



EDGE
Presents
:

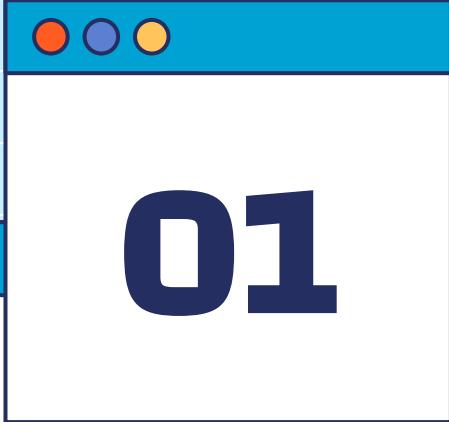
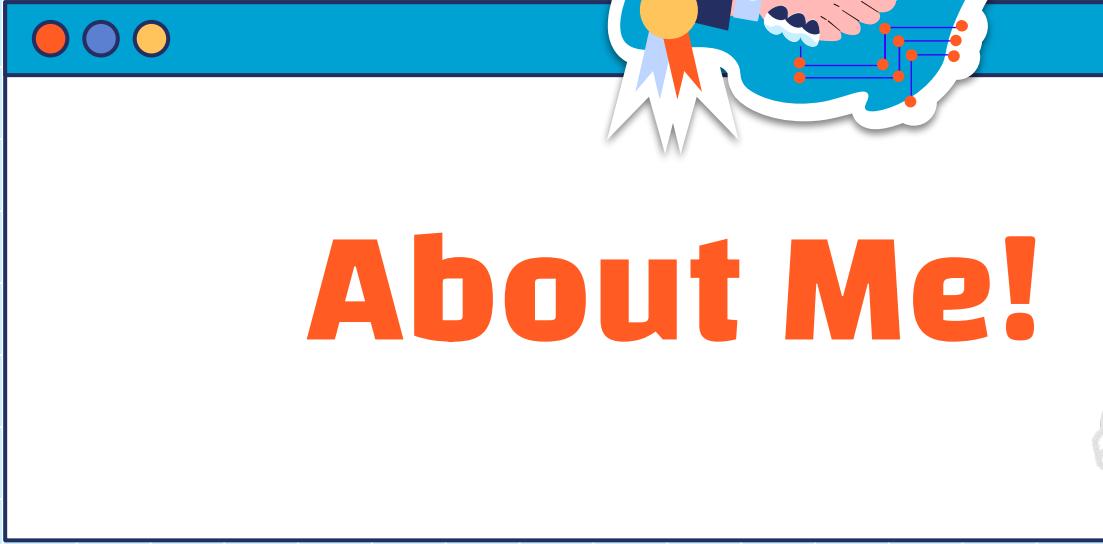
Computer Engineering-Based Project

