In the Mood4: Recommendation by Examples

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No semantics!
Based on pure
Collaborative Filtering

Goal

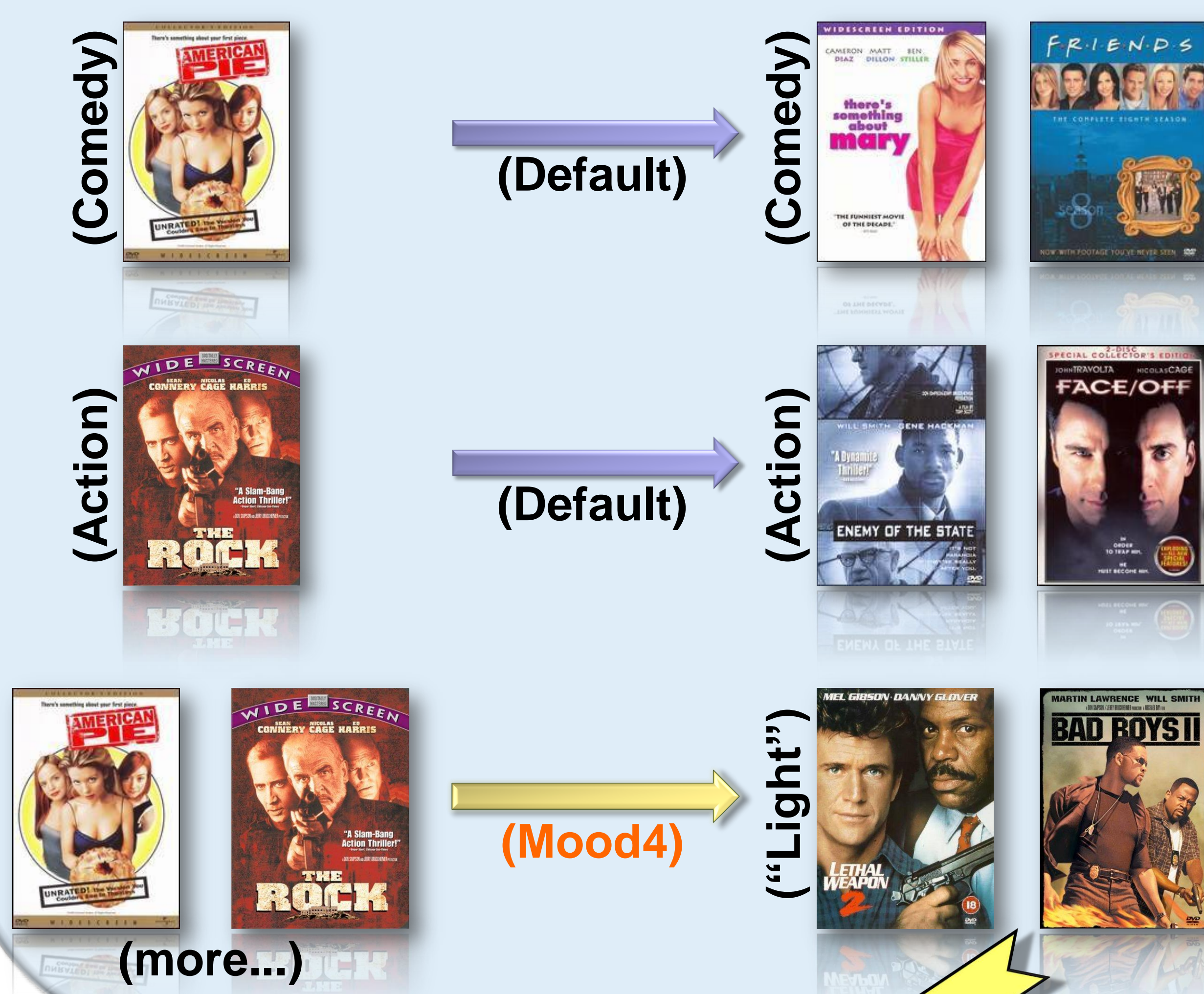**Generate recommendations that fit the user's <u>current</u> state of mind / mood**

I feel like watching a "light" movie…

Difficulties:

- **"Light"?? Is it Comedy? Action? Drama?**

- **Profiles don't always help:**

 - **Multiple users, single account**

  - **Different days, different moods**

Solution: <u>Describe your mood by Examples</u>

(Comedy) → (Default) → (Comedy)

