Will You Dance To The Challenge? Predicting User Participation of TikTok Challenges

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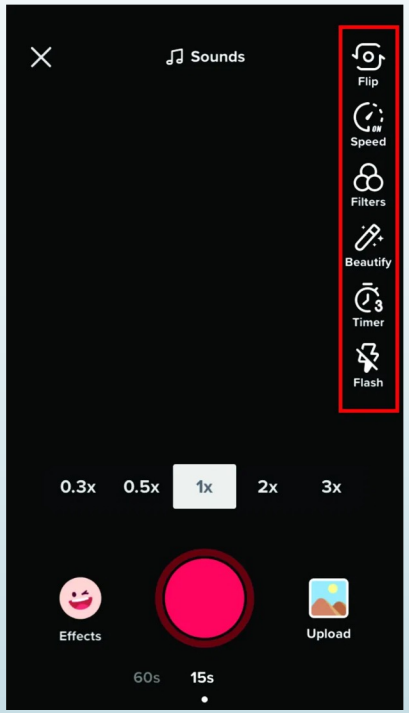
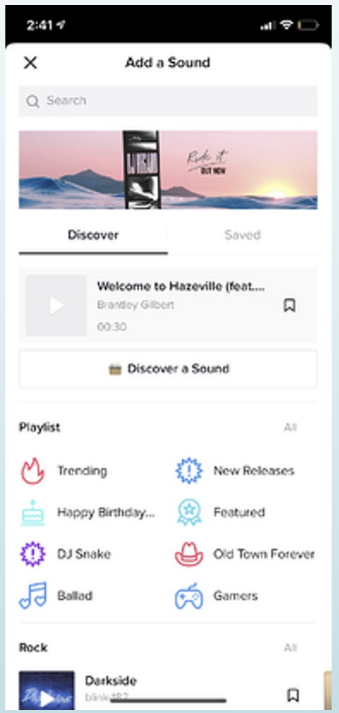
TikTok

- Video-based social media platform created by the Chinese company ByteDance
- Popular among the younger demographic (60% of users <34years)
- Short 15s – 60s video clips

