

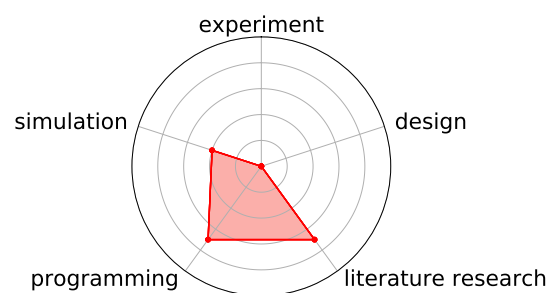
## Bachelor or Master thesis:

# Application of artificial intelligence methods for the energetic optimization of complex energy systems

In the course of the German Energiewende and the associated spread of ever more complex, decentralised energy systems, the requirements for intelligent building automation and control systems are constantly increasing. The optimal use of storage systems is crucial to decouple supply and demand and to transform the sum of many previously autonomous energy systems into smart systems. Methods from the field of artificial intelligence have great potential to support this process. With adaptive algorithms it is possible to predict non-linear system behavior and to support control tasks during operation.

### Your mission:

Based on a concrete energy system at the research location Berlin Adlershof, different algorithms for load prediction as well as for the support of control tasks will be tested. From the areas of deep learning, time series prediction and reinforcement learning, the most promising approaches will be selected and compared. The algorithms can be tested and trained on an existing simulation model of the system. A computing cluster is available for the training of computationally intensive neural networks. In addition, the practical suitability of the methods can be tested on the basis of various criteria.



### Our profil:

The E.ON Energy Research Center at RWTH Aachen University deals with sustainable energy supply concepts that take account of technical feasibility as well as social and economic aspects. The reduction of primary energy consumption in buildings and an increase of indoor comfort are among the research tasks of the institute.

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