Best Explanations For Recommendation

This survey only takes you less than 20 minutes to complete.

IMPORTANT: Please read the instruction carefully and select your answers.
We will check the consistency of your answers to make sure that you do not answer the questions by random selection.

CAUTION: Workers providing inconsistent answers will get **REJECTED!**

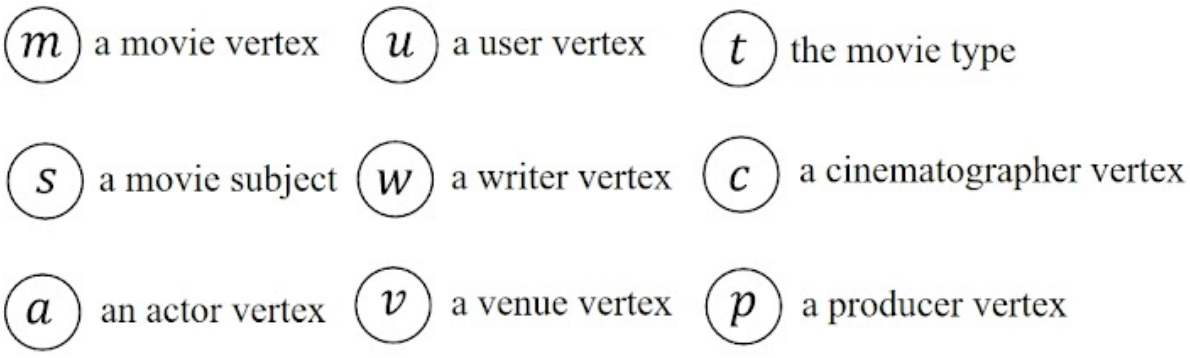
* Indicates required question

Preliminary

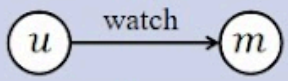
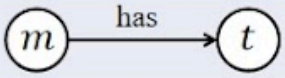
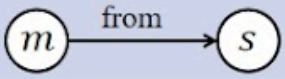
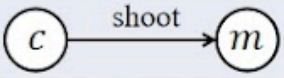
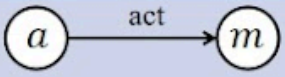
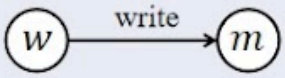
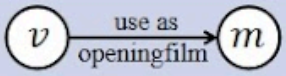
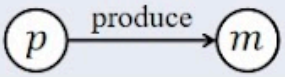
We will consider a movie recommendation scenario, where a movie *m0* is recommended to a user *u0*.

We will explain **WHY** such recommendation is made, where each explanation is represented by a graph, which consists of vertices and edges.

We have nine types of vertices as follows:



The edges connecting two vertices show different relationships:

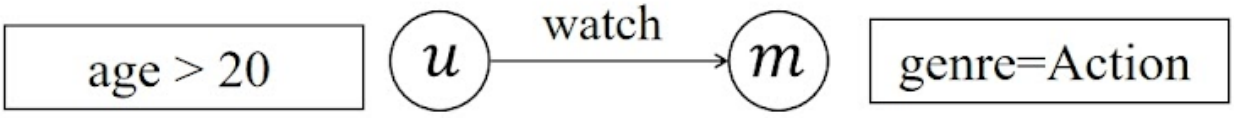
Edge	Meaning
	a user *u* watches a movie *m*
	a movie *m* has type *t*
	a movie *m* is from subject *s*
	a cinematographer *c* shoots a movie *m*
	an actor *a* acts a movie *m*
	a writer *w* writes a movie *m*
	a venue *v* uses movie *m* as an openingfilm
	a producer *p* produces a movie *m*

Each vertex may be associated with some attributes:

- User vertex: gender, age, job, zip-code, ..., etc
- Movie vertex: title, genre, rating , year, number of view counts (*#view*) ..., etc

We can also check the similarity between vertices, e.g., if two movies *m1* and *m2* are similar, we write **similar(m1, m2)**.

