

Development of a data-driven model for a fed-batch fermentation process using *Escherichia coli* - (m/f/d)

Start in October 2023

Efficient fermentation processes are crucial for industrial biotechnology. Many process parameters can only be determined offline. The resulting time delay limits efficient real-time process control. A soft sensor can overcome this challenge. Based on a model, a soft sensor can continuously measure process parameters that cannot be measured directly with conventional hardware sensors. Therefore, an optimal control of a specific bioprocess and thus maximum yields in minimal fermentation time can be achieved.

The goal of this master thesis is the development of a data-driven model for a fed-batch fermentation process using *Escherichia coli*.

Responsibilities:

- Development of a data-driven model in Python
 - Data Preprocessing
 - Sensitivity Analysis
 - Model Optimization
 - Model Validation

Requirements:

- Passion for programming
- Previous experience in Python
- Ability to work independently
- Modelling experience preferred but not required
- TUM student

We offer

- Insight into an industrial bioprocess
- Your own workstation with a desktop computer

Application

If you are interested, please contact Dennis Beerhalter (dennis.beerhalter@tum).

I will be happy to answer any further questions you may have.

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