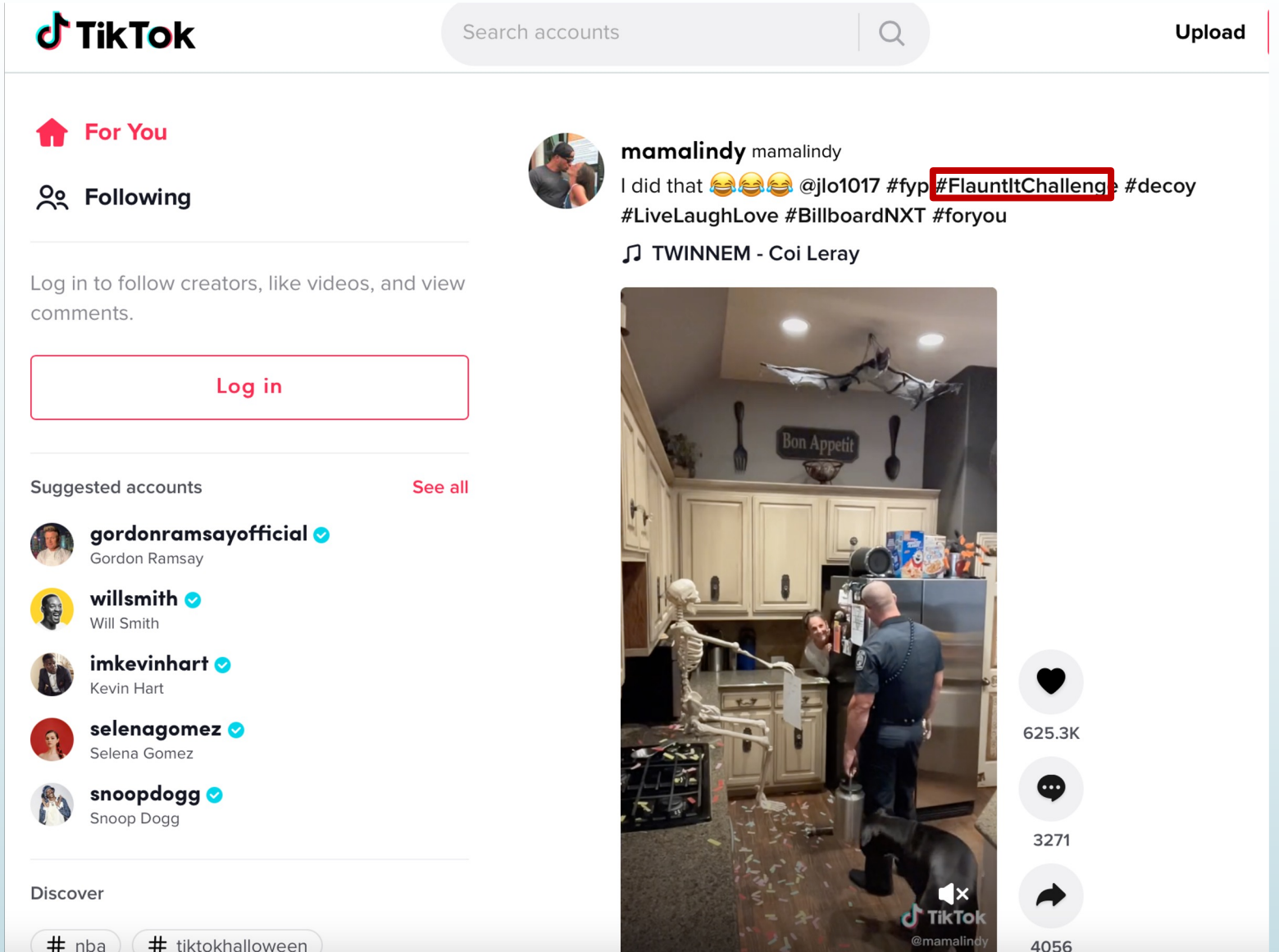




TikTok Challenges

ForYouPage

Challenge:
Format to endless iterate upon

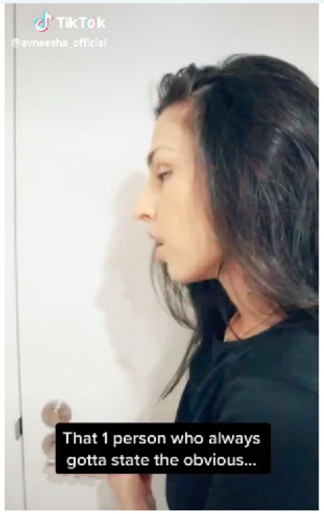


TikTok Challenges during COVID

- Created a TikTok account in Singapore and collected top 12 challenges on our #foryoupage
- Promote good hygiene habits, Cope with Quarantine

#godaddygochallenge

#papertowelchallenge



#karenchallenge

#washyourhandschallenge

#gencovychallenge

Research Objectives

- Predict the contagion of 12 TikTok Challenges that trend on the #FYP during the COVID19 lockdown

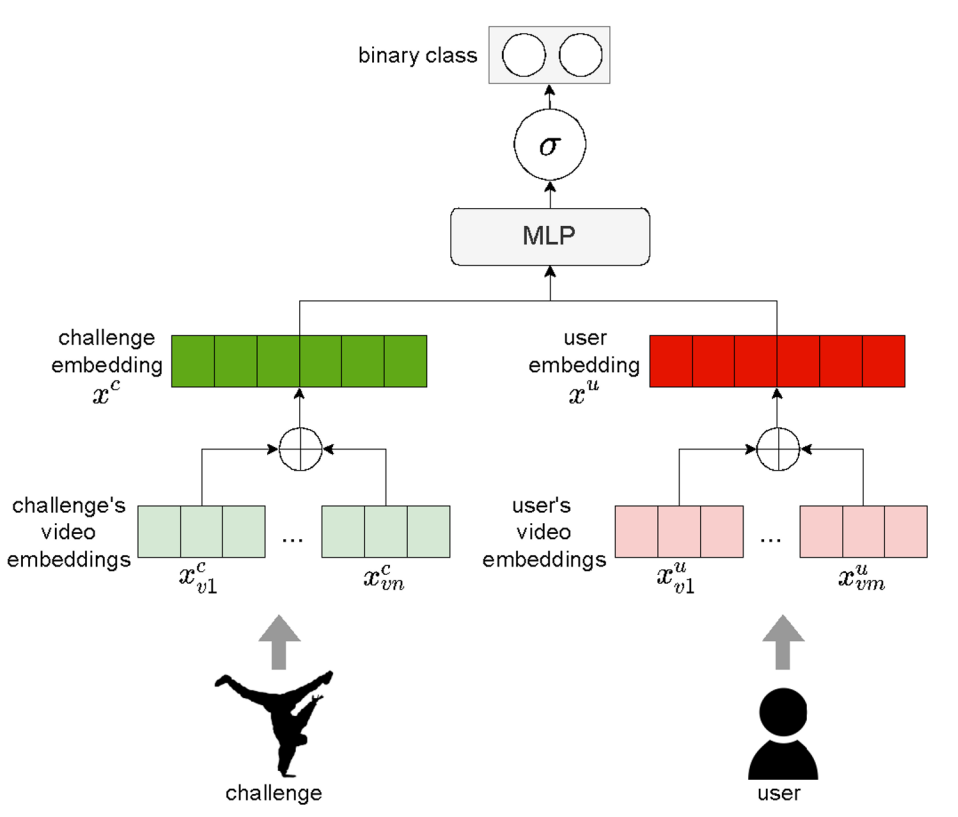
- Draws ideas from collaborative filtering, which exploits binary similarities between users and items to recommend content to users
- Extend the problem of predicting viewership of a video to predicting user participation in a challenge.
- User participation = user uploads a video of the challenge
- Challenge video are non-static: user injects his own flavour into the challenge.
- Performing a challenge = user's interest + challenge topic

