

Case Based vs Constraint Based Recommender Systems

Constraint-based recommender systems

- Constraint Based Recommender Systems consist of:
 - variables
 - user model features (requirements), Item features (catalogue)
 - set of constraints
 - logical implications (IF user requires A THEN proposed item should possess feature B)
- Derive a set of recommendable items
 - fulfilling set of applicable constraints
 - applicability of constraints depends on current user model

Constraint based recommender systems

id	price(€)	mpix	opt-zoom	LCD-size	movies	sound	waterproof
P ₁	148	8.0	4×	2.5	no	no	yes
P ₂	182	8.0	5×	2.7	yes	yes	no
P ₃	189	8.0	10×	2.5	yes	yes	no
P ₄	196	10.0	12×	2.7	yes	no	yes
P ₅	151	7.1	3×	3.0	yes	yes	no
P ₆	199	9.0	3×	3.0	yes	yes	no
P ₇	259	10.0	3×	3.0	yes	yes	no
P ₈	278	9.1	10×	3.0	yes	yes	yes

User's requirements can, for example, be
"the price should be lower than 300 €"
"the camera should be suited for
sports photography"

Case-based recommender systems

- Items are retrieved using similarity measures
- Distance similarity

$$\text{similarity}(p, REQ) = \frac{\sum_{r \in REQ} w_r * \text{sim}(p, r)}{\sum_{r \in REQ} w_r}$$

- Definition
 - $\text{sim}(p, r)$ expresses for each item attribute value its distance to the customer requirement $r \in REQ$ of a user
 - w_r is the importance weight for requirement r

Limitations

- Cost of knowledge acquisition
 - from domain experts
 - from users
 - from web resources
- Does not react to short term trends