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Institute for Automation and Applied Informatics (IAI)

## Hiwi-Job

# Assistance in the development of a framework for the autonomous, self-optimizing operation of a power-to-methanol plant

Key Words: modeling, PtX, Machine Learning

In order to reduce climate-damaging greenhouse gas emissions, the German energy transition is increasingly focusing on renewable energies and alternative fuels such as e-fuels. The international research project "UP-TO-ME" is working on the development of a new type of power-to-methanol process in which green methanol is produced from electricity from renewable energies and carbon dioxide as a fuel for ships. A container-sized test facility is currently being put into operation in the Energy Lab at KIT Campus North.

In the course of the project, there are always various tasks where we need your help! These may include the following:

- Carrying out simulations of the process with process engineering software to obtain relevant data
- Maintaining the database for storing the process data of the real plant and creating scripts for processing process data
- Development of regression models with various methods for predicting the process data of the plant and the simulations
- Further development of a framework for production planning of the power-to-methanol plant, e.g. the inclusion of current weather data to predict the electricity of a photovoltaic system.

The topics can be adapted and processed according to current needs or your own preferences.

### Education, experience and skills:

- Field of study: mechanical engineering, mechatronics, computer science, electrical engineering (or similar)
- Basic knowledge of Matlab and/or Python
- High motivation and ability to work independently

We are flexible in the choice of weekly working hours. The work can be carried out both on site at the Campus Nord and in the home office.

For further information please contact:

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