Compact Arduino

MP3 Player

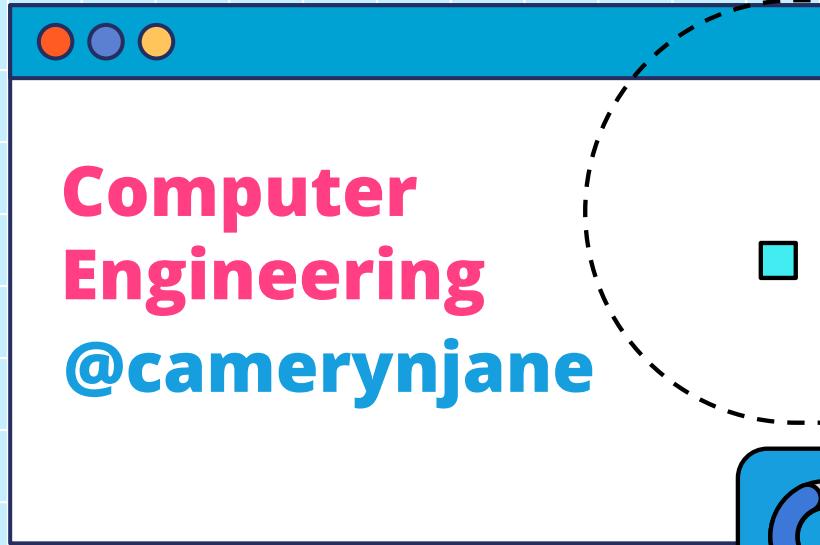
By: Cameryn Mugol



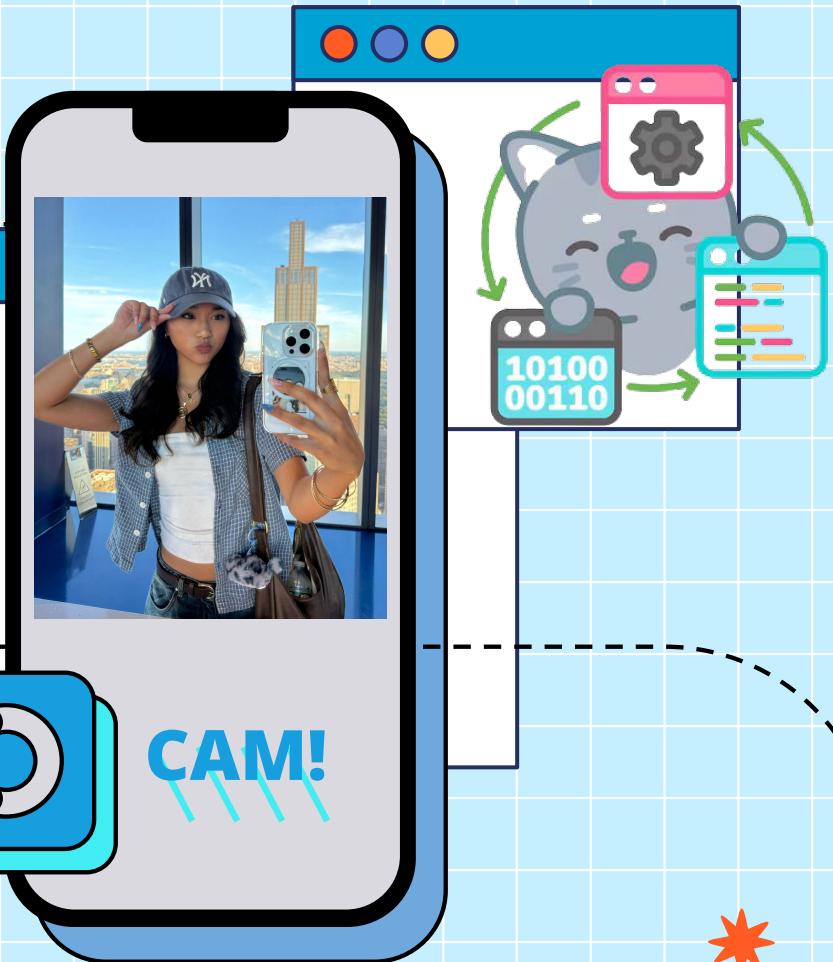


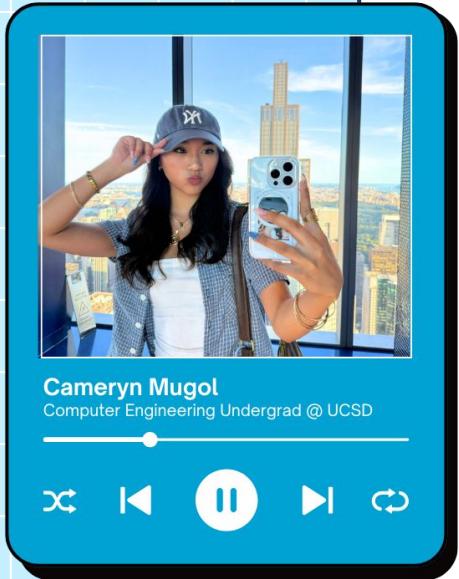
About Me!





