Lumi Monitor

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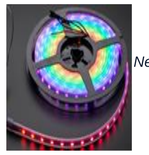
INTRODUCTION

Goal: Make parenting easier

Our project, the Lumi Monitor is intended to ease the life of parents by keeping track of the living conditions of their infants and ensuring the safety and comfort of their baby through installation of an integrated hardware in the baby's room. In this project we used three sensors namely: Tsl2591(Light sensor) along with a Neopixel ring, DHT22 (Temperature & Humidity Sensor), SPH0645LM4H (Microphone Sensor). This project is unique since it allows parents to use a variety of functionalities through an Android app with a friendly User interface. The main hardware board that we are using to implement the project is the Broadcom Development platform, the raspberry pi 3B+.

End Devices

DHT22 Temperature & Humidity Sensor



Neopixel LED Strip

TSL2591 Luminosity Sensor

SPH0645 Microphone Sensor

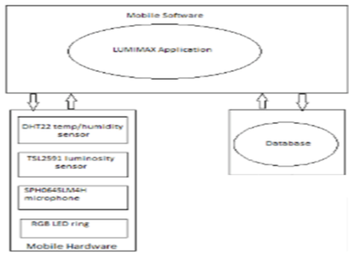
Broadcom Development Platform (RPI 3B+)

DATABASE & BLOCK DIAGRAM

Procedure to setup Database

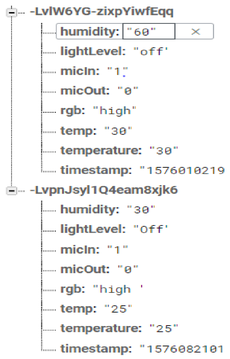
- **Get JSON file from firebase's website after creating database.**
- **Configure gradle files in android studio to get the app to work in real time with firebase.**
- **On the hardware, install python firebase library firebase**
- **Import JSON & firebase in python code**
- **1. from firebase import firebase**
  2. import json

- **firebase = firebase.FirebaseApplication('https://lumi-8b774.firebaseio.com/', None)**



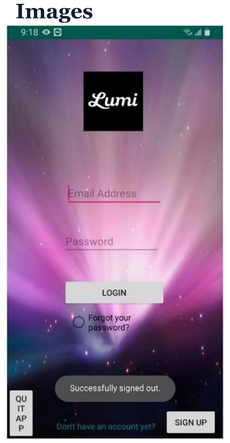
Block Diagram of how system works with all of its components.

Firebase Database Design to accommodate data.

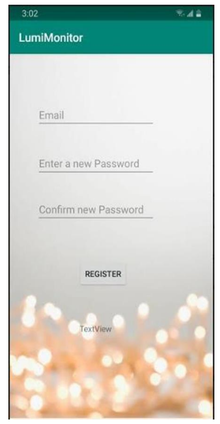


RESULTS

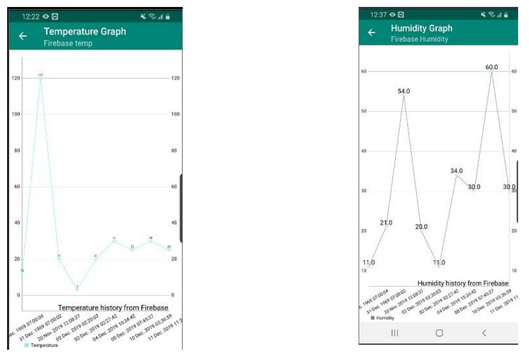
Images



Login Screen

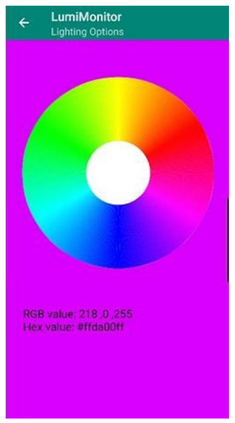


Registration Screen



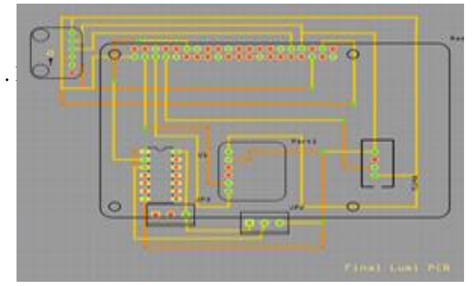
Graphical representation of Temperature & Humidity from Firebase data

Temperature & Humidity Data retrieval

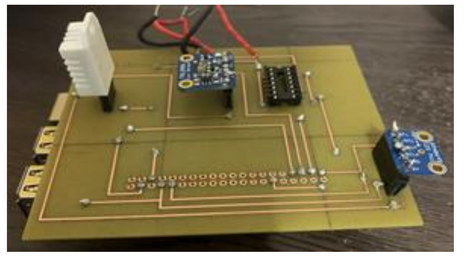


Color Wheel for adjusting color of Neopixel LED Strip

FINAL DESIGN & PCB



PCB Design using Fritzing Software



Final PCB with sensors attached and mounted on top of RPI

CONCLUSIONS

- Temperature & Humidity Monitoring
- 2-way communication channel
- Light & Sound Detection
- Signal Processing Circuit
- Android Mobile Remote Control
- RGB light controlled by color wheel

ACKNOWLEDGEMENTS

Check to make sure you' ve acknowledged partner and funding agencies, either with text or with their logos.

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