



FlickOh : Personalized Movie Recommendation and Rating System

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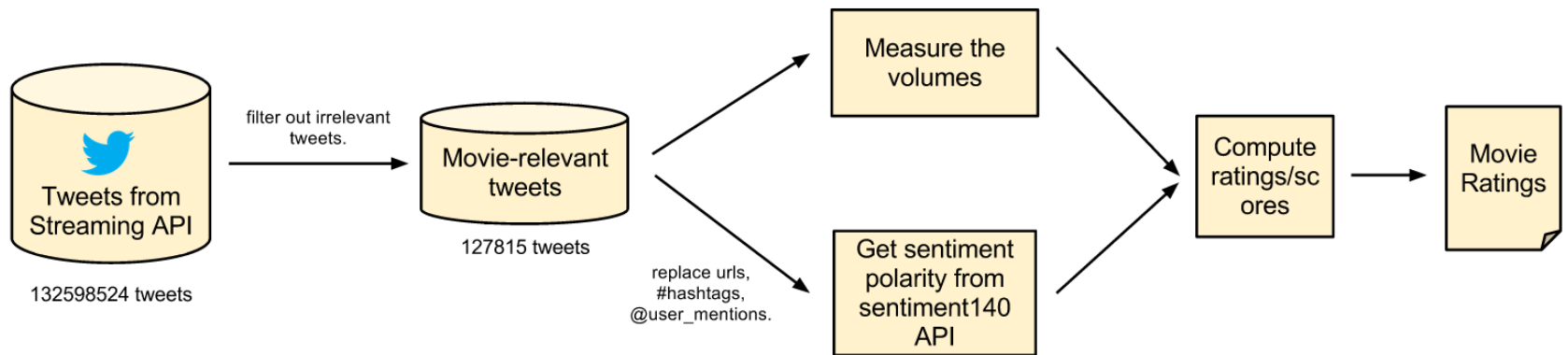


What is FlickOh?

- Movie rating and recommendation system based on Twitter data
 - Provide general movie rankings
 - Suggest movie recommendations to individual users

General Movie Rating

- Provide ranking of movies based on Twitter data
 - 86 movies
 - 132M tweets collected (Oct. 26 – Dec. 2)



