

Seminar in Business Analytics: Data Analytics with R and Python Summer Term 2020

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**”.

Business Intelligence refers to technologies that target how business information (or sometimes information in general) is collected, analyzed and presented. Combining these features results in software called Business Intelligence systems. These systems serve the purpose of providing better decision support.

In this seminar, students review different strategies for data analysis and data visualization. Alternatively, students are asked to describe and visualize the content of their dataset and pick a statistical method / data mining algorithm of their choice and perform a descriptive or predictive data mining task on their dataset.

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 programming languages Python or R.

Target Group:

This Seminar specifically addresses students all IMP disciplines, as well as in the M.Sc. Economics and M.Sc. VWL programs.

Organization:

Registration: Until May 3, 2020

Application via email to gunther.gust@is.uni-freiburg.de. **Make sure the following information is contained in the email body:**

- First name, last name
- Matriculation number (Matrikelnummer)
- Current overall grade average
- Attended lectures and seminars at our chair and grade obtained
- Email, phone number
- Study program, semester
- Short description of experience level in Python or R

In addition, you need to send your **transcript of records in the attachment**.

Response whether application was successful will be sent out shortly after the registration deadline

First meeting: **May 12, 2020 at 17ct (Online Meeting)**

Paper due: **Jul 3, 2020**

Online presentations: **Jul 9, 2020, 16 ct.**

Revised paper due: **Aug 31, 2020**

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.

Policies and Procedures**Grading:**

Paper (about 15 pages, 50%) and revised final paper (50%). In addition, you have to hand in your programming code and datasets (if applicable). In addition, there will be a presentation session (online), where the participants get feedback on their preliminary work. The seminar paper can be written in English only.

Credit points:

6

Credit points are applicable to:

M.Sc. BWL PNPM: Allgemeine BWL, Wirtschaftsinformatik
M.Sc. VWL (2011): BWL, Wirtschaftsinformatik
M.Sc. VWL (2014): Business Analytics
M.Sc. Economics: Elective in Information Systems and Network Economics profile
M.Sc. Computer Science: Wahlmodule BWL und VWL

Chair:

Prof. Dr. Dirk Neumann
Albert-Ludwigs-Universität
Chair of Information Systems
Platz der Alten Synagoge
79085 Freiburg
Germany