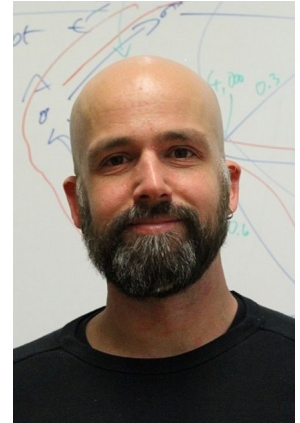# Semantic Web Technologies Organization

Heiko Paulheim

Hello

- Prof. Dr. Heiko Paulheim
  - Chair for Data Science
- Research Interests:
  - Knowledge Graphs on the Web and their Applications
  - Data Quality and Data Cleaning on Knowledge Graphs
  - Using Knowledge Graphs in Data Mining
  - Societal Impact of Artificial Intelligence
- Room: B6 26, B0.22
- Consultation: Tuesdays 9-10
  - Please make an appointment with Bianca Lermer upfront
- Heiko will teach the lectures

Hello

- M.Sc. Sven Hertling

- Graduate Research Associate

- Research Interests:
  - Semantic Technologies / Semantic Web
  - Linked Data
  - Knowledge Graphs

- eMail: sven@informatik.uni-mannheim.de

- Sven will teach the *Python* exercises
  and co-supervise the team projects.

Introduction and Course Outline

- Administration

- Introduction

    - Vision of the Semantic Web

    - Building blocks of the Semantic Web

    - Technical foundations

Course Organization

- Lecture
  - Semantic Web standards and languages
  - Programming for the semantic web
  - Creating semantic web data
- Exercise
  - Understand semantic web principles, play with real data
- Project Work
  - teams of 3-4 students build a Semantic Web application
  - teams may choose their own data sets and tasks
    (in addition, we will propose some pointers for ideas)
  - write summary about project, present project results
  - **not graded, but mandatory**

- Final exam
  - **final grades are only based on written exam**

Course Organization

- Registration

  - you have registered via Portal2

  - there is a waiting list

  - if you decide not to attend, please write to Ms. Czanderle

Course Contents and Schedule

- Today: Introduction

- 16.09.19: Knowledge Representation with RDF

- 23.09.19: Simple ontologies with RDF Schema

- 30.09.19: Linked Open Data, Programming the Semantic Web

- 07.10.19: SPARQL, Intro to student projects

- 14.10.19: Knowledge Graphs

- 21.10.19: Complex Ontologies with OWL

- 28.10.19: Reasoning with complex ontologies

- 04.11.19: Ontology engineering, top level ontologies

- 11.11.19: Semantic Web Data Quality and Interlinking

- 18.11.19: Rule languages and non-standard Semantic Web languages

- 25.11.19: *Project Presentations*

- 02.12.19: *Project Presentations*

Deadlines

- Submission of project work proposal
    - Sunday, October 13th 23:59

- Submission of final project work report
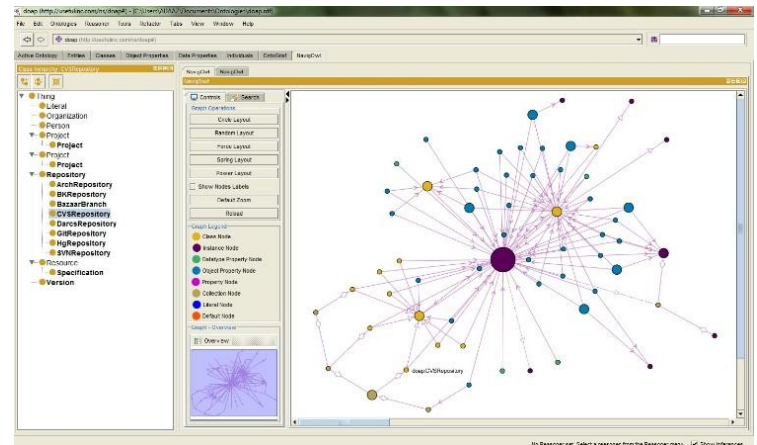   - Sunday, November 24th, 23:59

Course Organization

- Lecture Webpage: Slides, Announcements, Web Links

  - hint: look at version tags of slides!

- Additional Material

  - ILIAS eLearning System, https://ilias.uni-mannheim.de/

- Time and Location

  - Lecture: Monday, 13.45 – 15.15, Room B6 A1.04

  - Exercise: Friday, 12.00 - 13.30, Room B6 A1.04

Further Reading and Software

- Follow the links on the website
    - Most material is available online

- Programming environment
    - JENA framework (Java)
    - RDFlib (Python)

- Ontology engineering environment
    - Protégé
    - http://protege.stanford.edu/

Warning

- This lecture contains
  - cartoons
  - Java and Python code
  - some digressions to philosophy

- Having said that:
  - have fun! :-)

Questions?