EL Description Logic Modeling Querying Web and Learning Imperfect User Preferences

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URSW ISWC 06 position paper

DL and Web modelling

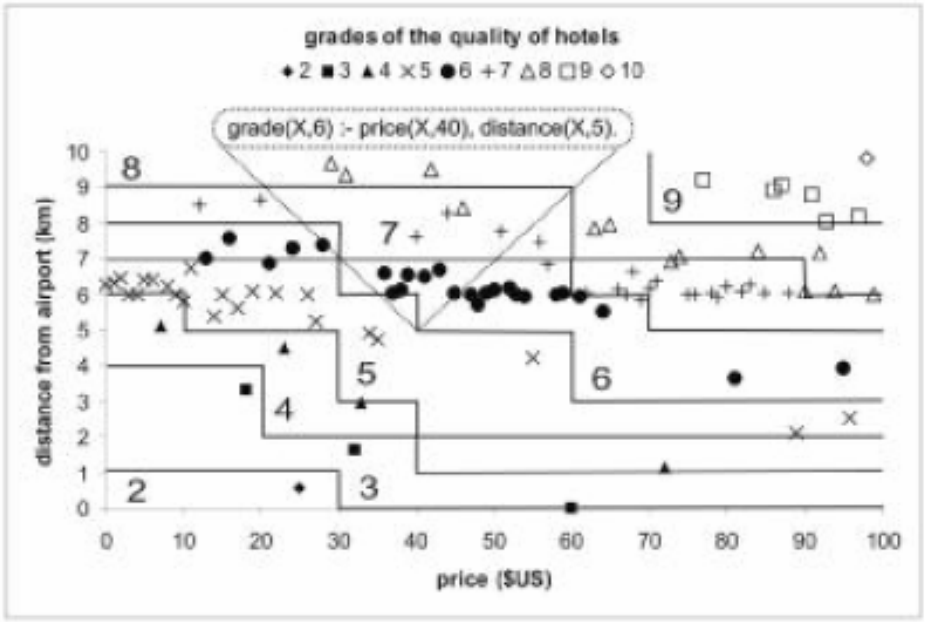
- DL basis for OWL
- Value restriction has to be reconsidered
- $\mathcal{EL}$ DL sufficient for applications
- $\mathcal{EL}$ querying in poly time
- Extension to user preference models
  e.g. a user looking for a cheap hotel close to a beach
- Aggregation of particular attribute preferences to global preference
- Top-k answers

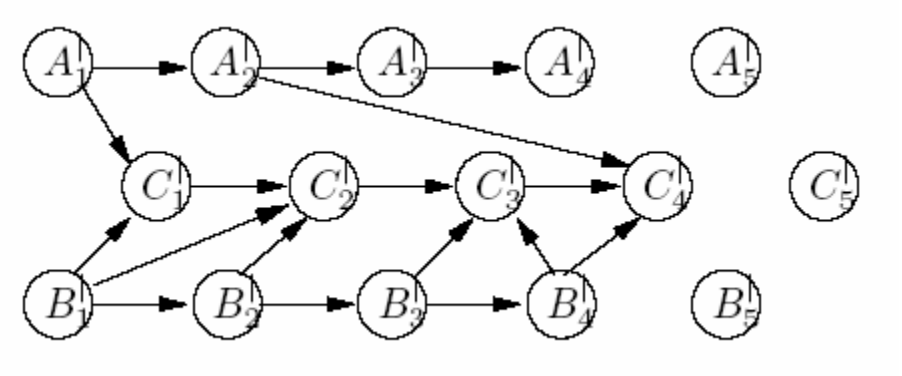
Uncertainty in Web Modelling

- Probabilistic models in SW
- Fuzzy logic models SW
- Fuzzy EL - fuzzy concepts
- - crisp roles
- - fuzzy aggregation
- Enables concepts like

  @(∃price.cheap, ∃distance.close)
- Problem of learning @ for each user

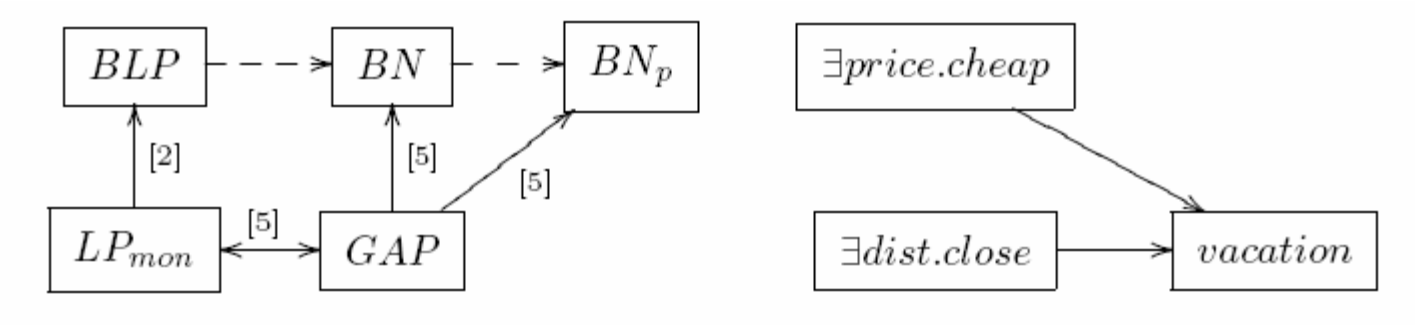
From FILP, IGAP to BN





Bayesian $\mathcal{EL}$ DL and others

- Concepts are r. v. over preference scale
- Roles are crisp / certain
- Aggregation = combination function
- Integrated with f$\mathcal{EL}$, classical $\mathcal{EL}$, …



Conclusion

- Position paper - sharing ideas
- Ideas supported by an analogy working in LP and simple experiments
- Further development of
  - formal model
  - experiments
  - OWL extension
- Questions, comments, …