FAIRY: A Framework for Understanding Relationships between Users’ Actions and their Social Feeds
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Motivation
- Personalized social feeds result from complex interplay of users’ social contacts, their interests and their actions.
- Curious users might wonder about the connections between their profile (interests, actions and social contacts) and the non-obvious personalized feed items.
- Over time, users might accumulate thousands of actions which makes it impossible for them to find out these connections on their own.
- Users might not have even have access to their full profile due to the problem of inverse privacy (asymmetry between users’ and service providers’ capacity in recording and processing personal data).
- Need for a user-side solution for discovering and ranking relationships between users’ actions and their social feeds!

Discovering and Ranking the Relationships

Interaction Graphs
- Heterogeneous Information Networks, modeling users’ interactions with the platform
- Explanation Paths: Paths connecting a user to her feed item

Ranking Relationships
- Thousands of explanation paths!
- Paths to be ranked based on usefulness/relevance and surprisal using pairwise LTR

Results
- LTR models beat the baselines for relationship discovery.

Features
- Interpretable and accessible features
  - User features such as their influence and activity level
  - Item features such as their popularity and specificity
  - Category features such as their popularity and specificity
  - Relationship instance features such as the overall coherence of the instance
  - Relationship pattern features such as confidence and frequency

Path instances matter more than their patterns.

Random sampling is effective.

FAIRY gives insights on relevance and surprisal.