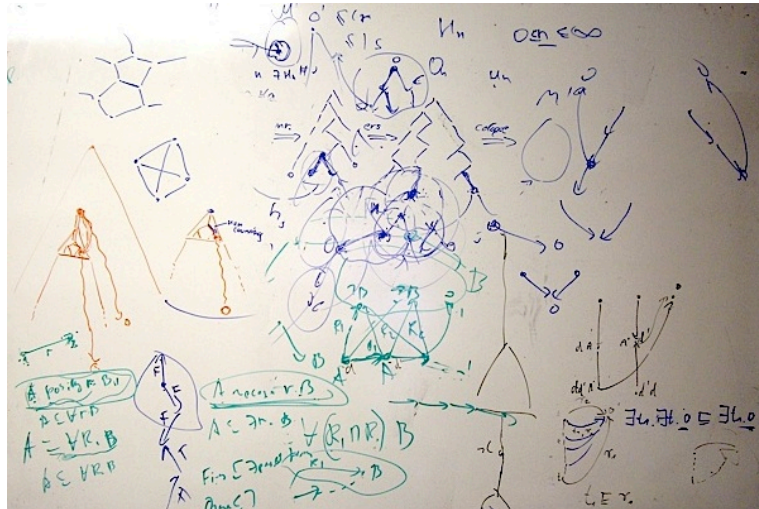


15
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**Коллоквиум
факультета
компьютерных наук
НИУ ВШЭ**



Sebastian Rudolph
TU Dresden
**Decidability of Con-
junctive Queries for
Description Logics
with Counting, In-
verses and Nominals**

Description Logics (DLs) are Knowledge Representation formalisms with a great significance for Semantic Web technologies. For instance, the ontology specification languages OWL DL and its successor OWL 2 DL, standardized by the World Wide Web Consortium (W3C), are based on DL languages. Conjunctive queries constitute the standard querying paradigm for data bases and have in recent years attracted increasing interest in the area of logic-based knowledge representation. While decidability and computational complexity are mainly clarified for standard DL reasoning tasks (such as knowledge base consistency or axiom entailment), decidability of conjunctive query answering in OWL DL and OWL 2 DL is still an open problem. Over a comparatively long time, a major obstacle towards the solution of this problem was the intricate interplay of three modeling features: nominal concepts, inverse roles and cardinality constraints.

In my talk, I will present results that, for the first time, establish decidability of a DL containing all three constructs. For a slightly restricted class of conjunctive queries (i.e., queries with only simple roles), our result also shows decidability in the logics that underpin OWL DL and OWL 2 DL. This work was carried out in the course of a research stay at Oxford University and has been published in the Journal of Artificial Intelligence Research: <http://jair.org/papers/paper3029.html>.

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