CAM!





02

Icebreaker!

“

If you could have any
superpower just for school,
what would it be?



SHARE WITH YOUR GROUP!

“

If you could swap places with any fictional character for the day, who would it be and why?

SHARE WITH YOUR GROUP!





What's your hidden talent?

SHARE WITH YOUR GROUP!





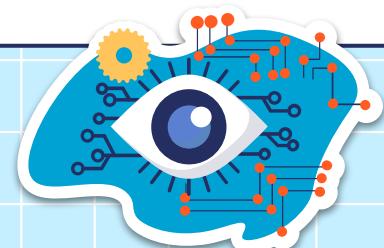
What's your go-to study
snack/drink?

SHARE WITH YOUR GROUP!

Diving Deeper

03

More about the project + C.E. in general



Why I chose Computer Engineering:

(and why you should too!)

Hardware +
Software

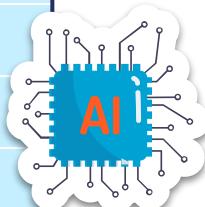
Innovation
& creativity

Constantly
evolving

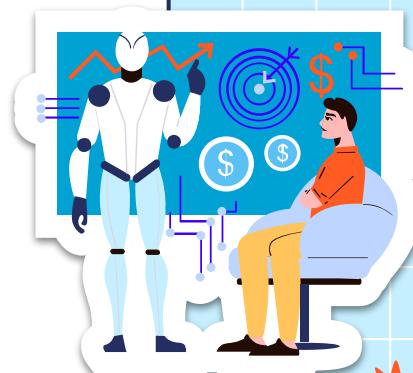
Best of both
worlds!

High demand
→ High-paying

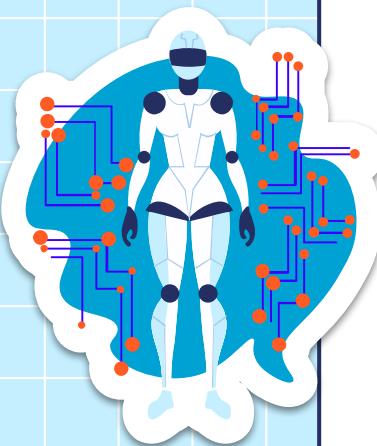
Versatile
applications



FLEX!



Computer Engineering Jobs



01

Hardware Design

Design the right piece of equipment for an end user.

02

Computer Network Architect

Create and/or maintain [internet](#) and communications infrastructures.

03

Embedded software engineer

Create [code](#) appropriate to the hardware [embedded](#) in tech.

04

Security

Protect [digital](#) infrastructures from [cyber](#) threats.

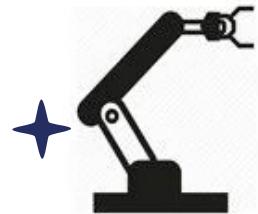


Embedded System

Definition:

a **combination** of computer hardware and software designed for a specific function.





Industrial Robots



GPS Receivers



Digital Cameras



DVD Players

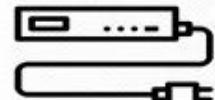


Wireless Routers

Embedded Systems



MP3 Players



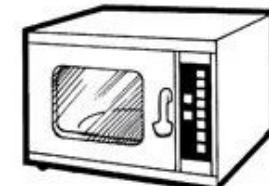
Set top Boxes



Gaming Consoles



Photocopiers



Microwave Ovens

The slide has a dark grey background with a teal header bar at the top. In the center, the word "Embedded Systems" is written in a large, semi-transparent, light-grey font. Surrounding the central text are several icons of electronic devices, each with a small caption below it:

- Industrial Robots (represented by a robotic arm icon)
- Digital Cameras (represented by a camera icon)
- DVD Players (represented by a DVD player icon)
- Wireless Routers (represented by a router icon)
- Set top Boxes (represented by a set-top box icon)
- Gaming Consoles (represented by a game controller icon)
- Photocopiers (represented by a photocopier machine icon)
- Microwave Ovens (represented by a microwave oven icon)