(Action) → (Default) → (Action)

(more…) → **(Mood4)** → ("Light")

Algorithm's Steps

Crate a Geometric Representation

Austin Powers (3.9)   **The Rock**   Air Force One (3.7)
American Pie   Lethal Weapon (4.1)
American Pie 2 (3.4)   **Independence Day**
Pearl Harbor (4.2)

Find Joint Representatives

$$JointRep(S') = \arg\max_{i \in N(s)|s \in S'} \left[\min_{s \in S'} \left[\frac{sim(i,s) * rate(i)}{\text{avg}_{j \in N(s)}(rate(j))} \right] \right]$$

(The item which resembles most to a subset of examples)

Enhance the Geometric Representation

Austin Powers   **Beverly Hills Cop**   Face/Off
American Pie   **The Rock**   **Air Force One**
American Pie 2   Bad Boys
Lethal Weapon   **Independence Day**
Hitch   Pearl Harbor

Items Selection

$$MoodRel(i) = \#\, circles(i) * mSim + \max_{s \in S^+}[Sim'(i,s)]$$

(Construct a list of top-K items by *MoodRel(i)*)

Diversification

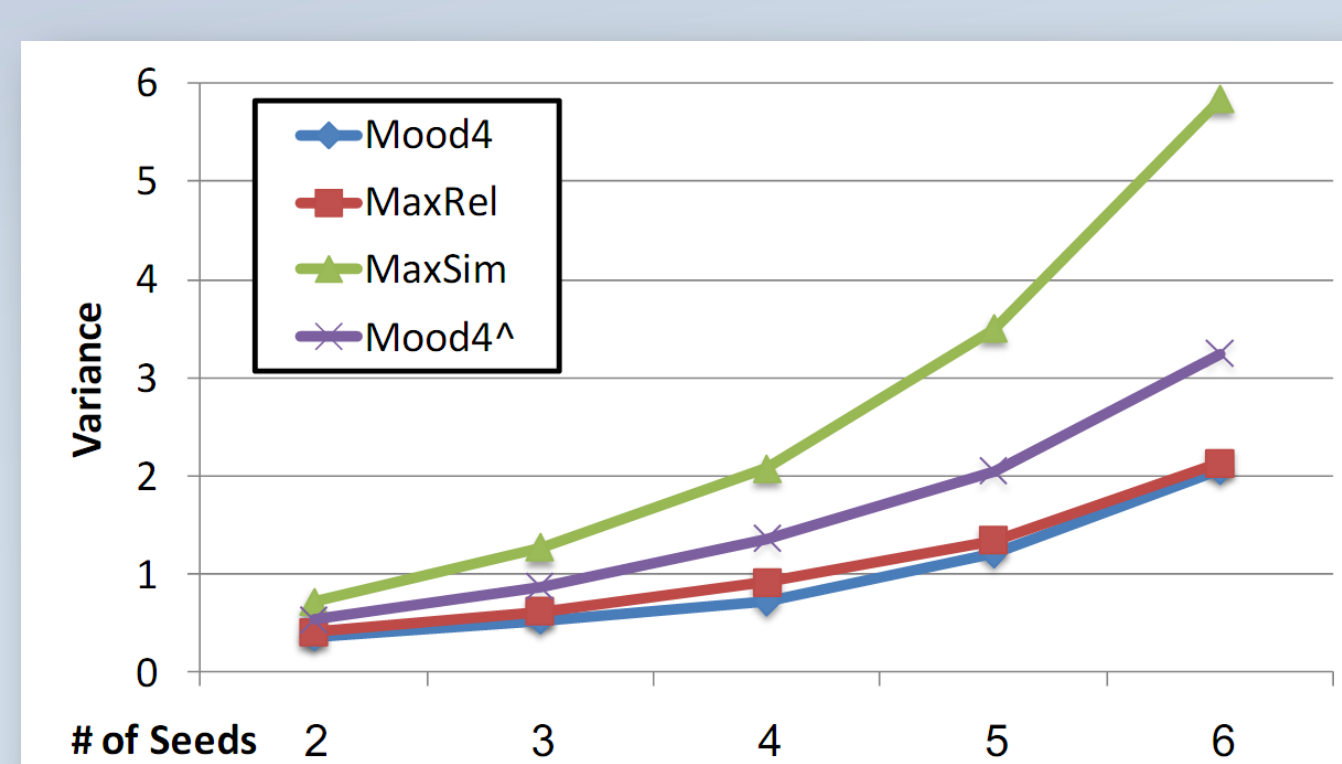**Apply a diversification algorithm based on <u>Priority Cover-Trees</u>**

