Data and Knowledge Engineering for Intelligent Systems

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Taiwan 2017
1. Computer Science in Würzburg, Summer School

2. Country and City: Germany, Würzburg

3. Research Aspects
Computer Science

Computer science is used in many application areas, including business, industry, and internet.

Professor Aja (Shih-Chieh) Huang from NTNU is a co-author of the game playing program AlphaGo.

In Würzburg, we have are investigating the internet, information systems, software engineering, aerospace technologies, and we have a study program on Games Engineering.
Computer Science in Würzburg

The University of Würzburg has about 30,000 students, the city has about 130,000 inhabitants.

CS Studies (each including a Thesis)

<table>
<thead>
<tr>
<th>Type</th>
<th>Years</th>
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<tbody>
<tr>
<td>Bachelor</td>
<td>3–4</td>
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<tr>
<td>Master</td>
<td>2–3</td>
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<tr>
<td>PhD</td>
<td>3–5</td>
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CS Topics

- Databases, Artificial Intelligence, Semantic Web
- Software Engineering, Algorithms, Hardware
- Aerospace, Human Computer Interaction
Summer School

Topic: Advanced Database and Logic Programming Concepts

- September 17–21, 2017
- a 5-day summer school for students and PhD students
- a complete schedule will be announced until May 2017
  - usually teaching in the morning,
  - exercises/labs in the afternoon

Co–Located with the Conference Declare
http://www.declare17.de
Germany – Castle in Würzburg (Bavaria)
Residency in Würzburg
Capital of Germany – Berlin, Brandenburg Gate
East Germany – Dresden
South Germany – Neuschwanstein
Modern intelligent and web–based information systems frequently need to integrate hybrid knowledge bases, containing, e.g.,

- relational / deductive,
- semi–structured, NoSQL,
- semantice web / linked open data.

We are investigating declarative and domain–specific languages for information systems.
Multi–Paradigm Programming

- Traditional, *imperative* programming languages tell the computer exactly how to accomplish a desired goal.
Multi-Paradigm Programming

- Modern, declarative programming languages will only have to specify the desired goal to the computer, e.g.
  - Database Languages,
  - Rules in Decision Support,
  - Semantic Web (ontologies).

- Imperative programming languages can profit from declarative specifications.

- We investigate integrations of declarative concepts into popular imperative languages, such as Java, JavaScript, and Python.
Applications

Aerospace

- High-Level Planning in Nano Satellites

- Code Analysis with Abstract Syntax Trees for C++
Applications

Digital Humanities
- Collaborative Morpheme Annotation
- Kallimachos (digital libraries)

Rule Bases for Expert Systems
- diagnosis in industry and medicine
Further Applications

Sports

- Image Recognition – Ball Trajectories in Tennis
- Decision Support – Analysis of Tactical Behaviour
Further Applications

Bioinformatics

- Language and Genome
- Metabolic Pathways, Drug Design
Further Applications

Industry

- Root Cause Analysis in Computer Networks
- Business Rules in E–Commerce

if 'Processes in ERP System' = partly
then 'Processes in other Software' = partly .

if 'Existence of other Software' = yes
and 'Functionality of other Software' = increasing
and 'Acceptance of other Software' = increasing
then 'Acceptance of ERP System' = decreasing .

if 'Use of other Software' = increasing/constant
then 'Acceptance of ERP System by Users' = decreasing .
Declare

Conference and Summer School
www.declare17.de
Würzburg, September 2017

Thanks for your attention!