We can specify constraints on attributes in an explanation to express richer relationships, e.g., a user *u* with age above 20 watches an Action movie *m*:



Questions

Consider the following four explanations for explaining why a movie *m0* is recommended to user *u0*.

You will be asked eight questions based on the four sets of explanations.

Explanation 1:

The movie *m0* is recommended to user *u0* because:

(1) The following conditions hold for user *u0*:

(a) user *u0* has watched 76 movies {*m1, ..., m76*} which was watched by another user *u1* who also watched *m0*

(2) The following conditions hold for movie *m0*:

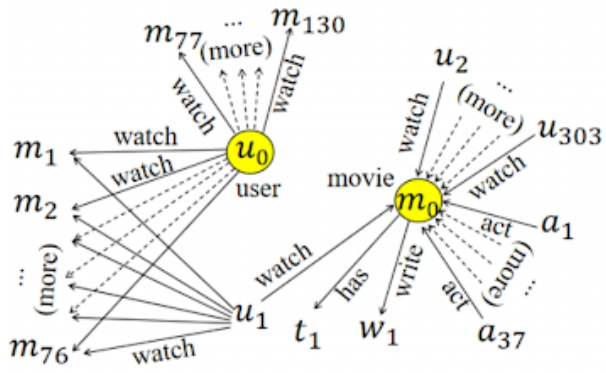
(a) movie *m0* has type *t1*

(b) movie *m0* was written by writer *w1*

(c) movie *m0* was acted by actors {*a1,...,a37*}

(d) movie *m0* was watched by 303 users (e.g., *u1*, *u2* and *u303*), where *u1* has watched some movies from *u0*'s watching list.

Statistically, this explanation has 450+ vertices and 500+ edges.
Besides, no attributes are associated with the vertices.



Statistic	Result
number of vertices	450+
number of edges	500+
average number of attributes associated with each vertex	0
Are there specific constraints associated with the attributes?	No

Explanation 2:

The movie *m0* is recommended to user *u0* because:

(1) The following conditions hold for user *u0*:

(a) user *u0* is a male, the same gender as the watcher *u1* of movie *m0*.

(b) user u0 watched a movie *m1* that is **similar** to movie *m0*

(c) user *u0* has watched a **Drama** movie *m2,* which has the same type as movie *m1*

(d) user *u0* has watched a **Drama** movie *m2, which* was also watched by the watcher *u1* of movie *m0*.

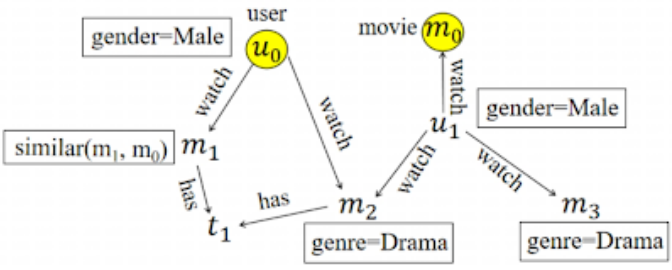
(2) The following conditions hold for movie *m0*:

(a) movie *m0* was watched by a **Male** user *u1*, that has the same gender as *u0*

(b) the watcher *u1* of movie *m0* watched two **Drama** movies *m2* and *m3*, where *m2* wa also watched by user *u0.*

Statistically, this explanation contains 7 vertices and 7 edges in total, and the average number of attributes associated with each vertex is 0.71.

Besides, there are specific constraints associated with the attributes, e.g., gender = Male.



Statistic	Result
number of vertices	7
number of edges	7
average number of attributes associated with each vertex	0.71
Are there specific constraints associated with the attributes?	Yes

Explanation 3:

The movie *m0* is recommended to user *u0* because:

(1) No conditions hold for user *u0*:

(2) No conditions hold for movie *m0*:

