

Scientific Python

IoT indoor positioning system for disabled people

PROJECT DESCRIPTION

The aim of the project is to develop a tool, which makes independent living easier for the blind and visually impaired people. The basic idea is to locate essential objects in indoor areas. There are four sensors which measure the distance of a specific object, then transfer the data to a central server. The server calculates the exact position depending on the signal strength of four sensors. These coordinates are uploaded to a database. The user-end of this tool is an online GUI, since voice commands are out of the objects of this project.

IMPLEMENTATION

Since the project has to be implemented in python language and the available devices on the market mostly supported C++ language, we simulate the IoT part of the system. To simulate we use a GUI where the tester can control the type and the place of the objects in the indoor area.

The server uses RethinkDB as a nonSQL database for data storage and archiving. The advantage of this tool is that the queries can subscribe to a particular table and whenever the table is changed, the queries and the client's data automatically updates.

The user-end interface uses a similar GUI as the simulated sensors but instead of set the objects, users can identify the type and the current places of the objects.

TASK DISTRIBUTION

Bence Keömley-Horvat is in charge of the IoT simulation, with the use of 'blueprint.gif'. The communication between the IoT device and the server has to be via JSON files. The JSON file should contain id, type, measured_distances fields.

Balázs Lükő is the leader of server implementation. The server calculates the x, y positions from the measured_distances. Data is uploaded to the database server in JSON format as well, containing id, type and coordinates fields.

Péter Kovách's main responsibility is to implement the user-end interface using 'blueprint.gif'. The program loads the data from the RethinkDB. The objects are visualised on the blueprint, with various colour, depending on the type of the object.

