



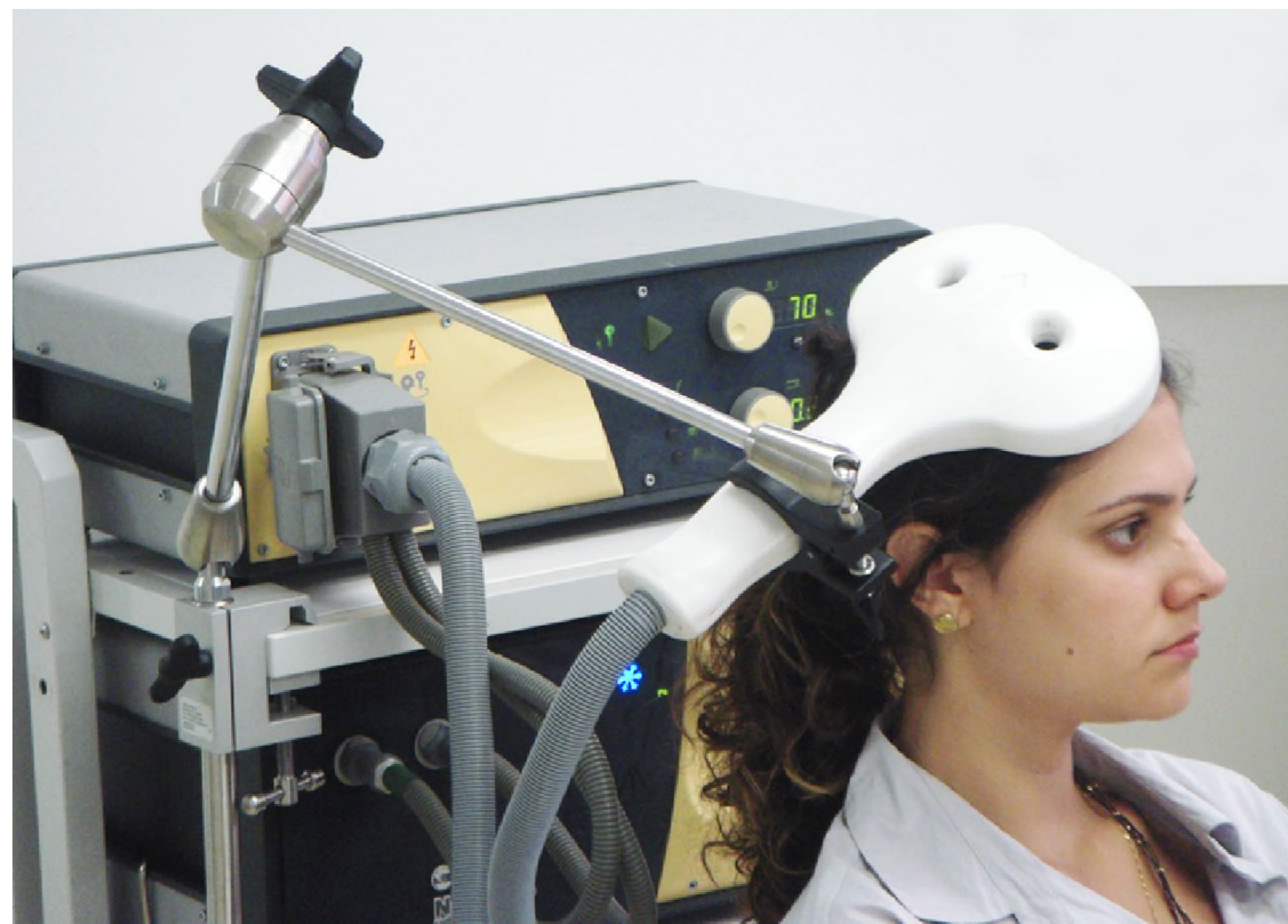
Developing a Transcranial Magnetic Stimulator Demonstration for Educational Purposes

