# Next Topic Recommendation for Influencers on Social Media

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- This paper is in the Vision Paper track.
- The main goal is to introduce a new task:

## Next Topic Recommendation for Influencers

• Also proposes a simple method of next topic recommendation.



What do we mean by "Influencers"?

Our target is "influencers" on social media who:

- have gained popularity
- by posting contents on some specific topic (e.g., video games, TV series).

# Such influencers:

 Need to change the (sub)topic periodically before the current topic becomes less popular (e.g., not sticking to one video game for long).

## Next Topic Recommendation for Influencers



#### **Problems in Topic Change for Influencers**

- 1. Which topic to shift to?
- 2. When to shift?
- 3. How to shift smoothly?



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## 1. Which topic?

Two factors:

• Popularity over the whole social media

 $\rightarrow$  can expect many new followers.

- Popularity among the current followers
  - $\rightarrow$  can retain many of the current followers.

#### There often exists the trade-off between these two



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2. When to shift?

- Rich-get-richer effect exists on social media.
- Influencers should change the topic before losing popularity to utilize rich-get-richer effect.



Green: effectively utilizes rich-get-richer effect Red: repeats same process every time it changes topic 3. How to shift smoothly?

• Influencers can mix the old and new topic for a while.



- More posts on the new topic
  - $\rightarrow$  more chances to have posts on the new topic viewed by the current followers.
- Too many posts on the new topic
  - $\rightarrow$  loses the current followers faster.

There exists a trade-off again



#### Summary of the Task

## Task: Next topic recommendation for influencers

- (At least) three problems:
  - 1. Which topic to shift to?
  - 2. When to shift?
  - 3. How to shift smoothly?
- Influencers play important roles in today's economy.
- Little existing academic research.

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Simple Method of Topic Selection

Given a user u who is shifting to a new topic N, our method predicts u's popularity (like/repost) on N.

- 1. collect  $\boldsymbol{u}$ 's posts in the past
- 2. remove posts on  $\boldsymbol{N}$
- 3. classify the other posts into 20 old topics  $O_1, \ldots, O_{20}$  (k-means on TF-IDF vectors)
- 4. calculate similarity between N and  $O_i$ :

 $Sim(N,O_i) = rac{|\{ ext{users posted on both } N, O_i\}|}{|\{ ext{users posted on } O_i\}|}$ 



Simple Method of Topic Selection

5. calculate the weighted average of the popularity of the u's past posts on  $O_1, \ldots, O_{20}$ :

$$E(p) = \sum_i w_i \cdot Sim(N,O_i) \cdot p_i$$

where

 $p_i$ : mean popularity of u's past posts on  $O_i$  $w_i$ : fraction of  $O_i$  in u's past posts

6. Linear regression on features E(p), #followers, #posts, ....



#### Experiment on X (Twitter)

- New topics: 11 video games
- Popularity: the number of likes/reposts
- Baseline: Linear regression w/o *E(p)* but w/ the mean popularity of *u*'s past posts





- Our method:
  - classify the users past posts into 20 old topics,
  - use the user's popularity on each old topic, and
  - their similarity to the new topic as the weight.
- Our method outperforms the baseline when we exclude users whose likes/reports per post is < 3.
- Our target is influencers, and such users are not influencers.

