Organization

Venue
The course will be held online. Details about used tools and how to connect will be shared with registered participants.

Registration
Deadline for registration is January 21, 2021.

Course fee
The fee for the course is € 645; discounted rate for affiliated with a university € 430.

Cancellation
The cancellation policy is as follows: 100% refund for cancellations till January 27; 75% refund for cancellations between January 28 and February 3; no refund for cancellations after February 4, 2021.

Attendee substitutes may be made at any time.

Information
http://www.biometrie.uni-heidelberg.de/datascience

Concept and Contents
University of Heidelberg
Institute of Medical Biometry and Informatics
Department of Medical Biometry
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Organization
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Number of Participants
The number of participants is limited to 20 per course.

Pre-requisite
Knowledge of mathematical principles including basic knowledge of probability theory.
Basic knowledge of the statistical programming software R is needed.
Basic understanding of regression modelling techniques.

Course instructors
Dr. Katharina Hees
Postdoctoral, TU Dortmund University

Further lecturers
Dr. Lorenz Uhlmann, Novartis Basel
Prof. Dr. Schmid, Institut für Medizinische Biometrie, Informatik und Epidemiologie, Universitätsklinikum Bonn
Dr. Thomas Welchowski, Institut für Medizinische Biometrie, Informatik und Epidemiologie, Universitätsklinikum Bonn
Maximilian Pilz, Institut für Medizinische Biometrie und Informatik, Universitätsklinikum Heidelberg

Aims
Course participants will be able to:
- Assess and validate a statistical (supervised) model
- Select an appropriate model for a supervised learning situation and relevant exploratory variables
- Conduct statistical (supervised learning) algorithms and to implement it in the statistical software R
- Interpret results of statistical models

Course content
The course will cover the following topics:
- Regularization methods for linear regression
- Model assessment and selection
- Neural networks
- Decision trees
- Random forests
- Bagging and boosting

Pre-requisites
The participants must have
- Basic knowledge of statistics and probability theory
- Basic knowledge in R

Schedule
Thursday (11th February)
9:00 – 10:30  Model Assessment and Selection I
11:00 – 12:30 Model Assessment and Selection II
13:30 – 15:00 Regularized regression methods I
15:30 – 17:00 Regularized regression methods II

Friday (12th February)
9:00 – 10:15 Support Vector Machines I
10:45 – 12:00 Support Vector Machines I
13:00 – 15:00 Neural Networks and Deep Learning I
15:30 – 17:30 Neural Networks and Deep Learning II

Saturday (13th February)
9:00 – 10:30 Prototype methods
10:45 – 12:15 Tree based & ensemble methods I
12:45 – 14:15 Tree based & ensemble methods II