TECHNISCHE UNIVERSITÄT DRESDEN

RULE-BASED PARADIGMS IN KNOWLEDGE REPRESENTATION

Seminar-Session 1: Introduction, Motivation, and Organisation

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Introduction

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Organisation

“Lecture” phase

- On Wednesdays, DS 5
- Today: Kick-off meeting
- Next week: Overview on topics, concrete research papers
- Optional sessions: **“How to (not) present”**, **“Structure of a research paper”**, . . .

Self-organised phase, directly after topic-assignments

- Direct supervision
  - At the usual slot (Wed, DS 5)
  - During office hours (check personal website, currently Thu, 14:00-15:00)

Presentation and Summary

- Towards the end of the semester
- Present your research-topic
- Write a paper-summary

Learning objectives

Part I

Literature

- Recognize need for related work
- Identify sources (literature search)
- Assemble information based on literature

Professional expertise

- Reflect on a topic
- Classify, summarise and differentiate on the topic
- Explain the topic to others

Learning objectives

Part II

Presentation

- Design presentation slides
- Plan and present your talk

Scientific writing

- Determine interesting results
- Provide an appropriate overview of prelimaries
- Judge and reflect on the work by writing your own
  - Introduction,
  - Conclusion, and
  - Related work section.

Evaluation

Check your examination requirements - and tell me

Paper summary

- Self-selected research paper
- 6-10 pages, without references in a given scientific style
- Introduction, conclusion, and related work from your point of view

Presentation

- 20 minutes + discussion
- Participation in all other presentations

Communication

General

- Matrix: channel for direct communication between all participants and the lecturer
  `https://matrix.to/#/#RuleBasedKR2021:tu-dresden.de`
- News on Website
  `https://iccl.inf.tu-dresden.de/web/Seminar_Rule-Based_Paradigms_in_KR_(WS2021)/en`

Personal

- Matrix: private conversation (@stel830c:tu-dresden.de)
- Email (stefan.ellmauthaler@tu-dresden.de)
- During the usual slot (Wed, DS 5)
- During office-hours (currently Thu, 14:00-15:00)
- On appointment

Topic overview

Rule-based Paradigms

Rules to **represent**, **manipulate**, **query**, and **generate** knowledge in various formalisms.

Rule

simple implication - $A \rightarrow B$, often written as $B :- A$

Paradigms

- **A**nswer **S**et **P**rogramming (ASP)
- `Datalog`
- Distributed Rule-Based Reasoning (e.g. multi-context systems)

Focus

Our focus will be on advanced techniques, related to these topics.

Good Reads
First References

- Abiteboul, S.; Hull, R. & Vianu, V. **Foundations of databases.**[1] Addison-Wesley Reading, 1995, 8
- Brewka, G.; Eiter, T. & Truszczynski, M. **Answer set programming at a glance**[2] Communications of the ACM, Association for Computing Machinery (ACM), 2011, 54, 92-103
- Dantsin, E.; Eiter, T.; Gottlob, G. & Voronkov, A. **Complexity and expressive power of logic programming.**[3] Proceedings of Computational Complexity. Twelfth Annual IEEE Conference, IEEE Comput. Soc, 2001, 33, 374-425

[1] **Alice-Book**: Great Introduction to DB-Theory and rule-based query languages

[2] Nice primer to ASP

[3] Dense Paper, hard to read entirely, great for detailed information