

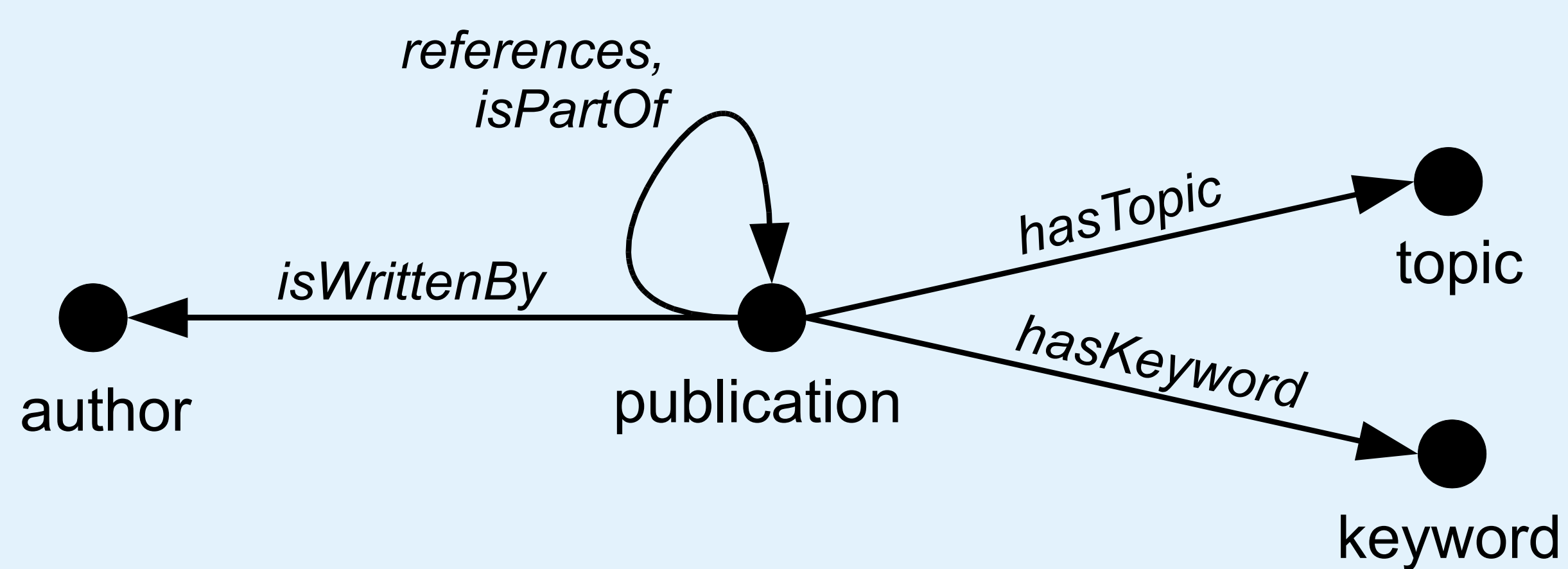
Enhancing Search Using Layered Graph Ranking of Multigraphs