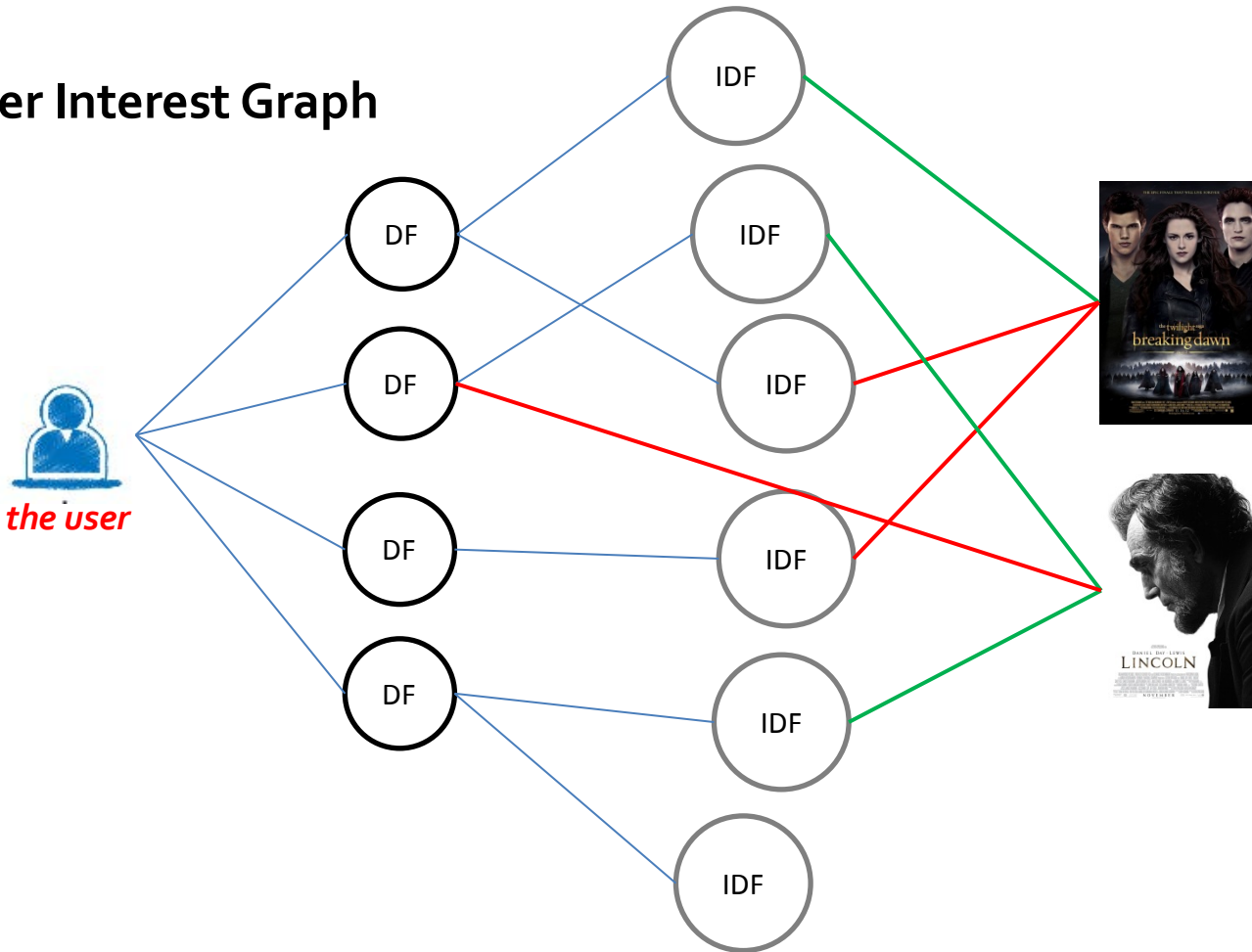


General Movie Rating

- Considering
 - movie preference (based on sentiment analysis) and popularity (the number of movie-relevant tweets)
- Formula:
$$\frac{P}{P + N + 1} \times T$$
 - P: the number of positive tweets
 - N: the number of negative tweets
 - T: total number of tweets

