



Universität Hamburg

DER FORSCHUNG | DER LEHRE | DER BILDUNG

CHAMPP

CENTER IN HAMBURG FOR
ASTRO-, MATHEMATICAL AND
PARTICLE PHYSICS

LECTURE COURSE IN THE QUANTUM UNIVERSE RESEARCH SCHOOL

Summer Term 2021

Machine Learning

Christina Brandt and Armin Iske

Course Description:

This course gives a mathematical introduction to machine learning.

Topics include (but are not limited to):

- Basic concepts from mathematics for machine learning
- Dimensionality reduction and manifold learning
- Kernel-based learning algorithms
- Support vector machines
- Data clustering
- Variational regularization
- Nonsmooth optimization by proximal gradient methods
- Classification methods, including binary classification
- Neural networks
- Network training algorithms
- Deep learning in inverse problems

Prerequisites:

Participants from all disciplines (with sufficient maths background) are welcome!

Date and Place:

Mon, 10:15–11:45, Moodle

<https://lernen.min.uni-hamburg.de/course/view.php?id=1132>,

Passcode: ML2021

Problem Classes:

Project class: Mon 14:15–15:45, Moodle

Starting on:

12 April 2021
