The API (application programming interface) ties together the connected “things” of the “internet of things”. In other words, the IoT APIs are the points of interaction between an IoT device and other elements within the network. IoT APIs also securely expose connected devices to customers. However, quality design is essential for meaningful communications between devices (or things). To ensure the high-quality design and maximize the understandability and reusability of the APIs, design patterns for designing APIs might be useful for designers and developers.

This project will analyze IoT APIs to abstract their URI design, i.e., to define some design patterns for IoT APIs that exist today. A tool will also be developed to automatically extract design patterns from a set of given APIs. This tool should also report a violation of any design principles defined earlier.

The project includes:
- Thorough manual analysis of IoT APIs to identify and extract patterns in URIs (a.k.a. URIs design templates)
- Formally define the design patterns using a pattern template (as used by GoF design patterns)
- Perform the detection of defined patterns in IoT APIs by splitting the APIs set into train and test data. The train data should be analyzed manually (the first step above), and the test data should be used for automatic detection by the developed tool.
- Visualize the detection results.
- Define and answer potential research questions (consult with the supervisor for this)

Basic understanding on RESTful APIs is a must. Java.

Project Course in Software Engineering (2DV609) or Software Design (2DV608) or Advanced Software Design (4DV608) or Software Quality (4DV607)

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