

Modulbeschreibung

Introduction to Machine Learning

Module numbers:	30.2588 [PVL 30.2589]
Language:	english
Study programme:	Bachelor KMI 2024/2021 - Wahlpflichtkatalog I Bachelor 2021 - Wahlpflichtkatalog I Bachelor dual KITS 2021 - Wahlpflichtkatalog I Bachelor dual KoSI 2021 - Wahlpflichtkatalog I Bachelor 2014 - Katalog I: Anwendungs- und systemorientierte Module Bachelor KMI 2014 - Katalog I: Anwendungs- und systemorientierte Module Bachelor dual KoSI 2014 - Katalog I: Anwendungs- und systemorientierte Module Bachelor 2007 - Vertiefung AE: Application Engineering KoSI 2007/2004/2003/2002/99 - Wahlpflichtfächer aus dem Informatikbereich KoSI 2007 - Vertiefung AE: Application Engineering
Type of course:	V+P = Lecture+Practical
Weekly hours:	3+1
Credit Points:	5
Exam:	Accompanying tests and evaluation of the solution of the problem sets
PVL (e.g. Practical):	not graded
Required knowledge:	linear algebra, statistics, basics of programming
Learning objectives:	The students will be able to apply learning algorithms to building smart robots (perception, control), text understanding (web search, anti-spam), computer vision, medical informatics, audio, database mining, and other areas.
Content:	1. Linear Regression with One Variable 2. Linear Algebra Review 3. Linear Regression with Multiple Variables 4. Logistic Regression 5. Regularization 6. Neural Networks: Representation 7. Neural Networks: Learning 8. Deep Learning 9. Decision trees 10. Machine Learning System Design 11. Unsupervised Learning (clustering) 12. Dimensionality Reduction 13. Anomaly Detection 14. Recommender Systems 15. Large Scale Machine Learning
Literature:	1. Mitchell, Tom. Machine Learning. New York, NY: McGraw-Hill, 1997. ISBN: 9780070428072 . 2. https://www.coursera.org/learn/machine-learning 3. MacKay, David. Information Theory, Inference, and Learning Algorithms. Cambridge, UK: Cambridge University Press, 2003. ISBN: 9780521642989 . Available on-line http://www.inference.phy.cam.ac.uk/mackay/itila/book.html
Lecture style / Teaching aids:	15 Lessons with 4 problemsets
Responsibility:	Arnim Malcherek
Professional competencies:	• formal, algorithmic, mathematical competencies: high • analytical, design and implementation competencies: high • technological competencies: high • capability for scientific work: low
Interdisciplinary competencies:	• project related competencies: medium • interdisciplinary expertise: basic technical and natural scientific competence • social and self-competencies: analytical competence, competence of knowledge acquisition, fluency