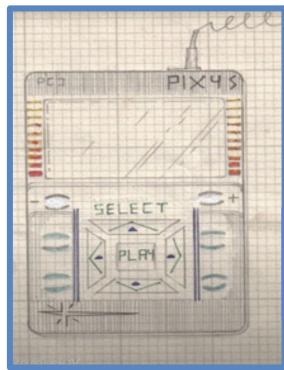
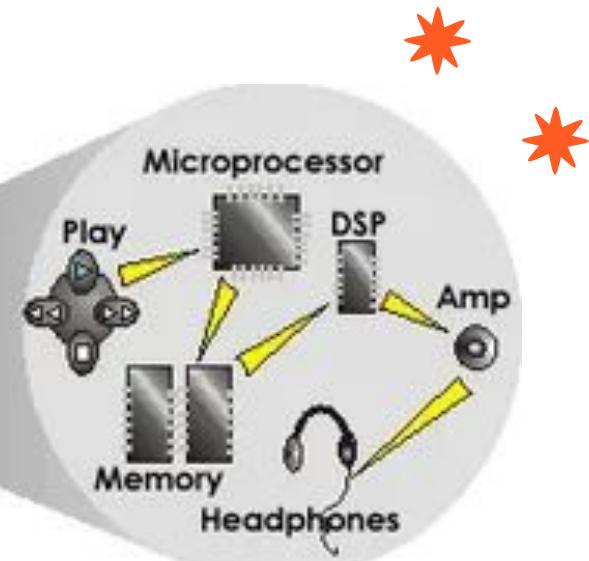
A white rectangular callout box with a red border is positioned over the MP3 player icon. It contains the following text:

MP3 (MPEG-1 Audio Layer 3) Player: a device for playing MP3s or other digital audio files.



★
YES!

An MP3 is 100% an example
of an embedded system



Fun Fact: This is an image of the first MP3 prototype made by Kane Kramer!



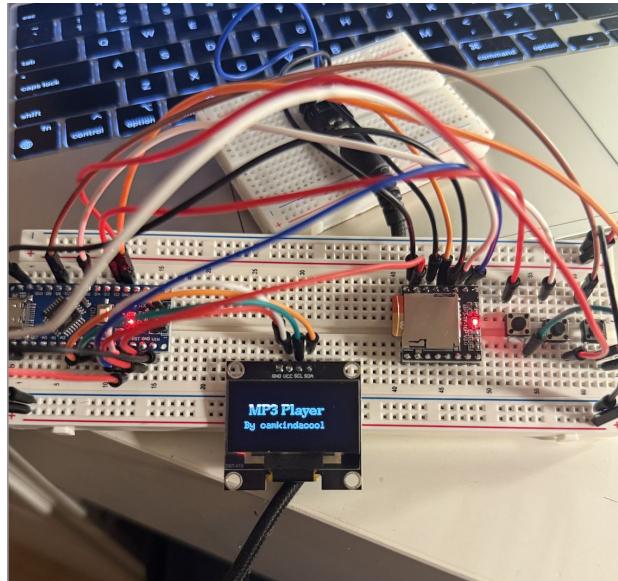
04

Building the Circuit



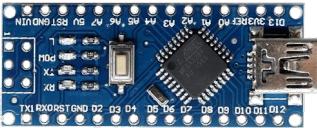
Features:

- 128x64 pixel OLED display for song and menu info
- Easy SD card music file transfer
- Simple navigation buttons for user control
- High-quality 3.5mm audio output





Components:



Arduino Nano



Audio Socket



DFPlayer Mini MP3



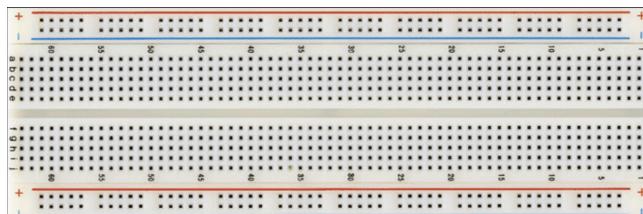
Connection Wires



Micro SD Card



Push Buttons (x3)



