



Reinforcement learning for prediction of dynamic biogas production

The accurate prediction of dynamic biogas production is of paramount importance for achieving energy security in the near future. While supervised learning methods are widely utilized in research, their application in industrial reactors is currently limited due to inherent complexity, demanding data requirements, and low flexibility.

Although reinforcement learning algorithms have received less attention so far, they hold significant potential as effective tools for predicting biogas production at an industrial scale, since they might need less data and computational resources. Additionally, reinforcement learning algorithms can readily be adapted into control methods if needed.

The objective of this master thesis is to implement, apply, and evaluate various reinforcement learning algorithms to successfully predict and potentially control biogas reactors. The biogas reactor's behavior will be represented using data generated by an established mechanistic model.

Requirements:

- Sound experience with Python
- Minimal experience with Matlab
- Existing knowledge regarding reinforcement learning

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