What To Take Into Consideration

- **Similarity** to the (individual) examples
- **Joint similarity** to subsets of the examples
- **Ratings** (possibly personalized) of the items
- **Diversity** of the recommended items
- **Coverage** of the examples

Experimental Results
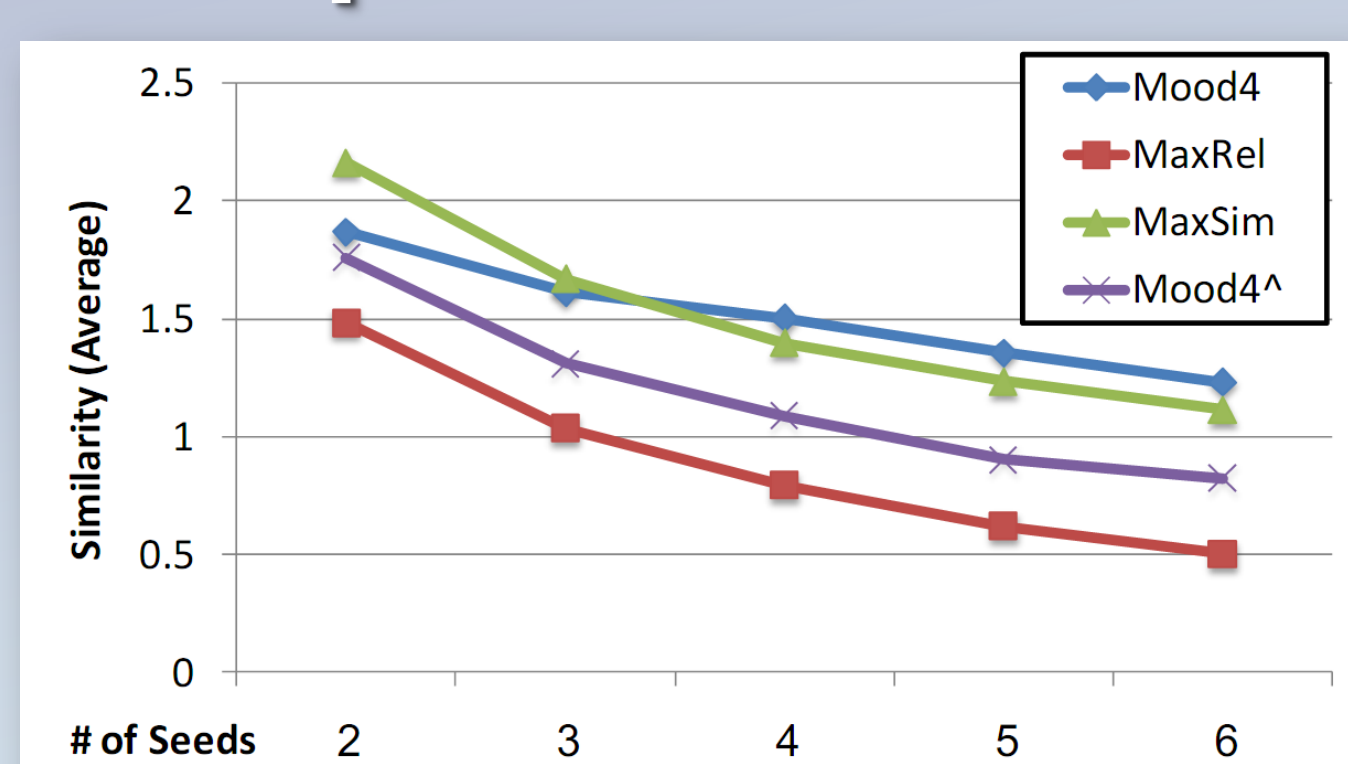
Similarity(avg) for increasing Seeds

Variance for increasing Seeds

Legend: Mood4, MaxRel, MaxSim, Mood4^