Ambilight

Lecture: Ubiquitous Computing

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## Abstract (max. 250 words)

The goal of our miniproject is to develop an “Ambilight” for a complete room. In order to create a comfortable ambient, we use the room temperature and the current light intensity to control the color and luminosity of the LEDs. Additionally, we’re going to develop an Android app to control the LEDs via WLAN or Bluetooth. We will add various lighting profiles and the ability to add user-defined profiles from inside the app.

## Motivation

Our motivation for this project has two different aspects:

One aspect is the learning process for us. We’ve never done any projects with technologies like Android or sensors in combination with development boards before, therefore this is a good opportunity for us to gain some experience in these areas.

The second aspect is the personal one. Both of us are living in a one-room-apartment which cannot be ventilated properly. Especially during the hot days of the summer when the outside temperature reaches the 35°C and above, the temperature inside the room reaches 30°C and more. Being able to turn the light inside the apartment “cooler” would be a great thing to compensate the heat at least a little bit. Vice versa it also can be used to save energy inside the room during winter. When we have the possibility to turn the light “warmer”, we don’t need as much energy for heating the room.

## Technology platform and model used

The sensors will be connected directly to the development board. The development board will be an Intel Edison board. It will process the information received from the sensors and, depending on this data and the profile set on the app, control the LEDs respectively in color and intensity.

The Edison will be connected with Bluetooth or WIFI to Smartphone running the Android app. With this, the default profile can be changed to a user-defined one.

## Objectives/Goals

The main goal of our project is to be able to present a working prototype at the end of the semester.

This will include the hardware setup, the software processing the sensor data on the board as well as the working Android app. The Galileo should work as a server and a smartphone should be able to connect and control the light color and intensity.

## Expected results

A working software on the Galileo (server) and on Android (client). The software will still be in a “beta state”, but should contain the full functionality needed for a production version.

## Project time plan

KW 20-21 Working server on Galileo and Android app (standalone)

KW 22 Connection with protocol for the communication between server and client

KW 23-24 Writing technical paper and creating poster

KW 25-26 ~ Buffer ~

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