

Project 1 - IoT data visualisation

Intro:

The SMV group is currently creating an automated plant growing system connected to the Internet of Things (IoT). The system consists of single-board computers (Raspberry Pi), various sensors (light, distance, temperature, humidity) and actuators (water pumps). Currently various different software libraries are necessary to interact with these peripheral devices locally, while remote access to the sensor readings is not possible.



Goal:

The goal of this project is to connect the systems to the IoT. This will be performed by introducing a homogeneous API locally on the Raspberry Pi. This API should be accessible programmatically from other systems (e.g. through a REST interface). Further, a web user interface should be created to stream data to the internet and provide remote monitoring capabilities to any users. For this part an evaluation of existing IoT platforms (dweet.io, freeboard.io, io.adafruit.com, etc.) should be performed and evaluated against an own, application-specific development using HTML, CSS3 & JavaScript libraries. The final outcome will be a monitoring and control software that is versatile and can be accessed platform independently.

Technologies:

Students are expected to show a general interest in the Internet of Things. The project will lean onto the following technologies and domains:

- Linux (Raspbian)
- Python-3 (Flask)
- web technologies: HTML, CSS, JavaScript, REST
- Data visualisation

Existing knowledge in any of these is beneficial but not a strict requirement. Note that the specific technologies and libraries can be adapted based on the student's needs, interest and knowledge.

The project is intended for one individual student.

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