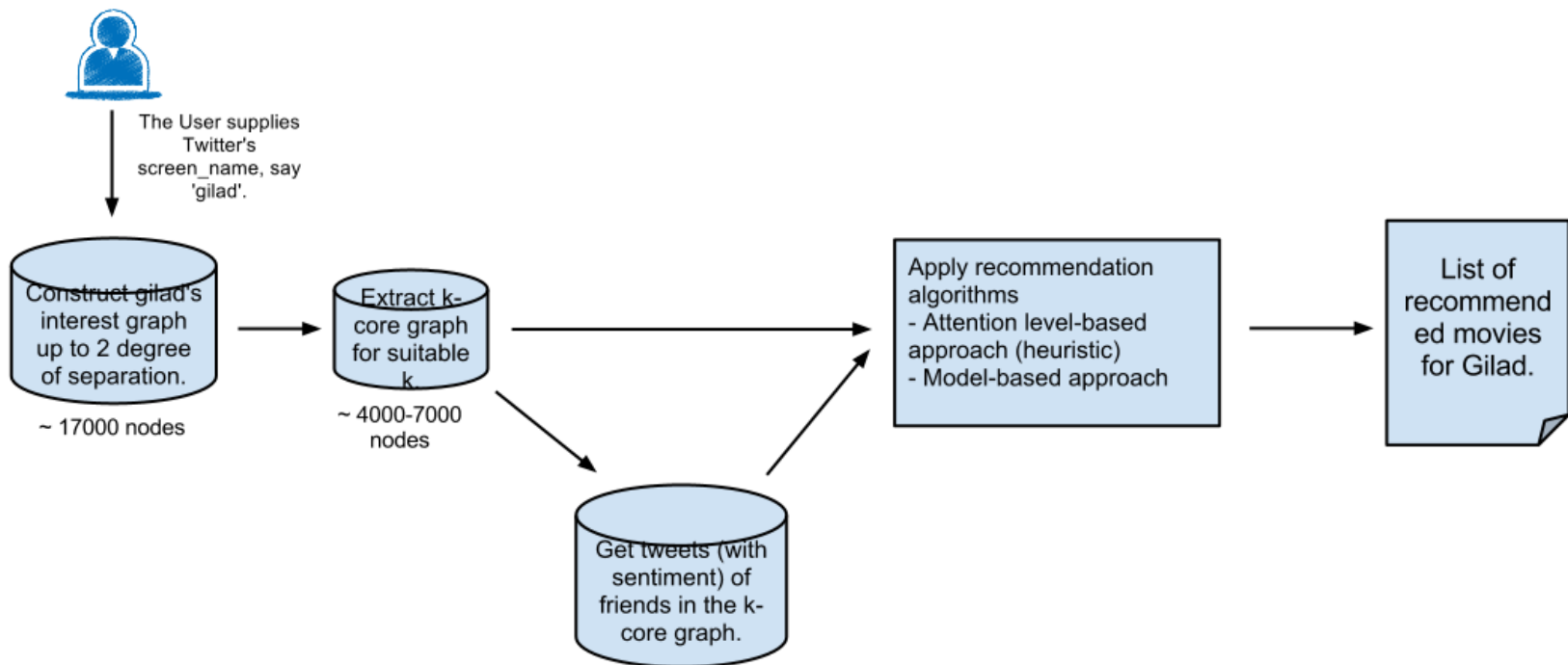
Personalized Recommendation

Twitter Interest Graph



DF = direct friend, IDF = indirect friend

Personalized Recommendation





Attention level-based approach

- Attention Level – Based Approach
 - Using two-level interest graph & sentiment analysis
- Considering
 - preference (based on sentiment analysis)
 - popularity (the number of a movie relevant tweets)
 - Influential power of friend (level and degree of a friend node)
- Formula:
$$\sum \left(\frac{S_i R_i D_i}{L_i} \right)$$
 - S: Sentiment Polarity (0:negative, 2:neutral, 4:positive)
 - R: Reference of movie (the number of movie tweets)
 - D: Degree of a friend node
 - L : Level of a friend(direct friend:1, indirect friend:2)



Model-based approach

- Use collaborative filtering with naïve Bayes classifier
- Aim to classify whether the user will like or dislike a movie.
- Input: rating matrix, i.e. users' rating on movies,
k-core interest graph centered at the user.
- Data sparsity problem

| | MV1 | MV2 | MV3 | MV4 | ... |
|----------|---------|-----|------|-----|-----|
| User 1 | dislike | x | x | x | |
| User 2 | x | x | like | x | |
| ... | | | | | |
| The user | x | x | x | x | |

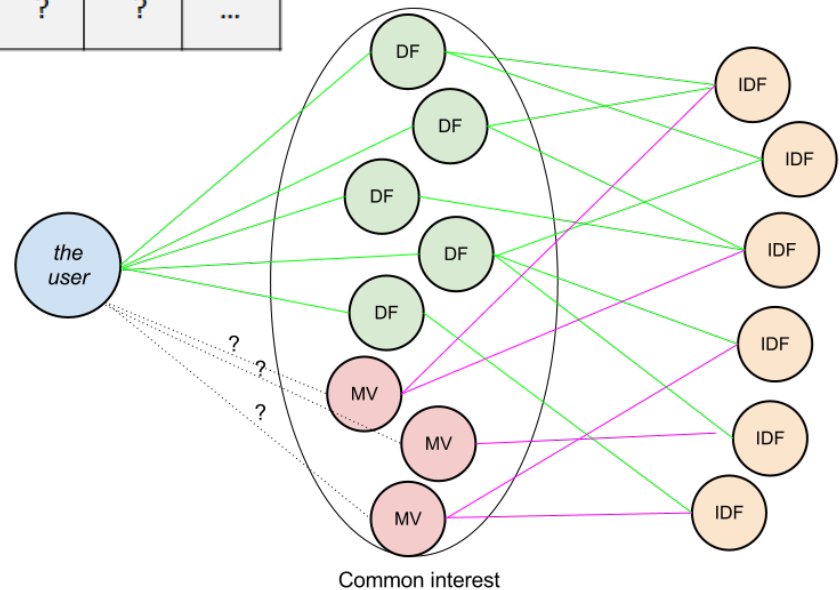
Model-based approach

Training Data

| | DF 1 | DF 2 | DF 3 | DF 4 | ... | DF N |
|-----------------|------|------|------|------|-----|------|
| IDF 1 like | 1 | 0 | 0 | 1 | | 1 |
| IDF 1 dislike | 0 | 1 | 1 | 0 | | 0 |
| IDF 2 like | 1 | 0 | 1 | 0 | | 0 |
| IDF 2 dislike | 0 | 1 | 0 | 1 | | 1 |
| ... | | | | | | |
| <i>the user</i> | 1 | 0 | 0 | 1 | | 1 |

Prediction

| MV 1 | MV 2 | ... |
|------|------|-----|
| 0 | 1 | |
| 0 | 0 | |
| 1 | 1 | |
| 0 | 1 | |
| | | |
| ? | ? | ... |





Demo

- <http://people.ischool.berkeley.edu/~stlim/flickoh/>



Thank You

- Questions or Comments?