

# Smart Motors Paraguay\*

**Goal:** Creating a low-cost device to teach electronics to high school students in Paraguay, utilizing existent tools in the country.



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Tufts 2026

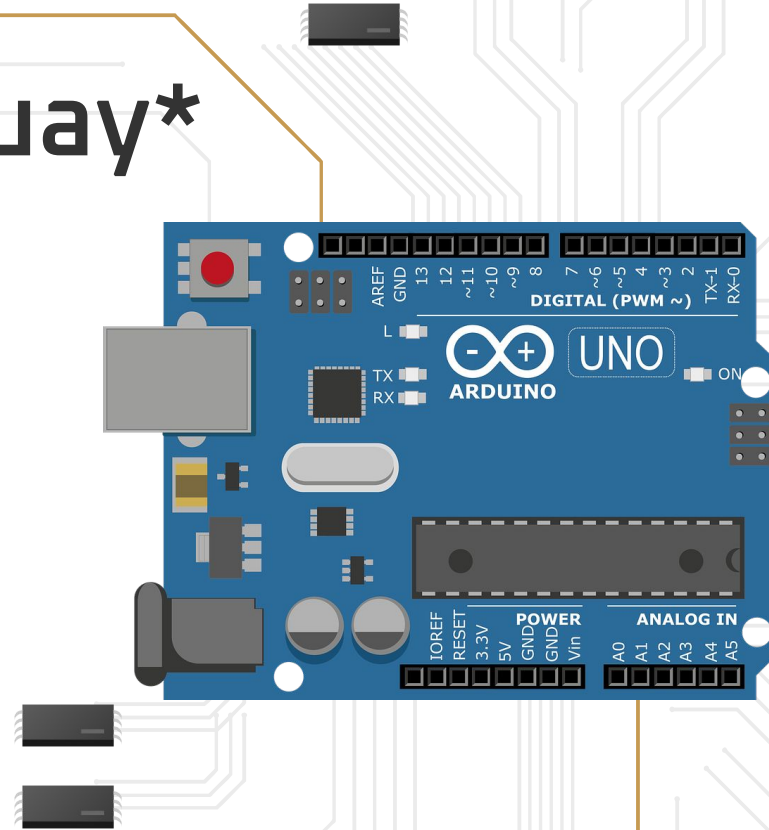
## IMPORTANT LINKS

[Github](#)

[Box CAD design](#)

[Notion](#)

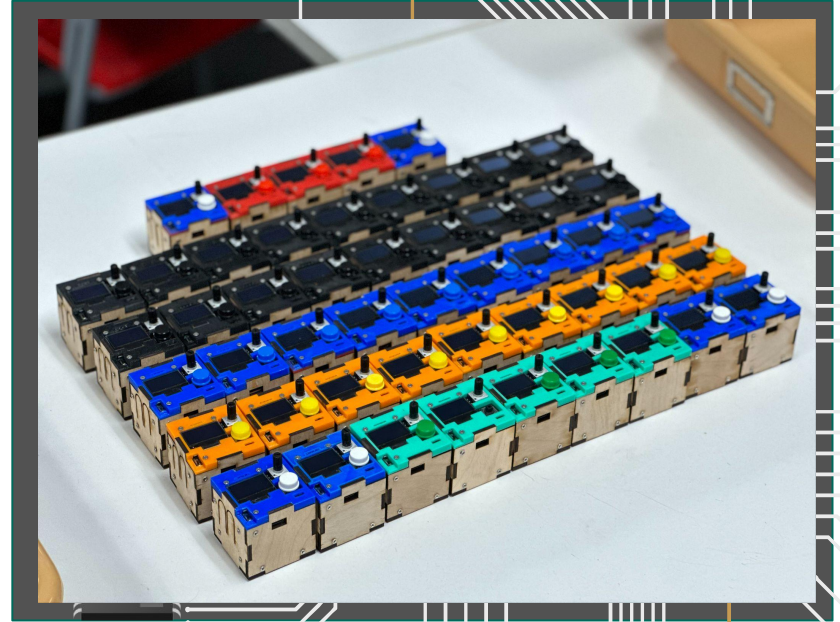
[Code assistant](#)



