

ABSTRACT

Context-awareness technology is one of the most important technologies that is implemented in smart applications. It increases the productivity of smart homes as well as ubiquitous and mobile computing. Context-awareness means using context information and the ability of computing devices to detect, interpret to an aspect of the environment. In the context-awareness system, middleware technology is also becoming more essential to the communication of the Context-aware system, because developing context-aware system becomes more complicated when there are many hardware with different platforms must be integrated to be one system. These interconnected techniques are required for context based through context aware technology and for accuracy context communication with various raw sensors. In respond to recent demand, some approaches have been proposed to provide functionalities and as a possible solution to some of the problems to try to solve the complexity of the hardware system, different platform systems. Middleware, application and services make use of different level of contexts and adapt the way they behave according to the current context.

This thesis addresses the development of context-awareness system. In particular, focuses on the middleware development that support the creation of context-aware application with the purpose of providing architecture and implemented as an intermediary between the raw sensors and application layers. The middleware-based context awareness systems is proposed to eliminate the complexity system of the hardware layer, bridges between the physical and the application layers and to guarantee the interoperability among hardware platform. In this research case-study we provide several kinds of sensors consisting of different systems to operate with prototype platforms for modeling and managing the middleware in accordance with the system integrates sensing, computing and user interaction as the outcome of the monitoring and reporting of user's physical performance by capturing the movement in the sensor range. Successful application of middleware will ensure that we can turn on/off the lights by proposed system when the sensors capture human movement within the sensor range.

The system controls multi-sensors such as Passive Infrared, light dependent resister and humidity and temperature sensors that we provided to read data from the real environment. Various issues and mechanisms that address have been implemented and tested. Implementation and experiments have been performed where users move in/out of the sensors range, and while adhering to different functionality such as

services or controlling multi-sensors. The middleware can handle the complicated system and fulfill its requirements such as heterogeneity, scalability, mobility and tolerance for component failure. Finally the work addresses issues related to the system and the completed components operate together so they can interpret and represent context information.

Keywords: Context Awareness, Middleware, Control System, Sensors.