PROJECTWORKLEARNING- PATENT,   iFLASHLED –SMART LIGHTS FOR SMART PEOPLE »FROM IDEA TO PRODUCT«

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Abstract

iFlashLED the device , which is mounted LEDs and are managed via an iOS or Android device , the web interface or UDP (User Datagram Protocol) and TCP (Transmission Control Protocol) protocol . For this we need a controller circuit and lights . As the title suggests "Smart Lights for Smart People " are smart lights for smart people , because the user can make programs to suit your taste with different effects , it can also be connected motion sensors . Management controller is possible via cable to the internet or even wireless controller it has a built-in WIFI module . The aim of the experiment or research project is the development of devices which can be operated LED lights over the Internet or even via your mobile phone. The user can be programmed their programs , operation of LED lights to suit your taste . They can be used for decorating , ambient lighting and the like . However, since the controller has the possibility to connect motion sensors and LED lights can also be useful where we want to highlight the space upon arrival at him.
The author gratefully acknowledge the assistance and the creative, qualitative and innovative cooperation at project based learning from Luka Penger.

Key words: iFlashLED, Android, iOS, LED lights, WEBinterface, ARM, PCB, WIFI

iFlashLED – PAMETNE LUČI ZA PAMETNE LJUDI "OD IDEJE DO IZDELKA"

Povzetek

iFlashLED je naprava, na katero se priklopi LED lučke in se jih upravlja preko iOS ali Android naprave,WEB vmesnika ali pa UDP (User Datagram Protocol) in TCP (Transmission Control Protocol) protokola. Za to potrebujemo kontroler in vezje z lučkami.
Kot pove že naslov »Smart Lights for Smart people« so to pametne lučke za pametne ljudi, saj si lahko uporabnik naredi programe po svojem okusu z različnimi efekti, nanj pa lahko priklopi tudi senzorje gibanja. Upravljanje kontrolerja je možno preko kabla za internet ali pa kar brezžično, saj ima kontroler vgrajen WIFI modul.
Cilj eksperimenta oziroma raziskovalne naloge je razvoj naprave s katero lahko upravljamo LED lučke preko interneta ali kar preko svojega mobilnega telefona.
Uporabnik pa si lahko sprogramira svoje programe, delovanje LED lučk po svojem okusu. Uporabimo jih lahko za okrasitev, ambientalno razsvetljavo in podobno. Ker pa ima kontroler možnost priklopa senzorjev gibanja, pa so LED lučke lahko uporabne tudi tam, kjer želimo osvetliti prostor ob prihodu vanj.
Za kakovostno, strokovno, kreativno in ustvarjalno sodelovanje pri izdelavi projektnega učnega dela se zahvaljujem Luki Pengerju.

Ključne besede: iFlashLED, Android, iOS, LED lučke, WEB vmesnik, ARM, PCB, WIFI

TECHNICAL CREATIVITY IN SCHOOL'S CURRICULA WITH THE FORM OF PROJECT LEARNING »FROM IDEA TO THE PRODUCT«

iFlashLED
Smart Lights for Smart people

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What is iFlashLED?

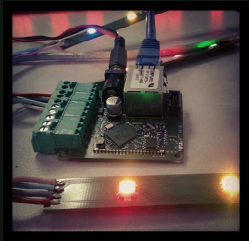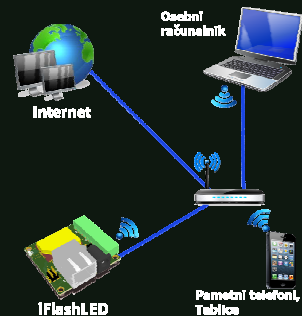iFlashLED is controller for LED lights which can be controllable with smart phones, computer application or WEB interface in browser.
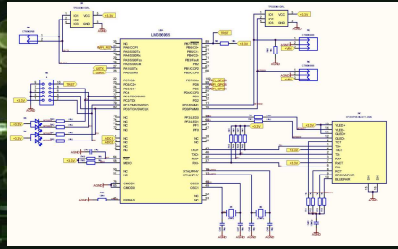

