

# Crowdsourced Evaluation of Semantic Patterns for Recommendations

Recommender systems help people cope with the amount of information available on the Internet.

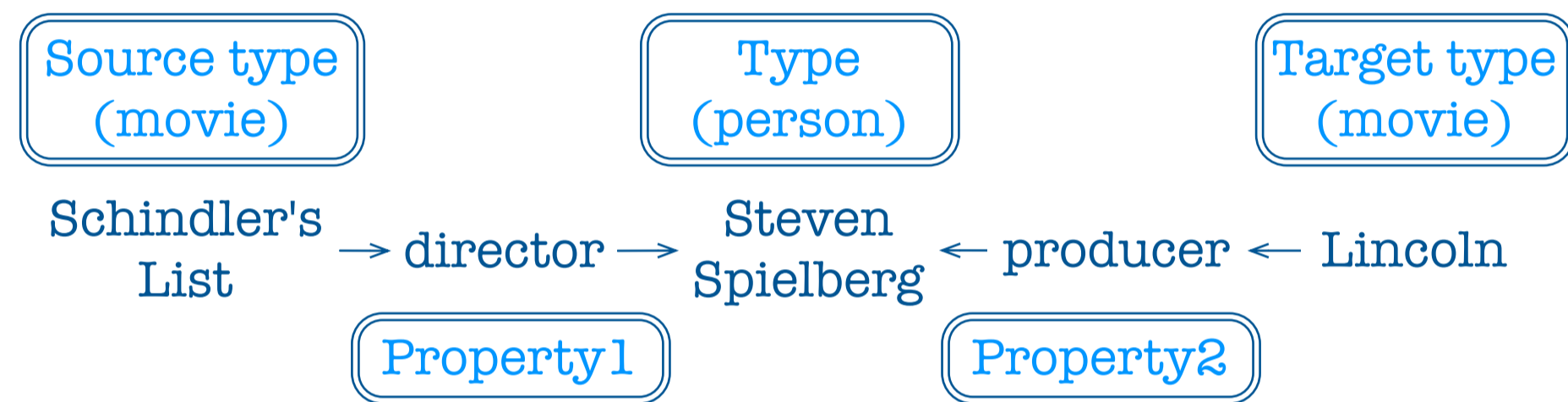
Standard methods tend to suggest only similar items, preventing **diversity**.

Extend existing approaches with **semantic patterns** to improve diversity in recommendation results.

**Linked Data** enables us to discover connections between items that otherwise do not surface.

The goal of this study is to identify **statistics** of the patterns that indicate their suitability for the (diversity enabled) recommendation process.

**SEMANTIC PATTERNS** connect a **source type** with a **target type** through **property-type** pairs.



## PATTERN STATISTICS

**Global Frequency:** how many times a pattern appears in the source.

**Local Frequency:** how many times a pattern appears in the source considering the instantiation of the source type (i.e. Schindler's List).

**Type Frequency:** how many times a pattern appears in the source considering the instantiation of the type(s) involved (i.e. person).

**Pattern Length:** number of properties involved in the pattern.

EXPERIMENT

You are buying the movie **Lincoln** for a friend and you want to get the "buy one, get two" promotion. Which of the allowing movies would you match with **Lincoln** in order to **surprise** your friend with something **not trivially related**?

**Offered Movies**

- Movie 1:** The Three Burials of Melquiades Estrada is a 2005 American drama film directed by Tommy Lee Jones and written by Guillermo Arriaga. It stars Tommy Lee Jones, Barry Pepper, Julio Cedillo, and Dwight Yoakam.
- Movie 2:** Zero Dark Thirty is a 2012 American action thriller film about the special operations forces mission to capture or kill Osama bin Laden. The film is directed by Kathryn Bigelow with screenplay by Mark Sokol, both associated with The Hurt Locker, another military action thriller. It will star Jessica Chastain, Joel Edgerton and Mark Strong.
- Movie 3:** Schindler's List is a 1993 film about Oskar Schindler, a German businessman who saved the lives of more than a thousand mostly Polish-Jewish refugees during the Holocaust by employing them in his factories. The film was directed by Steven Spielberg, and based on the novel Schindler's Ark by Australian novelist Thomas Kennealy.
- Movie 4:** Eight Below is a 2006 American adventure film directed by Frank Marshall and written by David Dighton. It stars Paul Walker, Jason Biggs, Bruce Greenwood and Moon Zoghdan. It was released theatrically on February 17, 2006 and distributed by Walt Disney Pictures in the United States.
- Movie 5:** Inception is a 2010 science fiction action heist film which was written, co-produced, and directed by Christopher Nolan. The film features an international ensemble cast including Leonardo DiCaprio, Ken Watanabe, Joseph Gordon-Levitt, Marion Cotillard, Ellen Page, Tom Hardy, Cillian Murphy, Diapie Bao, Tom Berenger, and Michael Caine.

1. Select one movie: (required)  
 Movie 1  
 Movie 2  
 Movie 3  
 Movie 4  
 Movie 5

2. Explain why did you select that movie (in question 1) (required)

3. Type here the 3rd word of the synopsis of the movie you selected (in question 1) (required)

## Setup

CrowdFlower workers choose a movie recommendation from 5 options:

- 4 recommendations generated by DBpedia patterns.
- One is from Amazon recommendations.

For each choice we collect also the motivation.

## Some numbers

- ✓ 36 tests
- ✓ 12 movies
- ✓ 3 genres
- ✓ 12 patterns (people-based)
- ✓ 722 contributions
- ✓ 28 spammers
- ✓ 157 hours

**RECOMMENDATION DIVERSITY** is calculated as the **semantic distance** between genres and topics of the recommended items and the items in the user profile.



# RESULTS

