inf535 - Computational Intelligence I

Module label: Computational Intelligence I
Module code: inf535
Credit points: 6.0 KP
Workload: 180 h

Used in course of study:
- Master's Programme Computing Science > Angewandte Informatik
- Master's Programme Environmental Modelling > Mastermodule

Contact person:
Module responsibility:
- Oliver Kramer
- Die im Modul Lehrenden

Authorized examiners:
- Oliver Kramer
- Die im Modul Lehrenden

Entry requirements:

Skills to be acquired in this module:

Professional competence:
The students:
- recognise optimisation problems
- implement simple algorithms of heuristic optimisation
- critically discuss solutions and selection of methods
- deepen previous knowledge of analysis and linear algebra

Methodological competence:
The students:
- deepen programming skills
- apply modelling skills
- learn about the relation between problem class and method selection

Social competence:
The students:
- cooperatively implement content introduced in lecture
- evaluate own solutions and compare them with those of their peers

Self-competence:
The students:
- evaluate own skills with reference to peers
- realize personal limitations
- adapt own problem solving approaches with reference to required method competences

Module contents:
Computational Intelligence comprises intelligent and adaptive methods for optimisation and learning. The module "Computational Intelligence I" concentrates on methods for evolutionary optimisation and heuristic approaches. The exercises introduce and deepen practical aspects of the implementation and algorithmic design, also taking into account application aspects.

Overview of Content:

- foundations of optimisation
- genetic algorithms and evolution strategies
- parameter control and self-adaptation
- runtime analysis
- swarm algorithms
- constrained optimisation
- multi-objective optimisation
- meta-modeling
Reader’s advisory


Links
Language of instruction: German
Duration (semesters): 1 Semester
Module frequency: jährlich
Module capacity: unlimited
Modullevel: AS (Akzentsetzung / Accentuation)
Modulart: je nach Studiengang Pflicht oder Wahlpflicht
Lern-/Lehrform / Type of program:
Vorkenntnisse / Previous knowledge: Grundlagen der Statistik

<table>
<thead>
<tr>
<th>Examination</th>
<th>Time of examination</th>
<th>Type of examination</th>
<th>Written or oral exam</th>
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<tbody>
<tr>
<td>Final exam of module</td>
<td>At the end of the lecture period</td>
<td>Written or oral exam</td>
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Course type | Comment | SWS | Frequency | Workload attendance |
------------|---------|-----|-----------|--------------------|
Lecture     | 2.00    |     |           | 28 h               |
Exercises   | 2.00    |     |           | 28 h               |

Total time of attendance for the module: 56 h