DataSet

- 12 Trending TikTok Challenges from 19 October to 19 December 2020
  - (1) challenges that aim to promoteawareness on good hygiene habits to reduce the spread of COVID virus (eg #washyourhands)
  - (2) challenges that provide entertainment through dance and song during enforced lockdowns
- Search for videos using the challenge hashtags, collected ~1000 videos for each challenge
- User collection: 1303 users with 8 video each
  - Collected users that participated in the most number of challenges for a month

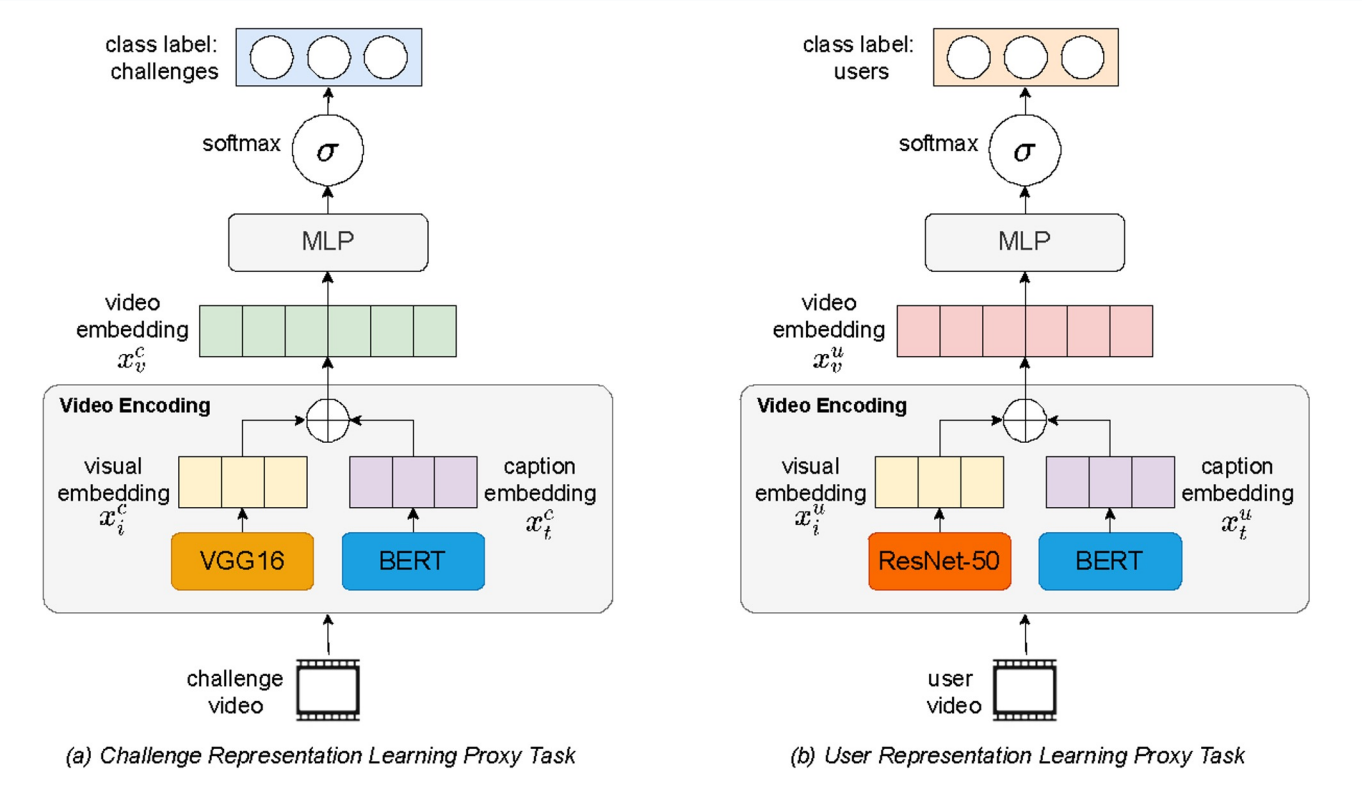
User-Challenge Prediction (Main Task)

- "Given a user and a challenge, predict whether the user will participate in the challenge."