\*This project was based on [Dr. Milan Dahal's work](#) with Smart Motors

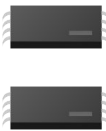
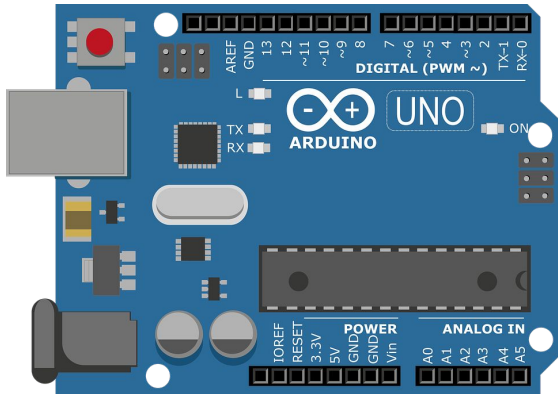
# What are Smart Motors?

Low-cost trainable devices, utilized as a tool to introduce concepts related to engineering and robotics, to children, with no need for internet or a computer.



*Research question:*

How to make Smart Motors, a low-cost educational device, adaptable to the region of Paraguay and surrounding areas, utilizing tools already available in the classrooms and collaborating with members of the community?



# Research process

```
graph LR; A((Learning about past Smart Motors Prototypes)) --- B((Meeting with educators from different regions (Brazil, Argentina and Paraguay))); B --- C((Learn electronics concepts and choose Arduino as base platform)); C --- D((Design and assembly of a prototype (Design a PCB, solder all components))); D --- E((Write code for UI (trained an AI assistant) in C++)); E --- F((Create a demo with the device, test it and repeat!));
```

Learning about past Smart Motors Prototypes

Meeting with educators from different regions (Brazil, Argentina and Paraguay)

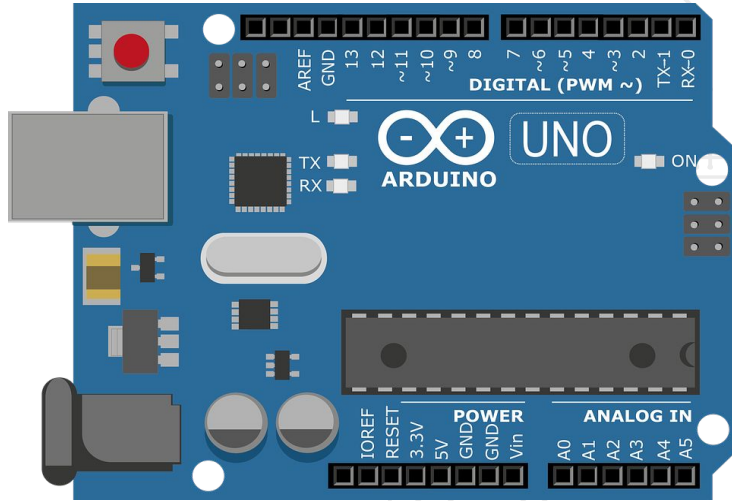
Learn electronics concepts and choose Arduino as base platform

Design and assembly of a prototype (Design a PCB, solder all components)

Write code for UI (trained an AI assistant) in C++

Create a demo with the device, test it and repeat!

