

Bachelor- / Master- oder Diplomarbeiten  
im Bereich

# Development of an Python based IIoT Communication Extension for TRNSYS 18

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Interfacing Python and TRNSYS enables the user to benefit from both of the tools, modelling capability of TRNSYS and variety of libraries in Python, e.g. for controller design and optimization. In the industry, OPC-Server and MQTT-Broker are commonly used, whereas MQTT has been established in the field of IIoT (Industrial Internet of Things). In this master thesis, an existing TRNSYS “Residential solar heat-pump battery storage system” model should be extended by the aforementioned communication protocols using Python libraries and applied to a use case (time series based forecasting or system control).

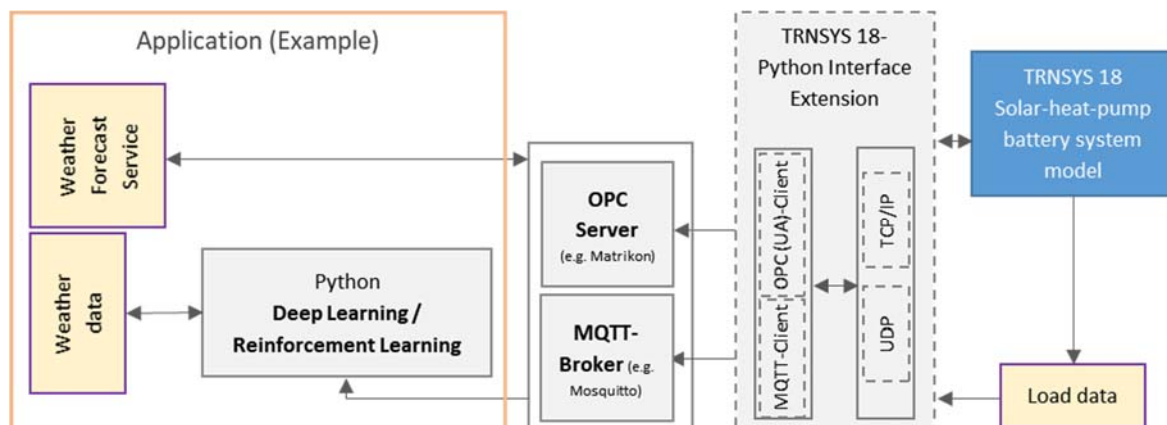


Abb. 1: Extension and application schema of TRNSYS 18 using extended Python Interface

The thesis incorporates follow subtopics of the Master Seminar (MS) and Master Thesis (MT):

- 1) Literature research on interfacing Simulation tools (MS)
- 2) Literature research on MQTT and OPC architecture (in IIoT) (MS)
- 3) Extension of Python-TRNSYS 18 interface with OPC and MQTT architecture using TCP/IP and UDP (MT)
- 4) Application of the extension with a TRNSYS18 residential energy system model (forecasting or system control) (MT)
- 5) Documentation of developed methods, models and achieved results (MS+MT)