

Movie recommendation based on users rating

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Outline

Idea

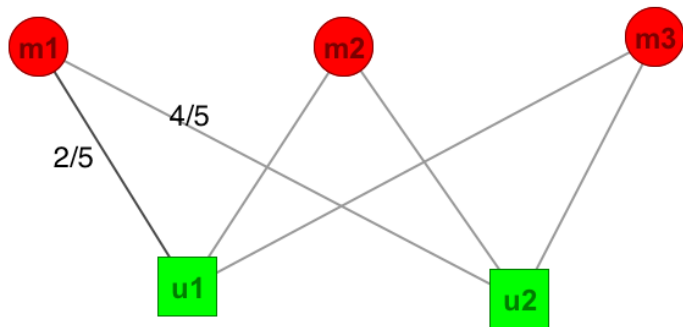
- ▶ Make movie recommendations for users.
- ▶ Problem of interest to many companies: Netflix, Youtube
...
- ▶ New approach based on graph modeling.

Data

users	movies	rating
0	1	5
2	9	3
2	4	4
3	10	3

- ▶ 80K rows
- ▶ 1.6K movies, ~ 50 ratings per movie.
- ▶ 943 users, ~ 80 ratings per user.

Modeling



Tools

- ▶ Language: Python
- ▶ Pandas for data manipulation
- ▶ Word2Vec toolkit for statistical modeling.

Generate Random Walk

- ▶ Start with empty list of movies $L = []$.
- ▶ Loop
 - ▶ Select random user u
 - ▶ Sample a movie $m \sim \mathcal{D} \propto \text{rating}$.
 - ▶ $L.append(m)$.
 - ▶ sample $u' \sim \mathcal{D} \propto \text{rating}$
 - ▶ $u \leftarrow u'$

$$L = \{493, 526, 526, 7 \dots\}$$

Word2Vec

- ▶ R^d Embedding



$$\arg \max_{\theta} \prod_{\text{movie} \in \text{Text}} \prod_{\text{context} \in C(\text{movie})} p(\text{context} | \text{word}; \theta)$$



$$p(c|w; \theta) = \frac{\exp(\langle v_c, v_w \rangle)}{\exp(\sum_{c'} \langle v_{c'}, v_w \rangle)}$$

Result