# Components

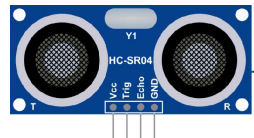


Arduino UNO R3

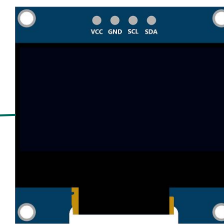


9V battery

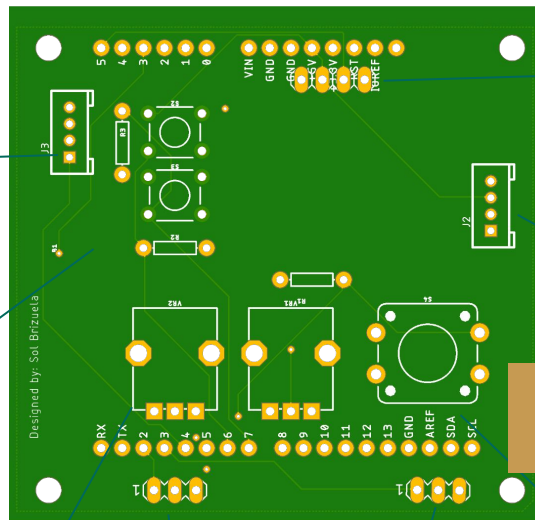
# Components



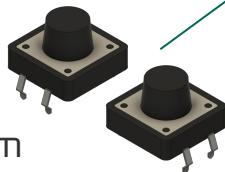
Grove Ultrasonic sensor



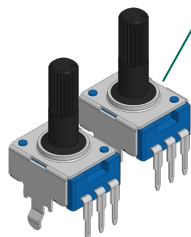
OLED Screen



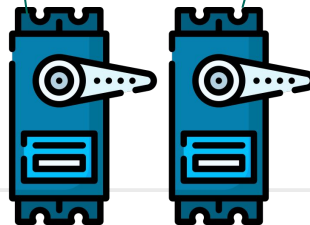
Printed Circuit Board designed by Sol Brizuela



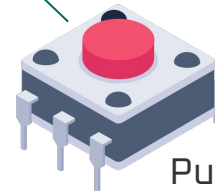
Push button (6 mm)



Potentiometers



Servo Motors



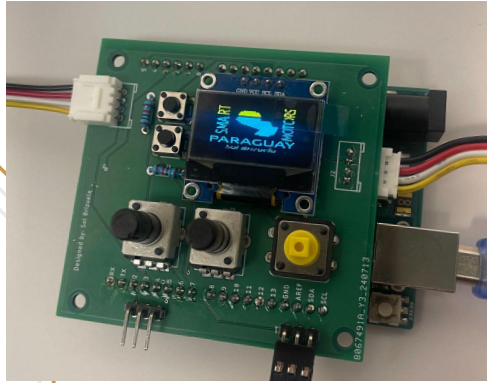
Push button (12 mm)