(3) A movie *m1* was watched by seven users, i.e., *u1,...,u7*

(4) Users *u1* and *u2* watched both movies *m1* and *m2*

(5) User *u8* watched movies *m2* and *m3*

(6) User *u9* watched movie *m4*

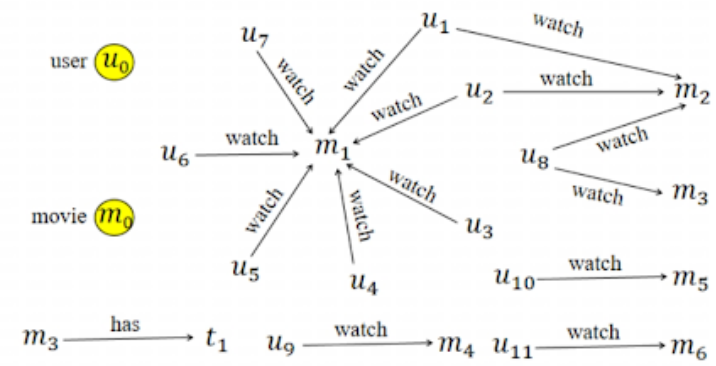
(7) User *u10* watched movie *m5*

(8) User *u11* watched movie *m6*

(9) Movie *m3* has type *t1*

Statistically, this explanation has 21 vertices and 15 edges.

Besides, no attributes are associated with the vertices.



Statistic	Result
number of vertices	21
number of edges	15
average number of attributes associated with each vertex	0
Are there specific constraints associated with the attributes?	No

Explanation 4:

The movie *m0* is recommended to user *u0* because:

(1) All users have the same set of selected attributes **gender, age, job**, ..., etc

(2) All movies have the same set of selected attributes **genre, rating, year**, ..., etc

(3) There is no other conditions for user *u0*

(4) The following conditions hold for movie *m0*:

  (a) movie *m0* has been watched by user *u1*

  (b) movie *m0* was produced by *p1* and *p2*

(5) There are 20 cases where a user watched a movie, e.g., *u1* watched *m1*, ..., and *u20* watched *m20*

(6) Cinematographer *c1* shot movies *m21* and *m22*

(7) Cinematographer *c2* shot movie *m24*

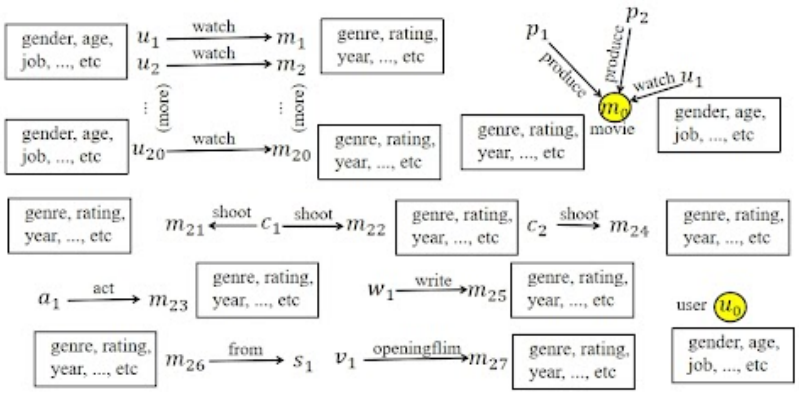
(8) Movie *m23* was acted by actor *a1*

(9) Movie *m25* was written by writer *w1*

(10) Movie *m26* was subjected from *s1*

(11) Movie *m27* was an openingfilm in venue *v1*

Statistically, this explanation has 58 vertices and 30 edges.
Besides, the average number of attributes associated with each vertex is 5,
but there is no specific constraint associated with the attributes.



Statistic	Result
number of vertices	58
number of edges	30
average number of attributes associated with each vertex	5
Are there specific constraints associated with the attributes?	No

Statistic Summary

Explaination	Statistic			
	number of vertices	number of edges	average number of attributes associated with each vertex	Are there specific constraints associated with the attributes?
Explanaiton 1	450+	500+	0	No
Explanaiton 2	7	7	0.71	Yes
Explanaiton 3	21	15	0	No
Explanaiton 4	58	30	5	No

Evaluation

Consider the quality of the above four explanations for recommendation.
In particular, focus on the following four aspects of each explanation:
1. Reasonableness
2. Conciseness
3. Decisiveness
4. Overall Performance

Reasonableness

"Reasonableness" is an aspect to be evaluated in this survey.
A given explanation is considered as good in terms of reasonableness if the logic behind the explanation is reasonable for recommending a movie *m0* to user *u0*.
Thus, an explanation with more reasonable logic is better.

