TechInf
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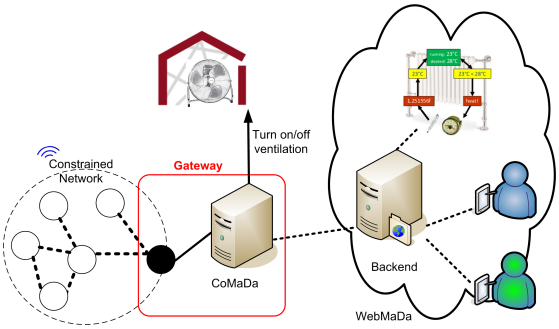
Creation of a Home Automation System linked to SecureWSN (MA)

Over several years a big IoT network called SecureWSN was established and continuously expended towards a trustworthy environmental monitoring framework for constrained networks. The network itself consists of 3 parts: (1) Data collection via constrained devices, (2) gateway component handling incoming data and managing the network called CoMaDa, and (3) a framework realizing backend and front-end for the end-user called WebMaDa. Several theses are available in those parts of SecureWSN.

SecureWSN itself is a powerful framework supporting different hardware and operating systems in the data collection process. Further it offers many services for users to see what happens in the environment (e.g., house, floor) where the constrained network is deployed. Based on collected data some actions need to be triggered (e.g., turning on the light or ventilation) which represents the main idea of a home automations system that represents one scenario in the area of Cyber-Physical-Systems (CPS) research.



In order to link the system to a home automation solution the following steps are required:

- Analysis of SecureWSN in respect what does it offer.
- Identify the best position in the architecture where to integration an interface to a home automation solution respecting the current security settings.
- Design and implement such an home automation system:
  - Integrate a solution where the user can specify so called IS-values (e.g., temp. = 23°C).
  - Implement the MAPE-Cycle to decide if an action needs to be triggered or not (e.g., turn on ventilation)
  - Identify hardware that can be integrated into the system performing triggered action
  - Realize the action triggering including link to the entity called by the action

Finally, the complete solution needs to be evaluated and the report needs to be written. Further, a detailed documentation on how to install the home automation system is required including how it can be integrated in running SecureWSN instances. Depending on the results we will try to publish it on high ranked conferences and workshops.

As this work is based on different works and research results, a willingness to familiarize oneself with the existing system is expected.
Knowledge in Java programming and little bit SQL, PHP, JavaScript, Angular would be an advantage.

We will offer you:

- Access to existing installations of SecureWSN's components
- Access to written theses of SecureWSN
- Smart working environment
- Deep contact to supervisors and a lot of discussions and knowledge exchange

If you are interesting in this thesis contact us and let's discuss:

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