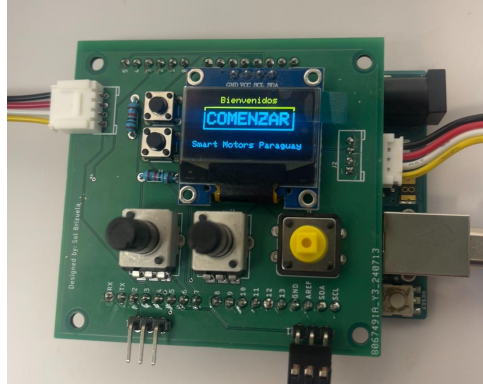
Grove Light sensor

# How it works\*

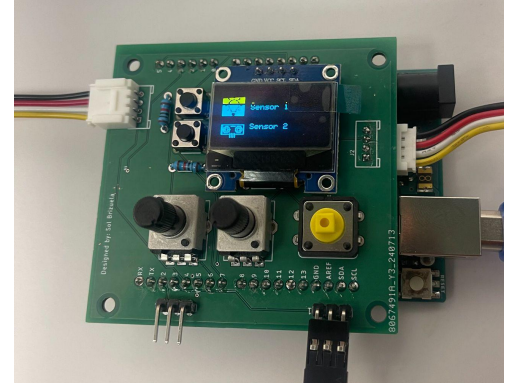
Logo



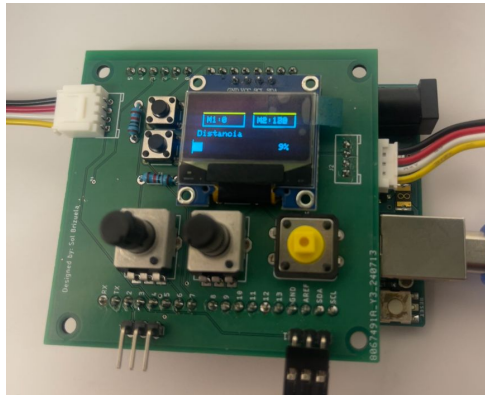
Welcome message\*



Select sensor

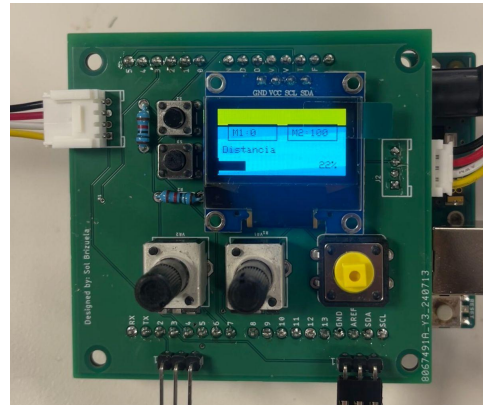


Training mode



Press button for 1 second to record data

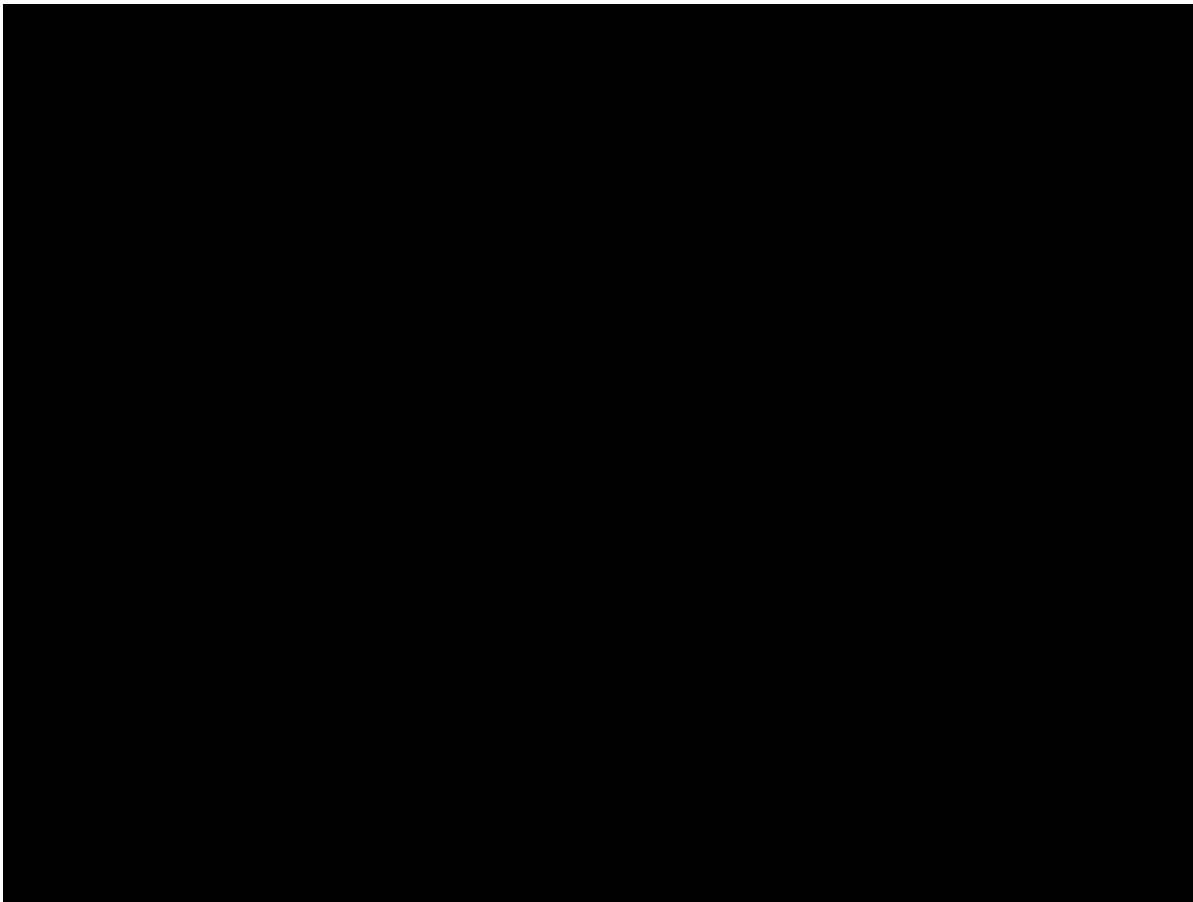
Playback mode



Press button for 2+ second to playback data

\*UI base code was generated by a ChatGPT assistant, trained by me  
\*\*Main language Spanish

# Demo



\*UI is in Spanish