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Albert-Ludwigs-Universität Freiburg
Abteilung für Wirtschaftsinformatik
Information Systems Research
Prof. Dr. Dirk Neumann

Wirtschaftsinformatik für die Unternehmensführung: Business Intelligence – Lecture & Exercise Summer Semester 2024

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 "Business Intelligence".

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 lecture, we will focus on what distinguishes the varying capabilities across Business Intelligence systems – 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 lecture 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?

Target group: Bachelor of Science VWL

Credit points: 6

Credits points are accreditable to: Wirtschaftsinformatik

Language: German (with English lecture slides)

Timeframe and Location

There will be two timeslots (note the different rooms!):

- Monday: 12 – 14 KG1, HS 1010

- Monday: 16 – 18 KG1, HS 1015

In the beginning the lecture will take place in both timeslots.
Later, the exercise sessions will take place in both timeslots.
The first session (lecture) starts on 22.04.24, 12:15. The complete schedule will then be announced.

Literature: E. Turban, R. Sharda, D. Delen, D. King:
Business Intelligence: A Managerial Approach, 2nd Edition
Int. Edition Pearson 2011

T. Mitchell:
Machine Learning
McGraw-Hill 1997

G. James, D. Witten, T. Hastie, R. Tibshirani:
An Introduction to Statistical Learning
(with Applications in R), 2nd Edition
Springer 2023

C. Bishop:
Pattern Recognition and Machine Learning Springer
2007

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