Breadboard

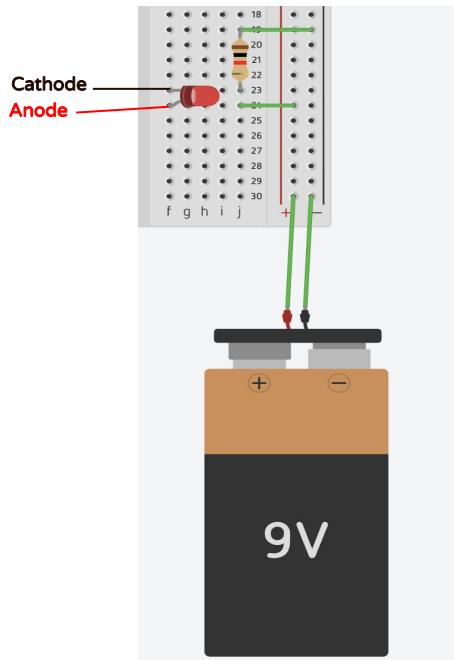


OLED Screen

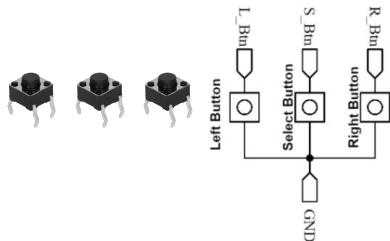
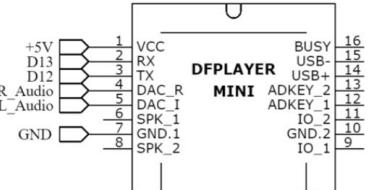
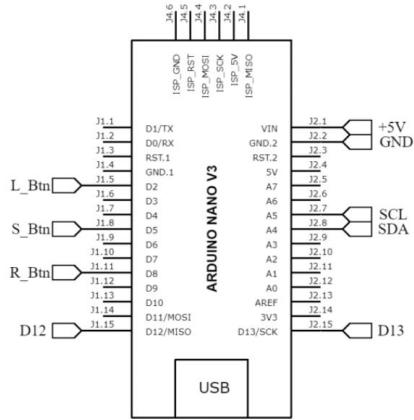




Connecting Components (Example)

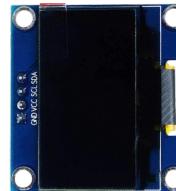
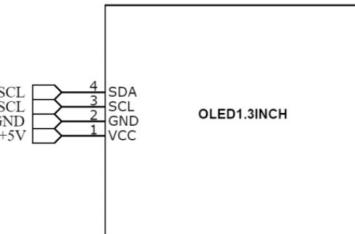


9V Battery	Resistor
Negative Terminal	Left Leg
LED	Resistor
Cathode	Right Leg
LED	9V Battery
Anode	Positive Terminal



Circuit Diagram

CIRCUITDIAGRAMS.IN



ELECTRO GADGET



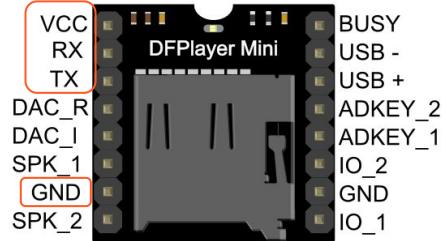
Circuit Wiring Connections #1

Arduino Nano to OLED Display Connections

OLED Module Pin	Arduino Nano Pin
VCC	5V
GND	GND
SCL	A5
SDA	A4



Circuit Wiring Connections #2

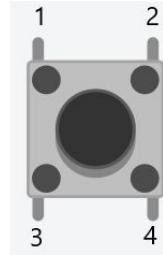


Arduino Nano to DFPlayer Mini Connections

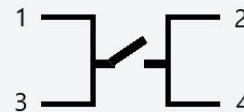
DFPlayer Mini Pin	Arduino Nano Pin
VCC	5V
GND	GND
TX	D13
RX	D12



