The LightSound Project

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September 30, 2023
Team members

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What is LightSound?

✓ Uses Arduino hardware
✓ High dynamic range light sensor allows a range of sensitivities
✓ Output sound through audio jack to headphones or speakers
✓ Runs on 9V battery, rechargeable Li-ion battery, or through computer power
✓ Inexpensive and easy to build!
✓ Request a pre-built device at no-cost!

Open Source
✓ Instructions to build your own (English, Spanish, and French)
✓ Software to collect and plot data
The LightSound designs

Wired

PCB
LightSound sound clip

Video demonstration of simulated eclipse
The sound starts as a high flute tone in the bright sunlight, and as the circle covers the sensor, the sound drops to a low clarinet before becoming clicks as the circle completely covers the opening. As it continues passing over, the low clarinet sound returns and the pitch rises until the flute sound returns.
One LightSound device can impact thousands!!!
In Progress

Goal: 500+ devices!!

We are....

- Building LightSound devices
- Running Workshops
- Donating LightSounds

Scan to request a device!
Workshops

<table>
<thead>
<tr>
<th>Teach</th>
<th>Teach soldering and circuitry skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Build</td>
<td>Build devices to be donated</td>
</tr>
<tr>
<td>Transfer</td>
<td>Transfer the knowledge</td>
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</tbody>
</table>

AAS 235 Workshop
Photo credit: Todd Buchanan 2020
April 2023

Tucson Initiative for Minoritized student Engagement in Science and TEchnology Program
LightSound Website

- Detailed instructions for building and operating
- Wiring diagram
- Files for 3D case design
  - Mesh (.stl) files for direct printing
  - CAD files for editing/modifying
- GitHub link for code
- Request form for LightSounds (pre-built or supplies to build your own)
GitHub Code

• Code for...
  • Arduino programming
  • Data logging
  • Data plotting

• Instructions for installing and using the Python code

• Documentation in English and Spanish, and soon to be in French!
Using the Arduino IDE

- Compile and upload code
- Serial Monitor and Serial Plotter for testing and quick looks (Tools menu)
Python logging and plotting code

Data from 2020 South American Eclipse, taken by Beatriz Garcia in Mendoza, Argentina

Observations on 2020 Dec 14 starting at 11:02 ART

Computer + speaker + LightSound setup
LightSound Project Discord Server

Welcome to the LightSound Project community! This server is meant to connect LightSound users and developers, coordinate eclipse planning, share lesson plans and outreach ideas, share code/hardware improvements, and help troubleshoot software and hardware issues. The channel directory below lists all the channels on this server and their descriptions. If you'd like, head over to #introductions to introduce yourself to our community!

The LightSound team is comprised of @Allyson Bieryla (Harvard Univ./CfA) and @Soley Hyman (Univ. of Arizona/Steward Observatory). Please feel free to reach out to us with any questions!

USEFUL LINKS

LightSound Website: https://astrolab.fas.harvard.edu/LightSound.html
LightSound GitHub (code updates will be shared in #development): https://github.com/soleyhyman/LightSound2.0

Channel List

GENERAL

#welcome: This channel is introduction to the LightSound Project Discord
#general: General discussion channel; ask non-topic specific questions here
#introductions: Introduce yourself when you join! Template provided in pinned message
#random: Channel for discussions that are not LightSound-specific
#server-discussions: Place to post ideas or suggestions about channels or the server

ECLIPSE PREP

#eclipse-planning-2023: Discuss and organize/coordinate plans involving LightSounds for upcoming solar and lunar eclipses

Link for joining the discord server on the LightSound website
LightSound
(eclipse sonification device)

http://astrolab.fas.harvard.edu/LightSound.html

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