

# Smart Stage Light Controller

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**Abstract**— Stage lighting is the specialty of lighting as it applies to the creation of theater, dance, musical drama and other execution expressions. Lighting experts are contracted and given the assignment of controlling and recreating the stage lights. To diminish human asset, time and endeavors, this venture proposes a clever lighting framework which strobes the LED lights in light of the steady recurrence change of any music record gave as a contribution through just a gadget which can do all crafts by controlling both the light and music without any assistance of the occasion directors or coordinators by utilizing the IoT based Raspberry Pi and Python. This framework could be valuable at live shows, clubs, corporate occasions or open space experiences and so forth. It additionally fills the need of indoor lighting giving state of mind based surrounding lighting to indoor exercises which can be utilized by non-experts too at homes, workplaces, introduction corridors etc.

**Index Terms**— raspberry pi, python, stage lighting.

## 1 INTRODUCTION

For tasteful impact which incorporates the utilization of lighting is a ponder utilization of light to accomplish viable

fake light sources, for example, Light Emitting Diodes (LEDs), gas release lights like neon lights, neon signs, mercury vapor lights and so forth., lasers and flares where sodium in a gas fire emanates trademark yellow light. Lighting enlightens the entertainers and specialists in a live theater and is chosen and organized to make emotional impacts.

Legitimate lighting can upgrade assignment execution, enhance the presence of a region, or have positive mental impacts on the gathering of people whether indoor or open air. Stage lighting gives light to better sight.

Show Organizers, Producers, Event Managers and the various individuals capable from setting up the show to executing it, carefully deal with arranging the stage lighting,

sound knowledge of music and lights. Additionally, it considering giving their group of onlookers the vibes of the increments money related weight on the coordinators when the occasion is scaled, consequently requiring a bigger taskforce to execute the set

Keeping in mind the end goal to take care of the issue of workload on team we propose a framework that actualizes a concentrated framework through which the sound as well as the visual segments can be controlled with the assistance of IoT gadgets.

The whole framework will be available through a web application which will give convenience to the client, contingent upon the necessities of the client.

The framework can be designed to either work inside a system or can be made available through the web.

The lighting pulls every one of the parts of the stage together. At staging connections, the keen lighting configuration is basic for each occasion from extensive gatherings, celebrations to little gatherings.

occasion outwardly. It requires human assets, labor, steady checking and

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## 2 EXISTING SYSTEM

execution of the arrangement. Their tasks include:

Stage lighting requires lighting experts from the setup to the

- Setting up and centering lights.
- Patching and or potentially wiring up lights to dimmers or electronic control supports.
- Changing the set-up of lights amid an execution of a show.

Setting up lights on the stage incorporates utilizing a support control which takes contribution from an administrator, changes it to signals that the dimmers can read and sends it down a link to the dimmers. The dimmers convey different measures of energy through the individual dimmers which gets distributed through apparatuses.

This requires a great deal of arranging previously by the sound and light professionals to set the lights as indicated by the correct point, position and zone to get the best outcomes on the stage.

### 3 PROPOSED SYSTEM

The framework proposed in this task executes the setup of lights with the assistance of IoT gadgets. This actualizes a

concentrated system through which the sound and in addition the visual components can be controlled. The sound given as a sample is divided into various frequencies utilizing a

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sequencer.

The acquired frequencies are then utilized for controlling the lights. The whole framework will be available through a web application which will give usability to the client.

Contingent upon the prerequisites of the client, the framework can be arranged to either work inside a system or be made available by means of the web.

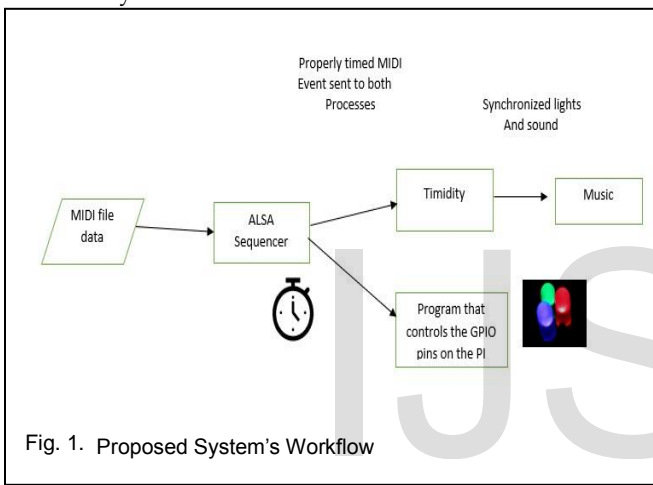


Fig. 1. Proposed System's Workflow

The figure above speaks to the general design of the proposed framework.

