Seminar Business Analytics:
Data Analytics in R

Summer Semester 2017

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 February 20, 2017 to April 20, 2017

Application via email to carla.li-sai@is.uni-freiburg.de with the following details:

- First name, last name
- Matriculation number (Matrikelnummer)
- Email, phone number
- Study program, semester
- Previous grades in statistics, econometrics and computational economics

Response whether application was successful in the beginning of May, 2017

The grading will take into account the study level (Bachelor/Master) of the individual participant.

First meeting: May 10, 2017 at 2 pm.

Room 2330

Final presentation: In July or August 2017 (date to be announced)

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 give an introduction into a specific library from the statistics software “R”.

Upon request, this course can count as a “Topics” course if the student fulfils the eligibility. If so, the student is required to extend the paper, adapt it to a conference form/layout.

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. The grading will take into account the study level (Bachelor/Master) of the individual participant
Credit points:	6
Credit points are applicable to:	Wirtschaftsinformatik, BWL
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