Formulate Two Proxy Tasks

- Challenge Representation Learning: “Given a TikTok video, predict whichchallenge it belongs to.”
- User Representation Learning: “Given a video, predict which user it belongs to.”

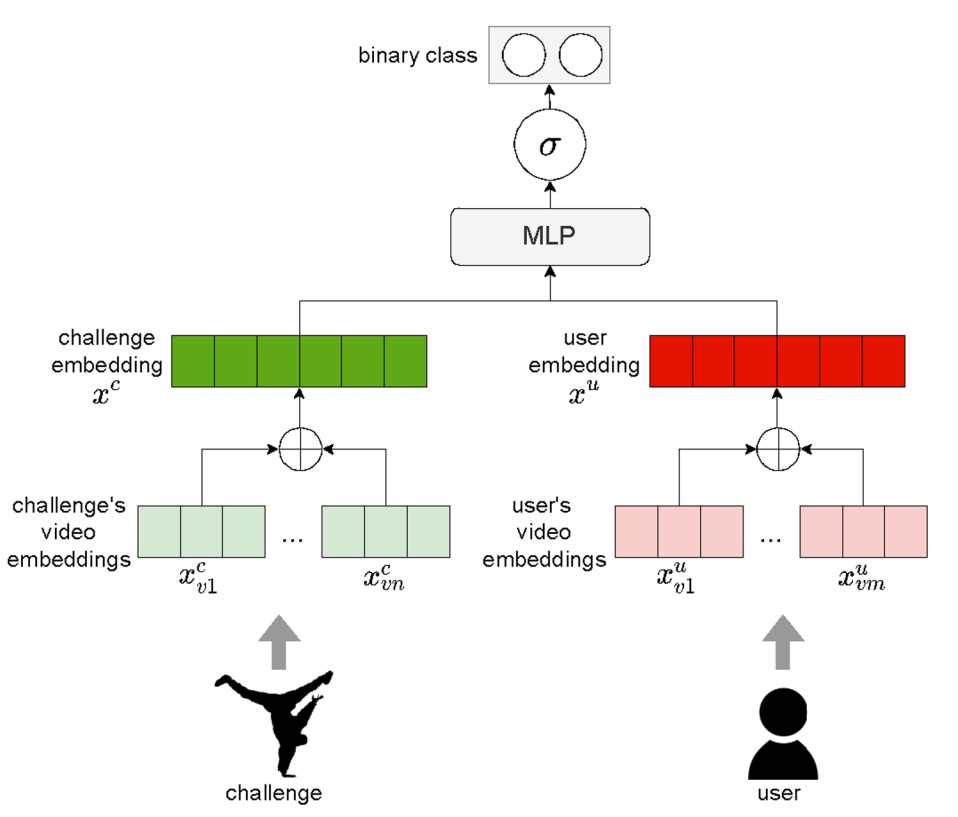


(a) Challenge Representation Learning Proxy Task

(b) User Representation Learning Proxy Task

User-Challenge Prediction (Main Task)

- "Given a user and a challenge, predict whether the user will participate in the challenge."



Results

TABLE I: Performance on challenge and user representation learning proxy tasks

Model	Macro-Prec	Macro-Rec	Macro-F1
Challenge Representation Learning			
VGG16	0.248	0.186	0.153
VGG16 + BERT	**0.660**	**0.563**	**0.494**
ResNet-50	0.257	0.174	0.125
ResNet-50 + BERT	0.583	0.486	0.385
User Representation Learning			
VGG16	0.163	0.558	0.163
VGG16 + BERT	0.186	0.749	0.188
ResNet-50	0.194	0.725	0.195
ResNet-50 + BERT	**0.197**	**0.733**	**0.197**

TABLE II: Experimental results for user-challenge participation prediction task

Model	Macro-Prec	Macro-Rec	Macro-F1
VGG16	0.017	0.200	0.083
VGG16 + BERT	0.188	0.750	0.188
ResNet-50	0.050	0.059	0.050
ResNet-50 + BERT	0.187	0.750	0.188
deepChallenger	**0.494**	**0.933**	**0.494**

Summary

- Our study on TikTok social contagion is part of a broader topic of user engagement on social media.
- TikTok presents a new medium for viral content adaptation, namely through video for content spread.
- Combining information about the user's uploaded videos and the challenge video data improves the predictive model of whether users will participate in the challenge.

Limitations & Future Work

- TikTok does not have an official API for data collection
- Data collection repository had to be fixed constantly because the platform was continually evolving

- Future work: characterize the propagation and replication reach of #FYP challenges, dances and songs on TikTok
- Inclusion of audio, themes and other TikTok features

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