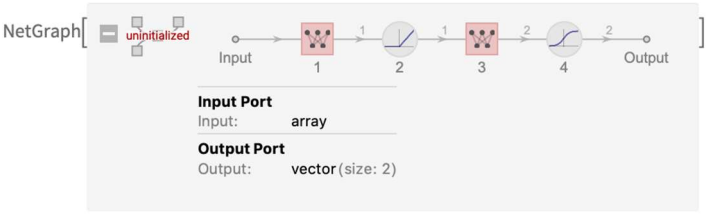
Graz University of Technology
Institute of Chemical Engineering and Environmental Technology

☒ Bachelor's thesis
☒ Plant design exercise
☒ Paid master's thesis
☒ Computational
☐ Experimental
☐ Plant design related

Application of Machine Learning Methods to the Modeling of Fuel Cells and Chemical Reactors

The goal of this topic, which is open to several BSc / MSc / plant design theses, is to apply machine learning methods to model process engineering plants involving chemical reactions, including in particular fuel cells. For this purpose, approaches that have so far been used, e.g., for search engine rankings, for predictions of user behavior or in the field of image and speech recognition [1], shall be applied to industrial operating data of process engineering plants. Examples for such approaches are artificial neural networks or gaussian processes. For this goal, building blocks in Wolfram Mathematica from previous work can be used [2-4]. This topic requires a basic familiarity with the Wolfram Language concepts, e.g., by exploring the website http://www.wolfram.com/wolfram-u/an-elementary-introduction-to-the-wolfram-language/. The theses can largely be done from the home office.



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Literature: [1] https://www.wolfram.com/language/introduction-machine-learning/
[2] https://doi.org/10.1016/j.asoc.2021.107938
[3] https://doi.org/10.1016/j.compchemeng.2021.107510
[4] https://doi.org/10.1016/j.compchemeng.2022.107823