Circuit Wiring Connections #3



Pin 1 & 3 are connected
Pin 2 & 4 are connected

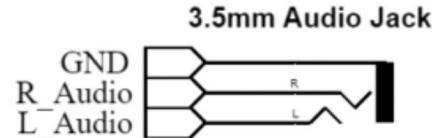
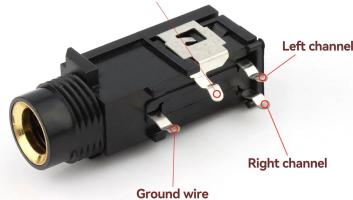


Arduino Nano to Push Button Connections

Push Button	Arduino Nano Pin
Left Button	D2
Select Button	D5
Right Button	D8



Circuit Wiring Connections #4

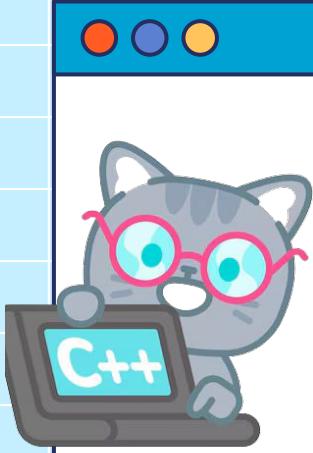


Audio Output

Component	Connection Detail
3.5mm Audio Socket	Connected to DFPlayer Mini audio output

Software Setup

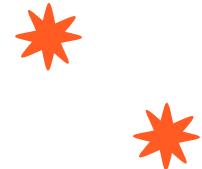
<https://github.com/camerynjane/MP3-Player-Source-Code>





Setting Up the SD Card

1. Find your desired song/audio on Youtube
2. Convert to MP3 using the link below:
<https://cnvmp3.com/v51>
3. Connect your SD card to your laptop and create the file system as shown in the Git repo
4. Add your audio files and title them accordingly, making sure each is in its own separate file (e.g. 001.mp3 is in “1” File)



Test your circuit!



Troubleshoot if needed, ask for help if you have any questions!



So proud of you all! ❤

Let's stay connected!



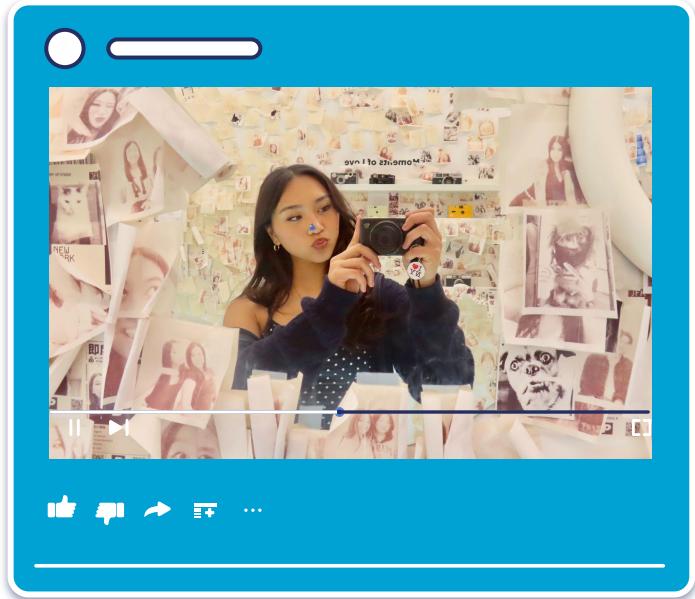
@camerynjane



Cameryn Mugol



cmugol@ucsd.edu





Thank you!

Hope to see you again soon :)