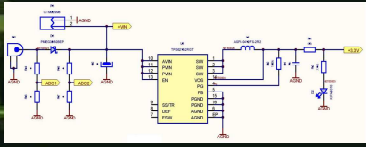## Diagram management

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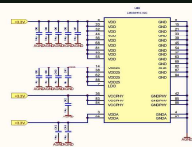## Electric scheme of controller

The main part of controller circuit is the microcontroller LM3s6965, as it performs all its functions. Through SSI protocol manages TCL5971 LED driver for LED lights and via UART interface communicates with WIFI module, while it communicates with users who are connected to the device via a cable.

Power supply circuit

Power supply circuit has a DC / DC converter, before him stands a diode to protect the circuit from reverse polarity voltage.

On board is the LED status indicator and power supply voltage divider consisting of resistors for measuring voltage and current.
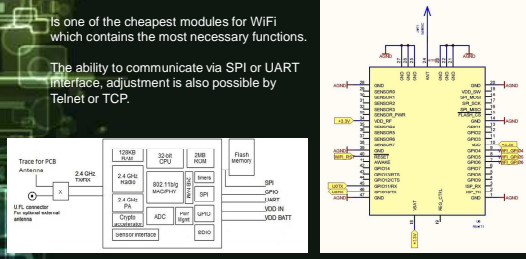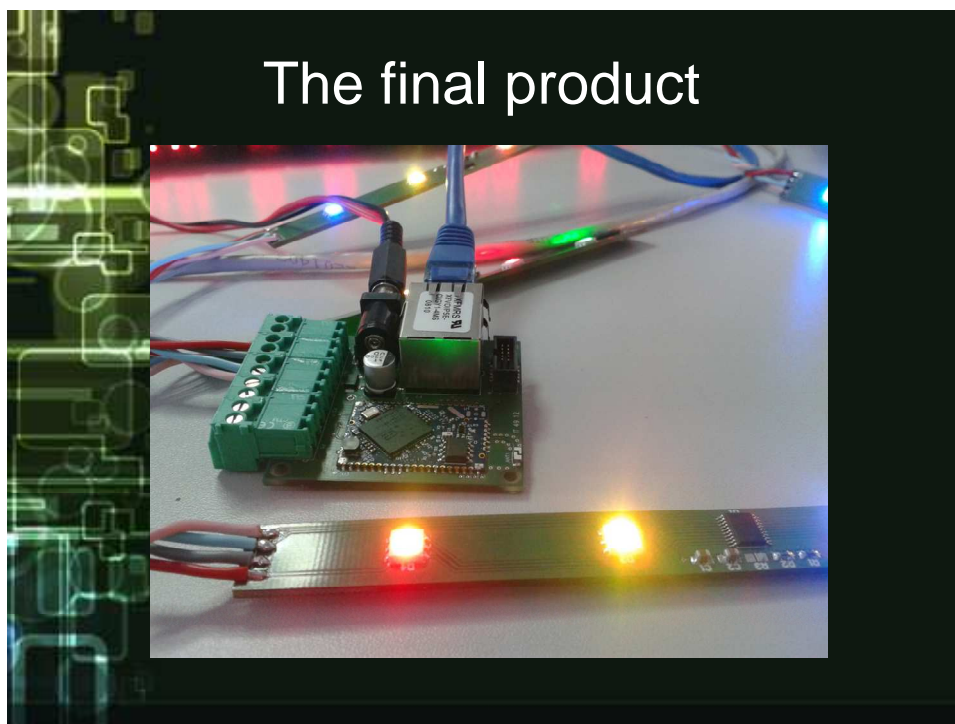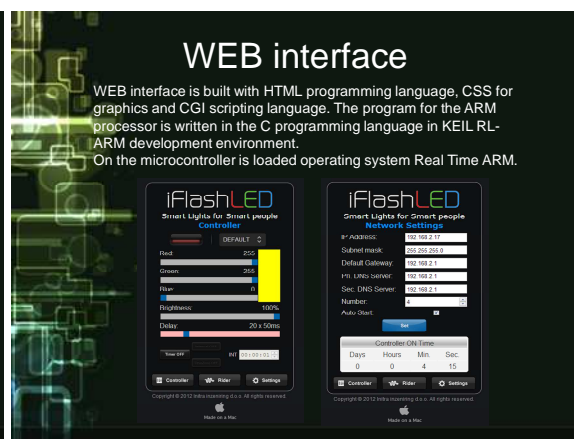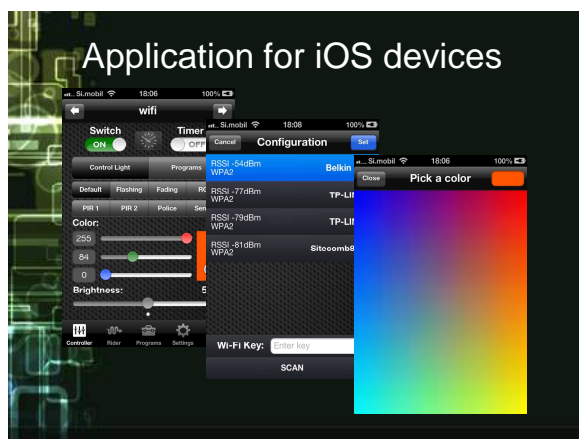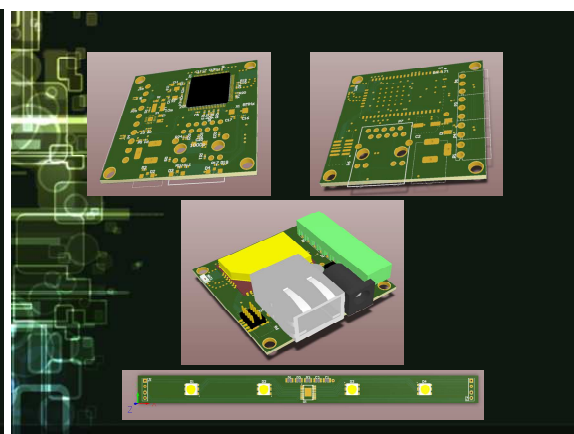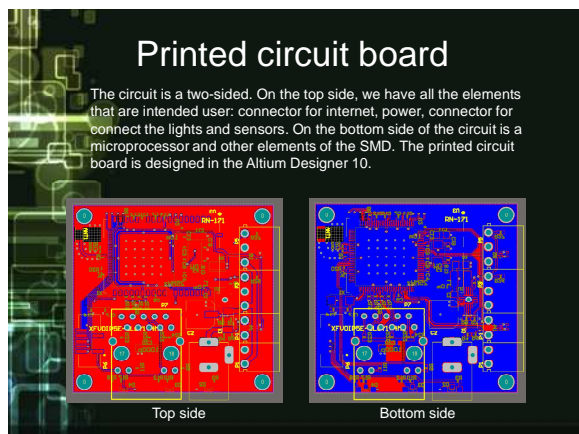

WiFi communication

For wireless communication is used WIFI module RN171 of company Roving Networks.

Is one of the cheapest modules for WiFi which contains the most necessary functions.

The ability to communicate via SPI or UART interface, adjustment is also possible by Telnet or TCP.

Printed circuit board

The circuit is a two-sided. On the top side, we have all the elements that are intended user: connector for internet, power, connector for connect the lights and sensors. On the bottom side of the circuit is a microprocessor and other elements of the SMD. The printed circuit board is designed in the Altium Designer 10.

Top side

Bottom side

Application for iOS devices

WEB interface

WEB interface is built with HTML programming language, CSS for graphics and CGI scripting language. The program for the ARM processor is written in the C programming language in KEIL RL-ARM development environment.
On the microcontroller is loaded operating system Real Time ARM.

The final product

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