Technology
Arts Sciences
TH Köln

Course
IIS - Intelligent Information Systems

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General information

Long name	Intelligent Information Systems
Approving CModule	IIS_MaTIN
Responsible	Prof. Dr. Andreas Behrend Professor Fakultät IME
Level	Master
Semester in the year	summer semester
Duration	Semester
Hours in self-study	60
ECTS	5
Professors	Prof. Dr. Andreas Behrend Professor Fakultät IME
Requirements	programming skills, knowledge about data structures and algorithms
Language	German, English if necessary
Separate final exam	Yes

Final exam

Details

written exam

Minimum standard

roughly 50%

Exam Type

written exam

Lecture / Exercises

Learning goals

Knowledge

Foundations of Knowledge Representation
- First-order logic
- relational, functional, tree-based, graph-oriented fact representation
(semantic networks, ontologies)
- rule-based systems

Automatic reasoning and inference methods
- resolution principle (incl. unification)
- forward and backward chaining
- fixpoint semantics

Declarative Programming languages
- Functional programming
- relational (logical) programming , e.g., Prolog, Datalog, SQL and SPARQL

Outlock on current research issues, e.g., query languages, parallel algorithms, distributed systems, combinatorial optimization and language processing.

Skills

Students have acquired basic knowledge about methods for representing knowledge, automatic reasoning as well as declarative programming languages. They understand the various ways of operationalizing declarative expressions and are able to realize suitable programming solutions for given problems.

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Lecture	2
Exercises (whole course)	2
Exercises (shared course)	0
Tutorial (voluntary)	0

Separate exam

none

Practical training

Learning goals

Skills

Representing knowledge by sets of tuples, relations, semantic networks as well as logic-based systems
Implementing calculation problems with a functional programming language (e.g. Haskell) using expressions, algebraic data types, infinite data structures and higher-order functions
Solving search problems with a logical programming language and recursive expressions
Formulating relational queries over knowledge bases (e.g. using SPQAQL or Datalog)

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Practical training	1
Tutorial (voluntary)	0

Separate exam

none

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