Ján Suchal

Supervisor: Professor Pavol Návrat

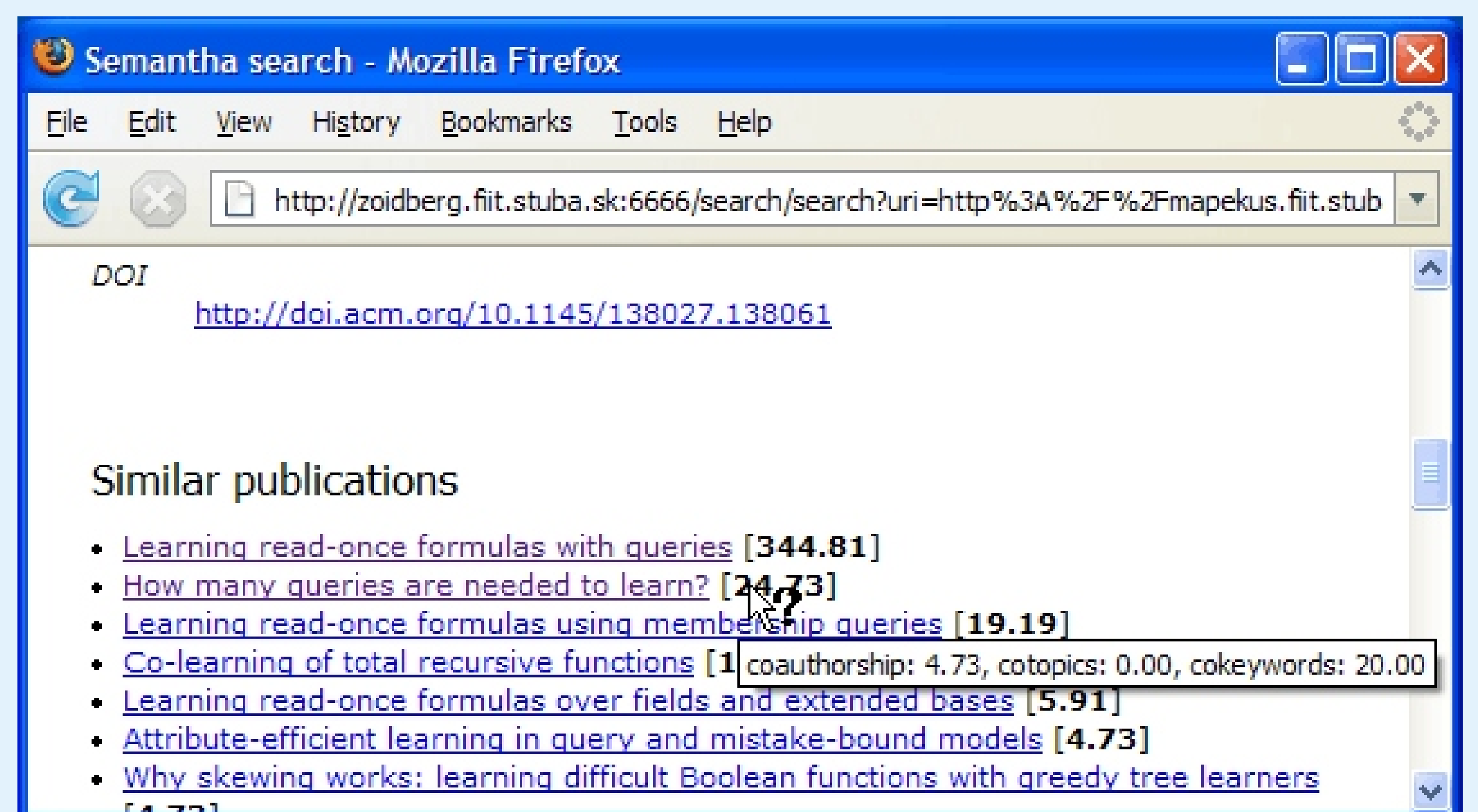
The Context Problem

- ranking nodes of typed multigraphs mixes multiple semantics of edges
- weights of edge types depend on context of searching
 - *searching for similar authors* - coauthorship dominates
 - *searching for similar publications* - topic and keyword similarity dominates
- ranks depend on context, thus precomputation of ranks is not possible



