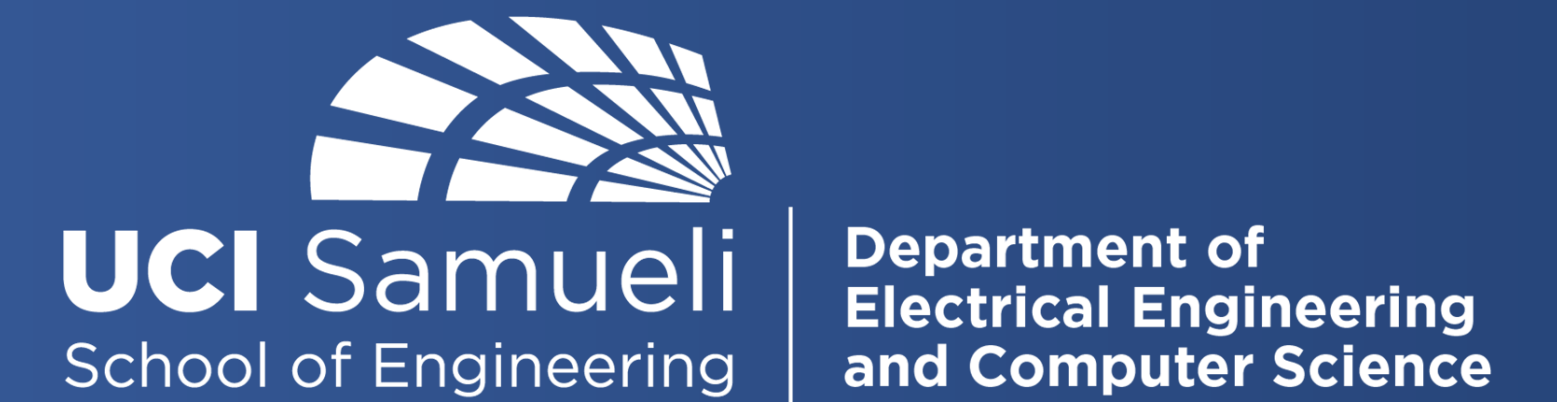




Sonido: Solar Speaker

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Background

Installing permanent external home speakers typically requires you to run wires through internal and external walls. This process requires damaging both internal and external walls leading to costly repairs.

Project Goal

Our solar-powered speaker aims to eliminate the need for internal-to-external wiring on a house while providing audio entertainment outside the home.

- Using a source connected to a secondary device, the speaker will play audio transmitted over a wireless network connection.
- The speaker will have an internal battery that will be charged using a solar panel

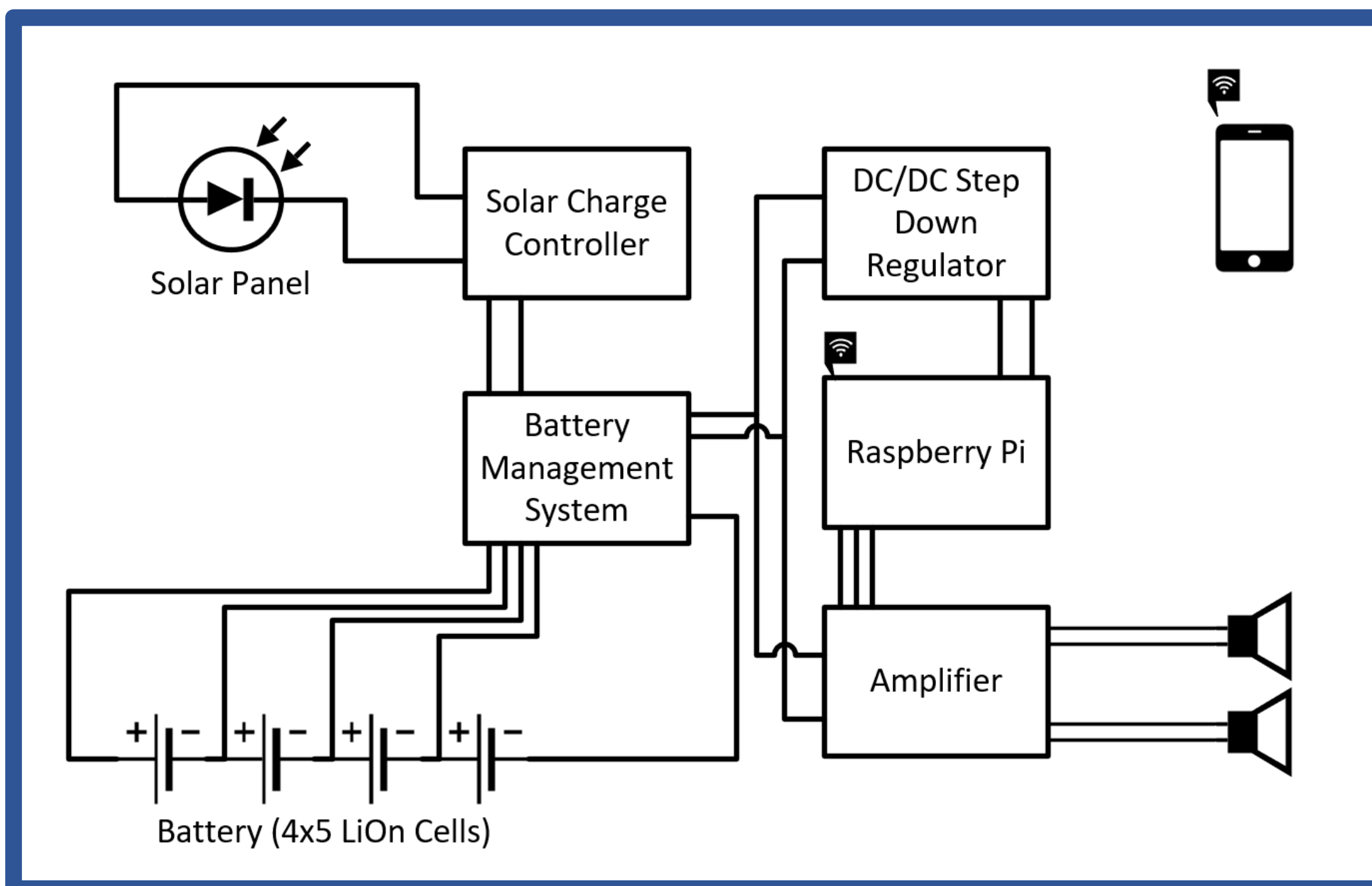
Materials Needed

Hardware:

2 x 3" 4 Ohm Speakers
Class-D Amplifier
Raspberry Pi 3B
12 volt, 500 mA Solar Panel
Solar Controller/Regulator
20 x Lithium Ion Cells
BMS to Charge the Cells
DC Converter/Regulator

Software:

Raspbian Lite
Apache 2
php v7
MariaDB
Mopidy



Implementation

The device is hardwired to a network for initial configuration. We built a landing page that guides the user through its initial setup which connects it to the user's wireless network. Once connected the user can use any browser enabled device on the same network to connect to the speaker.

Results

With Sonido, a user on the same network can play music from a Spotify library from any browser-enabled device. When no sunlight is available, Sonido can play for around 3 hours before needing to charge. When not in use Sonido goes into an idle mode to conserve power.

Improvements

An analog to digital converter along with a wireless interface would be the next step in development. This would allow a user to connect an existing analog device inside the home to the speaker for playback (existing home theater, record player, etc.)

References

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