inf536 - Computational Intelligence II

Module label: Computational Intelligence II
Module code: inf536
Credit points: 6.0 KP
Workload: 180 h

Used in course of study:
- Master's Programme Computing Science > Angewandte Informatik
- Master's Programme Engineering of Socio-Technical Systems > Embedded Brain Computer Interaction
- Master's Programme Environmental Modelling > Mastermodule

Contact person

Module responsibility:
- Oliver Kramer

Authorized examiners:
- Die im Modul Lehrenden
- Oliver Kramer

Entry requirements

Skills to be acquired in this module

Professional competence
The students:
- Recognise machine learning problems
- Implement simple algorithms of machine learning
- 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 w.r.t. peers
- Realise personal limitations
- Adapt own problem solving approaches w.r.t. required method competences

Module contents

Computational Intelligence comprises intelligent and adaptive methods for optimisation and learning.
The module "Computational Intelligence II" concentrates on methods for machine learning and data mining. The exercises introduce and deepen practical aspects of the implementation and algorithmic design, also taking into account application aspects.

Overview of Content:

- Foundations of learning and classification
- Nearest neighbouring methods
- Model selection and parameter tuning
- Regression
- Support vector and kernel methods
- Clustering
- Dimensionality reduction
Reader’s advisory

- HASTIE, T., TIBSHIRANI, R., FRIEDMAN, J.H.: The Elements of Statistical Learning, Springer 2009

Links

Languages of instruction: German, English
Duration (semesters): 1 Semester
Module frequency: once a year
Module capacity: unlimited
Module level: AS (Akzentsetzung / Accentuation)
Modulart: Pflicht o. Wahlpflicht / compulsory or optional

Languages of instruction / Type of program: V+Ü

Vorkenntnisse / Previous knowledge:
- inf535 Computational Intelligence I
- Statistics

Examination

Final exam of module: Time of examination: At the end of the semester
Type of examination: Written or oral exam

Course type
Lecture: Comment: 2.00 SWS SuSe 28 h
Exercises: Comment: 2.00 SWS SuSe 28 h

Total time of attendance for the module: 56 h