The bioinformatics research lab at the Technical University of Munich, TUM Campus Straubing for Biotechnology and Sustainability and Weihenstephan-Triesdorf University of Applied Sciences is looking for a candidate for a Bachelor's or Master's thesis with the topic

Statistical Analysis of Sales of an Online Trader

at the earliest possible date.

This thesis will be done in cooperation with an online trader who is selling his products on several platforms. Predicting the future based on historical observations is a common problem in many areas. For this purpose, modern statistical and machine learning based methods for Time Series Prediction are widely applied. Sales of an online trader are usually influenced by various factors, such as regional events. Thus, the goal is to integrate prior knowledge in order to guide the analysis and decision-making at the cooperating online trader. The identification and assessment of those external factors will be the main objective of this thesis.

After a thorough literature research, you will conduct data analysis to gain first insights on the structure and properties of the dataset. Afterwards you will focus on the identification of possible influencing factors, which you will derive from your literature research as well as from interviews with experts. In addition, you will implement code to add those factors to your dataset and conduct statistical analysis to assess their relevance. Furthermore, you will deal with the interpretation of the results and visualize them. Finally, you will draw conclusions on the most significant features. A possible extension of your work is the application of modern statistical and machine learning based methods to predict future sales by using multivariate features.

Your tasks:

- Literature research on sales prediction and possible influencing factors
- Expert interviews with the goal of identifying relevant features
- Implementation of code to add external features to your dataset
- Implementation of methods for a statistical analysis
- Visualization and interpretation of the results and the most relevant factors
- Possible extension: usage of modern statistical or machine learning based methods for sales prediction

Your skills:

- You are close to finishing your Bachelor's or Master's degree, preferably in a technical field
- Basic programming knowledge, preferably in Python
- Good programming skills are an advantage
- Basic knowledge of statistics and good mathematical skills
- First experience with statistical models and machine learning are a plus
- Strong motivation and interest for computer science and machine learning
- Ability to work and learn new topics autonomously
- Proactive, goal-oriented and communicative way of working
- Good language competence in English, written as well as spoken

Technische Universität München
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