

## Seminar Business Analytics: Data Analysis and Visualization in R

Winter Term 2017/2018

### Course Description:

Prior to the start of the Information Age in the late 20th century, companies were forced to collect data from non-automated sources manually. Companies back then lacked the computing capabilities necessary for data to be analyzed, and as a result, decisions primarily originated not from knowledge but from intuition. With the emergence of ubiquitous computing technology, company decisions nowadays rely strongly on computer-aided “**Data Mining**”.

In this seminar, we will focus on what distinguishes the varying capabilities across Data Mining – namely the underlying methods. We will review different strategies for data collection, data analysis, and data visualization. Sample approaches include dimension reduction of big data, data visualization, model selection, clustering and forecasting.

In particular, the seminar will answer the following questions:

- **Forecasting:** Based on historical values, how can businesses predict future developments ahead of time? Given the current stock market prices, can we predict tomorrow's values?
- **Data analysis:** How does weather impact electricity prices? Which parameters of second-hand cars correlate with their value?
- **Clustering:** How can businesses group consumers into distinct categories according to their purchase behavior? Can businesses group job applicants into groups of similar characteristics?
- **Dimension reduction:** How can businesses simplify a large amount of indicators into a smaller subset with similar significance? Can the huge set of features characterizing supermarkets (e.g. gas station, discounts, service) be combined into groups?

Individual assignments will consist of a specific problem from Data Mining. Each participant will be provided with a dataset to which a certain method should be applied to using the statistics software R.

**Target Group:**

This Seminar specifically addresses students all IMP disciplines, as well as in the M.Sc. Economics and M.Sc. VWL programs. Interested and committed B.Sc. VWL and BWL students may also participate.

**Organization:**

Registration: from Oktober 01, 2017 to October 26, 2017

Application via email to [carla.li-sai@is.uni-freiburg.de](mailto:carla.li-sai@is.uni-freiburg.de) with the following details:

- First name, last name
- Matriculation number (Matrikelnummer)
- Email, phone number
- Study program, semester
- Transcript of Records (Leistungsübersicht)
- Curriculum Vitae (Lebenslauf)

Response whether application was successful will be given at the beginning of November, 2017

First meeting: **November 13, 2017 at 10ct**

Room 2330

Paper draft due: January 22, 2018

Final presentation: January 29, 2018, room 2330, KG2, 9 am

Final Paper due: March 16, 2018

**Communication:**

All announcements, handouts, etc. will be sent via email.

**Topics:**

Exact topics along with hints on literature will be announced at a later point. Each participant will have to work on an assignment with the statistics software "R".

**Policies and Procedures****Grading:**

Draft of seminar paper (about 10 to 15 pages), corrected version thereof and presentation  
The seminar paper can be written in English only.

**Credit points:**

4 for Bachelor, 6 for Master  
Study program will be considered in topic assignment

Credit points are applicable to:

Wirtschaftsinformatik, BWL

**Chair:**

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