Following are the segments exhibit in the framework:

- MIDI File
- ALSA Sequencer
- Timidity
- GPIO pin controller

A record with the .MID or .MIDI document expansion is a Musical Instrument Digital Interface document that clarify how the sound ought to be delivered once connected to a playback gadget or stacked into a specific programming program that knows how to translate the information. Advanced Linux Sound Architecture (ALSA) is a software framework and part of the Linux kernel that provides an application programming interface (API) for sound card device drivers.

### 4 SOFTWARE REQUIREMENTS

The following hardware serves as the backbone for the functioning of the proposed system:

- Python
- Raspbian OS
- Web Browser (Firefox, Chrome etc.)

### 5 HARDWARE REQUIREMENTS

The following hardware serves as the backbone for the functioning of the proposed system:

- Raspberry Pi
- Breadboard
- 26- or 40-pin Breakout board with accompanying ribbon cable
- LED Strips
- Resistors
- Jumper Cables □ Channel solid relay

### 6 LIMITATIONS

At present, this undertaking utilizes improvement strategies to locate the best light setting and depends on the qualities of sound like frequency however when the quantity of lights increments to hundreds, the streamlining system won't work adequate for ongoing light control. Likewise this framework can just do the trick for unremarkable sound frameworks, but for bigger sound setup the IoT gadget would need power and thus would require a foreign source to do as such. It makes use of the frequency of the music at real time as a characteristic property of mimicking the light function with the music. However it lacks characteristic of identifying other characteristics such as genre, lyrics for recreating the mood preset.

### 7 WORKING

Use case diagrams display the usefulness of a framework utilizing performing artists and utilize cases. In this unique circumstance, a "framework" is something being created or worked, for example, a site. The "on-screen characters" are individuals or substances working under characterized parts inside the framework. In above outline the on-screen characters are client and framework. The client performs essential capacities like transfer music

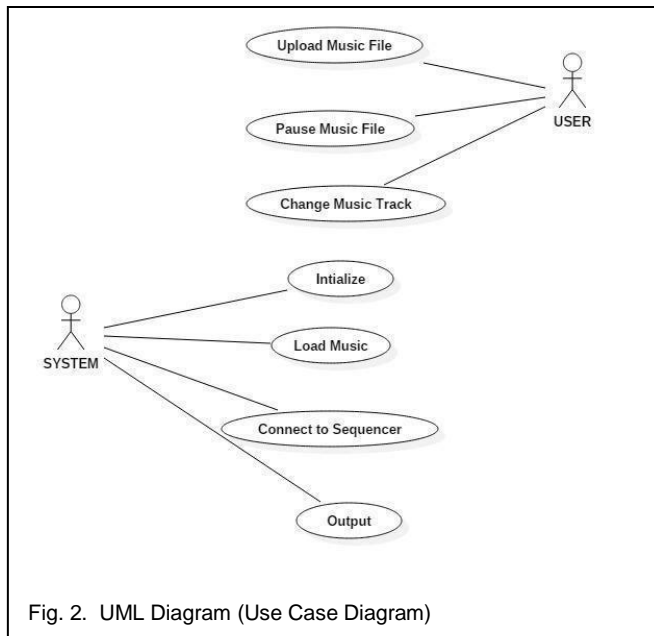


Fig. 2. UML Diagram (Use Case Diagram)

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document, change the track and delay it. The most imperative capacities are naturally controlled by the framework like instating, stacking the music track into the sequencer and the signs are viewed as yield on the GPIO pins.

## 8 CONCLUSIONS

This venture speaks to an option for giving an outwardly engaging strategy to introducing visual shows or shows which can be controlled by sound or music, planned for use by artists and other performing craftsmen who intensely depend on visual imagination. A key element of the calculations being utilized as a part of this undertaking is the capacity to test the sound document rapidly and give a yield which can control the associated lights voluntarily. Test comes about with the LEDs exhibit the plausibility of the framework. Later on we design interface the music and light advances together, and to make it an ongoing framework which most accessible frameworks today are definitely not.

## ACKNOWLEDGMENT

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