

35780: Advanced Data Analytics (Winter term 2023-2024) – lecture

35781: Tutorial

Announcement of course organization

A. Contents

The course covers key state of the art techniques in statistical learning/machine learning. The emphasis of the course is on techniques from supervised learning in the context of regression modeling. The following content is covered: Fundamental concepts (bias-variance trade-off, curse of dimensionality, flexibility vs. interpretability, resampling techniques), key building blocks (parametric polynomials, spline-regression, tree-based modeling), and frequently employed algorithms (lasso, backfitting, random forest, boosting). Prediction and inference are discussed. Selected applications are used to motivate the different algorithms.

B. Prerequisites and Organization

Basic understanding of calculus and matrix algebra, introductory statistics including inferential methods, regression analysis, and testing methods. Basic knowledge of statistical software R is an advantage. Please bring a laptop with [R](#) installed to class.

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| • Stud.IP | Lecture 35780; Tutorial 35781. |
| • Date | Blocked during weeks 40 and 41 (October 04-05 & 09-11, 2023). |
| • Structure | 2x12 slots: Theory, pen & paper tutorials, and "hands-on" R sessions. |
| • Organization | Each slot will cover approx. 60 minutes, plus discussion time. |
| • Language | English/English. |
| • Room & Time | Tba, 10.00-16.00h. |
| • Examination | End of October/beginning of November; will be discussed in class. |

C. Registration and course materials

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| • Course registration | Sign up Stud.IP no. 35780 & 35781 until September 15, 2023. |
| • Exam registration | Examination no. 261004 creditable with 5 ECTS for students with degree programme MA AIE / MBA / MA CompMath / MA IEB or MA WI directly during the course by signing up on the list provided by lecturer Dr. Markus Fritsch. |
| • Course materials | All course materials will be distributed via Stud.IP. |