HiWi project on
Processing and analysis of multivariate data on energy consumption of private households

The energy transition has also to be a heat transition – especially in the building sector. In 2018 17% of the final energy was used for heating in private households alone. Simple but sufficient models of the buildings are the key to reduce the heating and cooling load. A study based on a survey should help to answer questions like: “What data are required for a good model?” and “Which variables have the most effect on the thermal energy consumption of a building?”. But before the analysis with multivariate methods is possible, the collected data have to be tidied up.

Possible tasks for a HiWi project are
- Extraction and collection of the relevant data from the answers in an online survey
- Conception of suitable data formats and representations
- Support with the evaluation and analysis of the data via e.g. Principal Component Analysis, Factor Analysis, Analysis of Variance, Canonical-Correlation Analysis, Cluster Analysis, different regression methods (logit and LASSO), and further machine learning methods
- Plotting the results

Education, Experience, and Skills:
- Preferable background: science, technology, engineering, mathematics, economics
- Skills:
  - Fun with problem structuring
  - Basic knowledge in statistics
  - First experiences with programming, ideally in R and/or MATLAB, also Python

Conditions:
- Earliest start: August 15, 2020
- Scope: between 30 and 85 hrs/month possible
- Workplace: KIT Campus North, if applicable home office possible

The IAI is a multidisciplinary institute with research in energy, information technologies, and automation. We offer you a flexible and open-minded working environment with free space for your ideas. If you are interested, we would be very happy for your application! In this case, please send a mail with a few lines about your motivation and background as well as a list of covered lectures with grades to sauer@kit.edu.