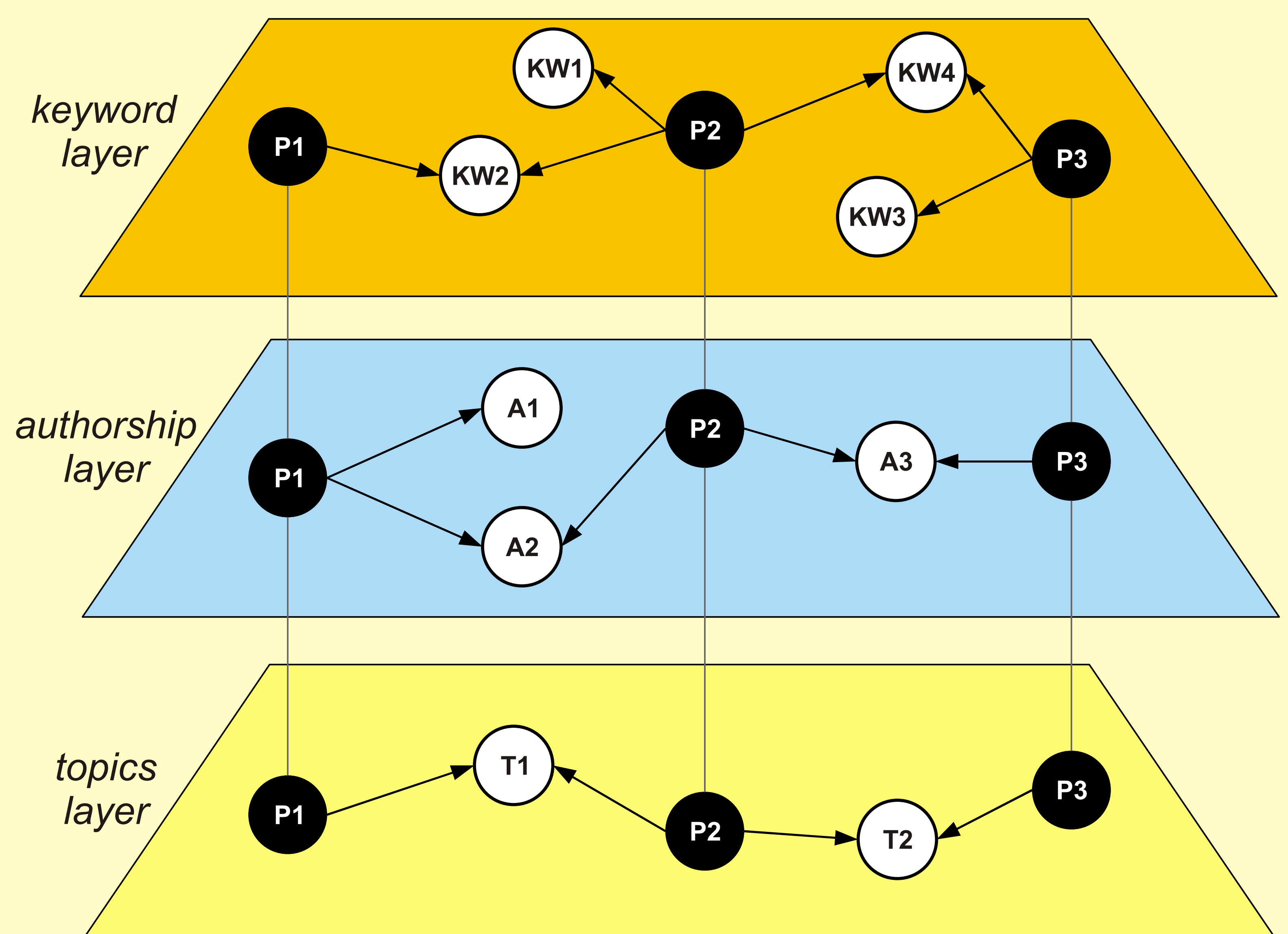
Search Application Prototype

- domain of scientific publications (ACM Digital Library)
- stored in ontology consisting of ~100K papers
- per layer ranking calculated using spreading activation search using normalized energy distribution caching
- available at <http://leela.fiit.stuba.sk/semantha/>



Layered Graph Ranking

- transformation of multigraph to layered graph
- each layer contains only one type of edge
- layers are context independent
- precalculation of ranks for each layer
- final ranks computed as linear combination of ranks on each layer



Future work

- comparison of linear layered combination ranks versus full graph propagation ranks
- automatic learning of context edge weights using implicit feedback

Acknowledgment

This work was partially supported by the Slovak Research and Development Agency under the contract No. APVT-20-00710 and the State programme of research and development "Establishing of Information Society" under the contract No. 1025/04.

Institute of Informatics and Software Engineering

Faculty of Informatics and Information Technologies, Slovak University of Technology in Bratislava, Slovakia