

The main aim of this report is to develop, design and analyse a system to simulate a context-aware routing algorithm in an indoor scenario.

The context-aware purpose of this project is to take advantage of the interaction of the routing system with an entity when it is relevant. From all the context entities, the spatial environment is one of the most important, and the one which more information can be taken advantage of. Benefits can be obtained from using context-awareness in many ways, which have a special interest in the Information Technologies area.

The intention of this report is to create a new application using context information related to the space, to be more precise, the position of the entities within a concrete location, and its preferences. The primary target is to design a supermarket in which benefits can be obtained from the position of the customers, their preferences (concretely the shopping list) and also the location of the products, to create an intelligent and efficient supermarket for the customer (but also for the supermarket in itself) point of view.

Knowing the position of the customers and the location of the products in the supermarket can be useful to draw up efficient routes that can guide the customers through the corridors to buy their products quickly, which is the main reason why the system uses a shortest path routing algorithm to find the best route from the customer to the wished product. This algorithm considers the shortest distance and also the position of the rest of the customers so the system is able to guide the customers through another path in cases where they reach congested zones in the supermarket. Bluetooth wireless technology is used to accomplish the localization and system communication task. In addition the routing algorithm is adapted to fit the requirements of the intelligent supermarket. The design and implementation of a GUI simulator written in Java that represents the designed system is the main goal of this project. This simulator serves as a tool to test the system operation offering the possibility to modify parameters such as the rate and distribution type of the arrival of customers, the number of customers, subjective criteria of congestion and speed of the simulation among other parameters.

Different types of statistics and the possibility to generate files with the information of the simulation are the main outcomes of this project, besides the GUI. In addition, this information can be translated into a Matlab script using a parser designed for this purpose. Finally the results and conclusions of the system are presented, and the future lines to follow the development of this innovative project.