

Control Your Things: Tool for Collection And Control of Personal Things

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Abstract—Everyone faces the challenge of finding and collecting all things for the travel, journey, etc, and tracking them to ensure that they are not forgotten or lost. One possible solution for these tasks is to attach electronic tags to required things and to keep a track of them by a smartphone or a special scanner.

There are 4 technologies that can be used to create electronic tags: Wi-Fi, Bluetooth, RFID, NFC. All tags differ from each other in the size, range, battery life, format of the recorded data and other technical characteristics. These parameters define how the user's smartphone can interact with electronic tags and which use cases can be implemented in the application. For example, the data exchange between RFID-tags and smartphone requires a scanner, but other types of tags can be directly used by the phone.

The proposed system for control of personal things consists of a mobile application and electronic tags. The user attaches the tags to things. The database of things with tags is stored in the phone. Also if the user wants to keep a track of objects with RFID-tags, one will be able to use the special scanner. It can be put in the bag, drawer or any other container where user wants to track things.

We have designed three use cases for the system:

1. The user collects things in a bag, the application automatically creates a list of detected things.

Then one can rename, delete, edit list contents and check presence of things later on.

2. The user chooses the thing that one can not find. The application determines and shows to the user the distance between the smartphone and the tag associated with the thing. When the user moves, the displayed distance changes accordingly.
3. The application can be set to alarm the user if the thing with the tag disappears from the visibility range.

Currently the application implements list creation and things presence checking use cases. In the first scenario the user sees on the screen the names of all objects which was added previously for tracking. Then one manually forms the list by selecting thing's names.

In the second scenario the user uses a list that was created in advance. When one wants to collect things into the bag he/she chooses the appropriate list and carries things with attached tags near the phone. The application highlights the corresponding list items and puts them to the end. When all things were detected the user sees the message "All things are collected".

Current version of Control Your Things application supports electronic tags with NFC technology. In the future authors plan to add support for Bluetooth and RFID tags and implement other use cases.