

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

Evaluation of modern Time Series Forecasting approaches for sales of small and medium-sized companies

at the earliest possible date.

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 Forecasting are widely applied. Some of the best performing modern approaches were developed based on large datasets, which are usually not available in small and medium-sized companies. The goal of this thesis is to evaluate whether they are nevertheless applicable for horticultural sales predictions based on datasets provided by partner companies.

Your tasks:

- Literature research on modern Time Series Forecasting approaches. Potential algorithms are the following ones:
 - o Winning method of the M4 competition <https://www.sciencedirect.com/science/article/abs/pii/S0169207019301153>
 - o MTNet <https://arxiv.org/abs/1809.02105>
 - o TADA <https://ieeexplore.ieee.org/document/8594829>
- Analysis of datasets provided by partner companies
- Implementation of about three modern approaches
- Application of already implemented Time Series Forecasting methods
- Visualization and interpretation of the results based on a comparison of all techniques you used

Your skills:

- You are close to finishing your Bachelor's or Master's degree, preferably in a technical field
- Good programming knowledge, preferably in Python
- Very 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