FORSCHUNGSPRAXIS – IMAGE PROCESSING

fortiss is the state research institute of the Free State of Bavaria for the development of software-intensive systems, based in Munich. The scientists at the institute work in research, development and transfer projects with universities, research institutions and technology leaders in Bavaria, Germany, and Europe. They research and develop methods, techniques, and tools for reliable, secure and comprehensible software solutions and artificial intelligence applications. fortiss is organised in the legal form of a non-profit limited liability company. The shareholders are the Free State of Bavaria (majority shareholder) and the Fraunhofer-Gesellschaft zur Förderung der angewandten Forschung e.V. (Fraunhofer Society for the Promotion of Applied Research).

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Project Description:

The continuous further development of energy distribution grids is a crucial prerequisite for the successful integration of renewable energy, which is often generated decentrally. As generation fluctuates greatly and depends, for example, on weather conditions and the time of day, distribution grids must be configured accordingly to cope with fluctuations in energy generation. Automatic analysis and configuration of the grid is crucial in order to identify bottlenecks or free capacity. However, most grid plans are not yet digitized, which makes automatic analysis difficult as the basic information has to be entered manually.

The aim of this Forschungspraxis (FP) is the automatic extraction of structural information about the configuration of energy distribution networks from image-based data. For this purpose, the schematically depicted electrical components as well as their connections and parameters must be recognized and localized. The output should be machine-readable so that the information can be processed in later steps of the configuration pipeline. Ideally, network diagrams from different providers can be processed fully automatically or with only little additional input.

Your tasks:

- Development of a solid concept of how to extract structural information of energy distribution grids from image data.
- Implementation of an algorithm that processes the image data and that converts the information to machine readable representations, e.g., .json or .csv files.

Your profile:

You are a student with programming experience and interested in image processing and image analysis. A reasonable background in software engineering will be also helpful.

Our offer:

Expertise and guidance in image processing concepts for the design of the framework as well as assistance in programming related issues.

Did we catch your interest?

Please contact Julian Wörmann via woermann(at)fortiss.org.