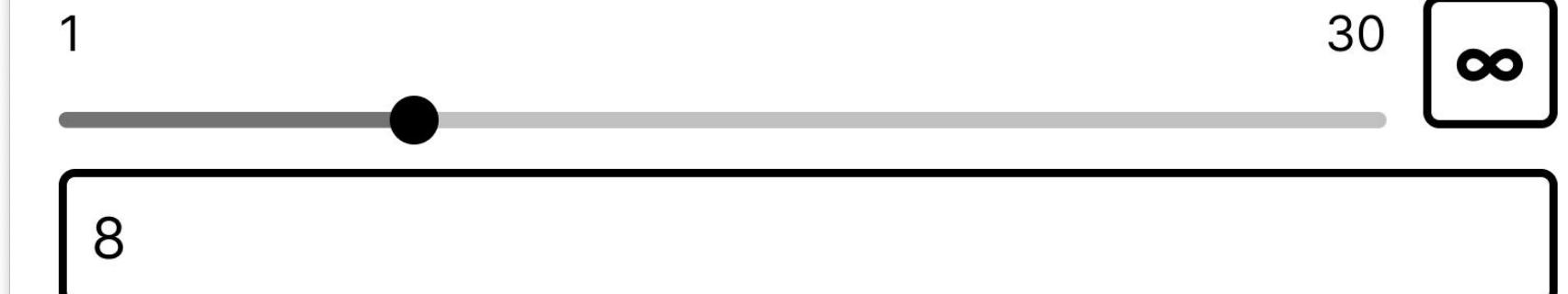
A search bar with a placeholder text "Type your preferences...". To the right of the search bar are two small icons: a checkmark and a circular arrow.



# Natural language feedback

Stack size  
for setting frequency  
of feedback

## Stack size



A horizontal search bar with a light gray background. It contains the placeholder text "Type your preferences...". To the right of the search bar are two buttons: a green button with a checkmark icon and a green button with a circular arrow icon. A large black downward arrow is positioned below the search bar.

# Natural language feedback

Observations  
for activity summary  
and reflection

- 11:32  
1/2/2023

Show more restaurant recommendations in Manhattan
- 11:33  
1/2/2023

Show me some more brunch food
- 11:57  
1/2/2023

Show me less content from Chelsea Market

## Observation

You were interested in brunch around Manhattan but maybe not Chelsea Market.

CLEAR ALL 

# Future directions

# Future directions

## Collaborative teaching

*Users can teach, share, and merge custom feed algorithms*

## Content moderation

*Teach algorithms to detect and remove certain types of content from the feed*

# Mapping the Design Space of Teachable Social Media Feed Experiences

K. J. Kevin Feng, Xander Koo, Lawrence Tan, Amy Bruckman\*,  
David W. McDonald\*, Amy X. Zhang\*

University of Washington, Georgia Tech



- Identified key signals for content value in feeds
- Built taxonomies to inform interactions in teachable feeds
- Illustrated points in the design space with design concepts