Abstract

Indoor environment has a great influence on people’s behaviour and performance. Creating a smart environment that can adapt to people’s behaviour not only helps people to achieve a higher performance, but also helps the building owner to minimize energy consumption. Therefore, it is important to understand people’s behaviour in the indoor environment and find a way to recognize these behaviour. This paper presents a Proof of Concept experiment directed at finding a way to automatically and non instrusively recognize people’s behaviour. A constraint was placed on this experiment by the specifications of the IR camera which meant that only an individual workspace was investigated, although the technique is intended to be directed at office and working space in general. The starting point of the experiment was a detailed and comprehensive observational study of peoples behaviour in order to ascertain which activities could be or should be recognised automatically by the system. The non intrusive sensor was based on a 32 pixel by 32 pixel true (PIR) infra red camera. Experiments were performed in real time on captured images for finding the recognizable features which were needed to categorize the daily behaviour. Eventually an image processing program was created for recognizing people’s behaviour and which sent data in real time to cloud server were it could be correlated with other room based sensors for temperature, humidity and sound. The result is , that this proof of concept has successfully been able to recognise various daily behaviours that were the focus of the observational study.

Introduction

-background information (building & people’s performance + behaviour model)

-problem definition

Study1: observation on daily behaviour

Study2: experiments on IR camera

Implementation: Behaviour recognition program

Evaluation & discussion

conclusion