

EVALUATING CONTEXT-AWARE RECOMMENDATION SYSTEMS

MOTIVATION

- Reduce costs of context-aware recommendation system evaluation conduction.
- Use small amount of experiment participants to simulate high number of recommendation system users.

CONTEXT-AWARE RECOMMENDATIONS

- long-term context attributes
- short-term context attributes
- other attributes
- input data for proposed evaluation method
- frequent patterns identification

UID	Gender	Age	Budget	Recommended item	Frequency
1	Male	24	30 €	1	1
2	Male	27	50 €	3	5
3	Female	22	25 €	9	2
4	Male	19	10 €	14	3

SUPPOSED SITUATIONS

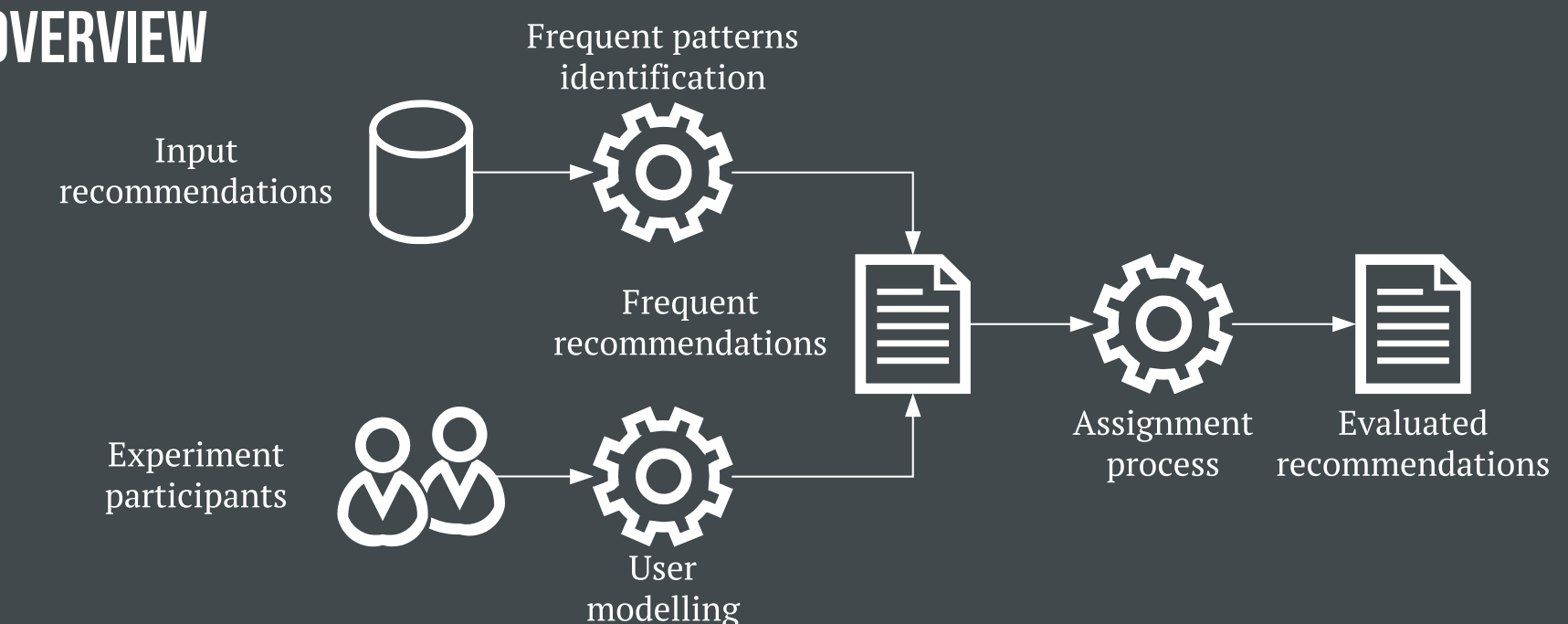
- Participant pretends to be in given situation.
- Using supposed situations in evaluation process is a cheaper alternative to setting up real situations.
- Supposed situations are based on context attributes in identified frequent patterns.
- Simple knowledge or social perspective taking skills might be used to evaluate supposed situation.

EXPERIMENT PARTICIPANTS

- Does not have to be necessarily an user of recommender system.
- Reliability to evaluate supposed situations is determined.
 - Mutual reliability determination by participants.
 - Previous experience of participants.
 - Measuring social perspective taking skills.

UID	Reliability
1	0.3
3	0.55
6	0.7

METHOD OVERVIEW



ASSIGNMENT PROCESS

- Profit of participant p evaluating recommendation r for user u is equal to $frequency(r)$ if $u = p$. Otherwise profit is equal to $reliability(p) * frequency(r)$.
- $P \times R$ matrix
- Combinatorial optimization problem - Multiple knapsack problem
- We adapt MULKNAP algorithm to acquire exact solution.

Recommended item	Frequency	Profit UID = 1	Profit UID = 3	Profit UID = 6	Assigned to UID
3	5	1.5	2.75	3.5	6
14	3	0.9	1.65	2.1	-
9	2	0.6	2.0	1.4	3
1	1	1.0	0.55	0.7	1

EXPERIMENTS

- Experiment with various types of participant's reliability determination
- Examined Interpersonal reactivity index inquiry and reliability determination based on experience with no significant results.