1. Q1. Consider only "Resonableness" of each explanation. Please indicate one explanation that you think with the best "Resonableness" in all four explanations. *

   Mark only one oval.

   - ◯ Explanation 1
   - ◯ Explanation 2
   - ◯ Explanation 3
   - ◯ Explanation 4

2. Q2. Consider only "Resonableness" of each explanation. Please indicate *exactly 2 explanations* that you think with better "Resonableness" in all four explanations. Note: One of them *must* be the explanation you indicated in Q1. *

Check all that apply.

- [ ] Explanation 1
- [ ] Explanation 2
- [ ] Explanation 3
- [ ] Explanation 4

Conciseness

"Conciseness" is an aspect to be evaluated in this survey.
A given explanation is considered as good in terms of conciseness if the information contained in the explanation is concise, *e.g.,* the number of vertices or edges is as few as possible, and the average number of attributes associated with each vertex is as few as possible.
Thus, an explanation using concise information is better than one that uses complicated information.

3. Q3. Consider only "Conciseness" of each explanation. Please indicate one explanation that you think with the best "Conciseness". *

Mark only one oval.

- ◯ Explanation 1
- ◯ Explanation 2
- ◯ Explanation 3
- ◯ Explanation 4

4. Q4. Consider only "Conciseness" of each explanation. Please indicate *exactly 2 explanations* that you think with better "Conciseness" in all four explanations. Note: One of them *must* be the explanation you indicated in Q3. *

Check all that apply.

- [ ] Explanation 1
- [ ] Explanation 2
- [ ] Explanation 3
- [ ] Explanation 4

Decisiveness

"Decisiveness" is an aspect to be evaluated in this survey.
A given explanation is considered as good in terms of decisiveness if the explanation only contains decisive factors for explaining the recommendation.
This can be reflected by, e.g., any specific constraints associated with the attributes or containing the most critical/important vertices and edges in the explanation.
Thus, an explanation that only provides decisive information is better than one that mixes both critical and non-critical information.

5. Q5. Consider only "Decisiveness" of each explanation. Please indicate one explanation that you think with the best "Decisiveness". *

Mark only one oval.

- ◯ Explanation 1
- ◯ Explanation 2
- ◯ Explanation 3
- ◯ Explanation 4

6. Q6. Consider only "Decisiveness" of each explanation. Please indicate *exactly 2 explanations* that you think with better "Decisiveness" in all four explanations. Note: One of them *must* be the explanation you indicated in Q5. *

Check all that apply.

- ☐ Explanation 1
- ☐ Explanation 2
- ☐ Explanation 3
- ☐ Explanation 4

Overall Performance

"Overall Performance" is the last aspect to be evaluated in this survey.
It is an aspect of the overall performance of each explanation.
Under the aspect of the overall performance,
we would like to have an explanation such that it is good in terms of the reasonableness, conciseness and decisiveness *simultaneously*.
Thus, if the performance of an explanation is better than another one in terms of reasonableness, conciseness and decisive factor, the former explanation is better.

7. Q7. Consider only "Overall Performance" of each explanation. Please indicate one explanation that you think with the best "Overall Performance". *

Mark only one oval.

- ◯ Explanation 1
- ◯ Explanation 2
- ◯ Explanation 3
- ◯ Explanation 4

8. Q8. Consider only "Overall Performance" of each explanation. Please indicate *exactly 2 explainations* that you think with better "Overall Performance" in all four explanations. Note: One of them *must* be the explanation you indicated in Q7. *

Check all that apply.

- ☐ Explanation 1
- ☐ Explanation 2
- ☐ Explanation 3
- ☐ Explanation 4

You are almost done!

We will use your worker ID that you input in MTurk to verify your work.
Please enter your worker ID below.

9. Worker ID *

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Survey code that should be filled in Mturk: **AcceptMakex**