

Master thesis

Meta-heuristic optimisation of data preparation and model hyperparameters for biogas prediction based on machine learning



BACKGROUND:

The prediction of dynamic biogas production for the achievement of energy security can be crucial in the near future. Machine learning and neural networks are suitable methods for optimal prediction, but they require an optimized data preparation process, as well as optimised hyperparameters. Several optimisation techniques are available, but their effectiveness on biogas data is still to be tested. The aim of this Master thesis is to implement, apply and evaluate these optimisation methods to existing models and datasets, in order to find the most accurate and efficient methods.

YOUR TASKS:

- Literature review on existing meta-heuristic optimisation procedures
- Analysis of case study and identification of suitable optimisation methods
- Implementation of meta-heuristic optimisation algorithms (eventually with the help of third-party python libraries)
- Evaluation, comparison and discussion of results

YOU HAVE:

- Experience with python (or comparable programming language)
- A Bachelor degree in data science or similar
- Familiarity with machine learning and neural networks
- A curiosity for nature-inspired optimisation techniques

WE OFFER:

- Competent and motivated support in the processing of the tasks
- Hands-on experience with cutting-edge artificial intelligence methods
- Extensive data basis of laboratory and industrial biogas reactors
- The possibility of starting off your working career with crucial computer and data science skills
- A family-friendly, modern working environment in a collegial working atmosphere
- Good public transport connections

BEGINNING:

August, 1st 2022

DURATION:

6 Months

PROCESSING LOCATION:

Deutsches Biomasseforschungszentrum, Torgauer Straße 116, 04347 Leipzig

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APPLICATION DOCUMENTS:

Please submit your compelling application (in a single attachment, preferably as pdf, max. 5 MB), composed by your CV and a 1-page motivational letter

e-Mail: bewerbung@dbfz.de

For an encrypted transmission of your application you can use the upload form Cryptshare.

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