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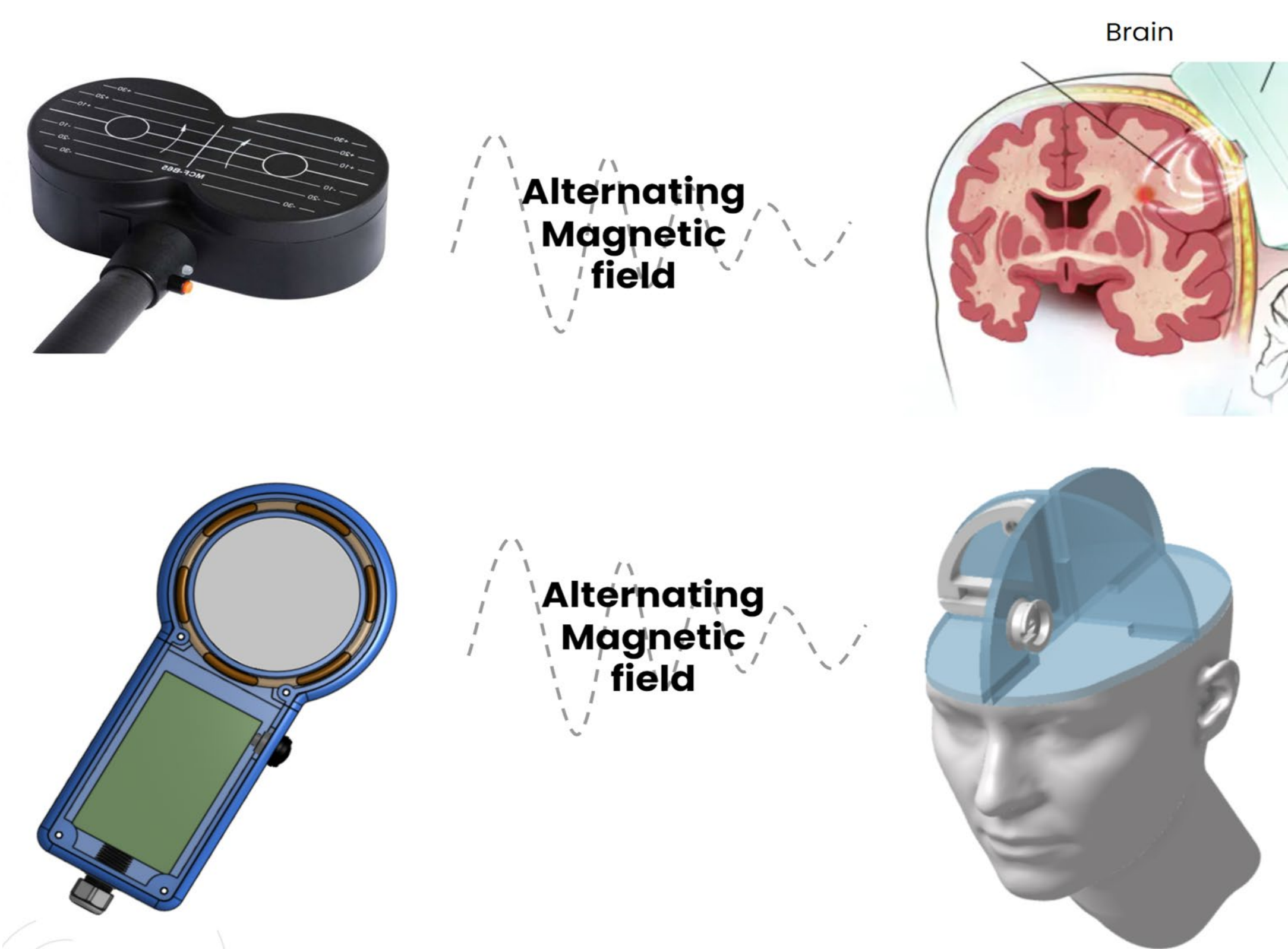
Background

- Transcranial Magnetic Stimulation (TMS) is a treatment for several neurological conditions
- TMS uses a series of short magnetic pulses directed to the brain to stimulate neurons via electromagnetic induction.



- The physics behind the treatment is difficult to explain to patients without relevant background.

This project aimed to solve challenges faced by clinicians in educating TMS patients during the informed consent process.

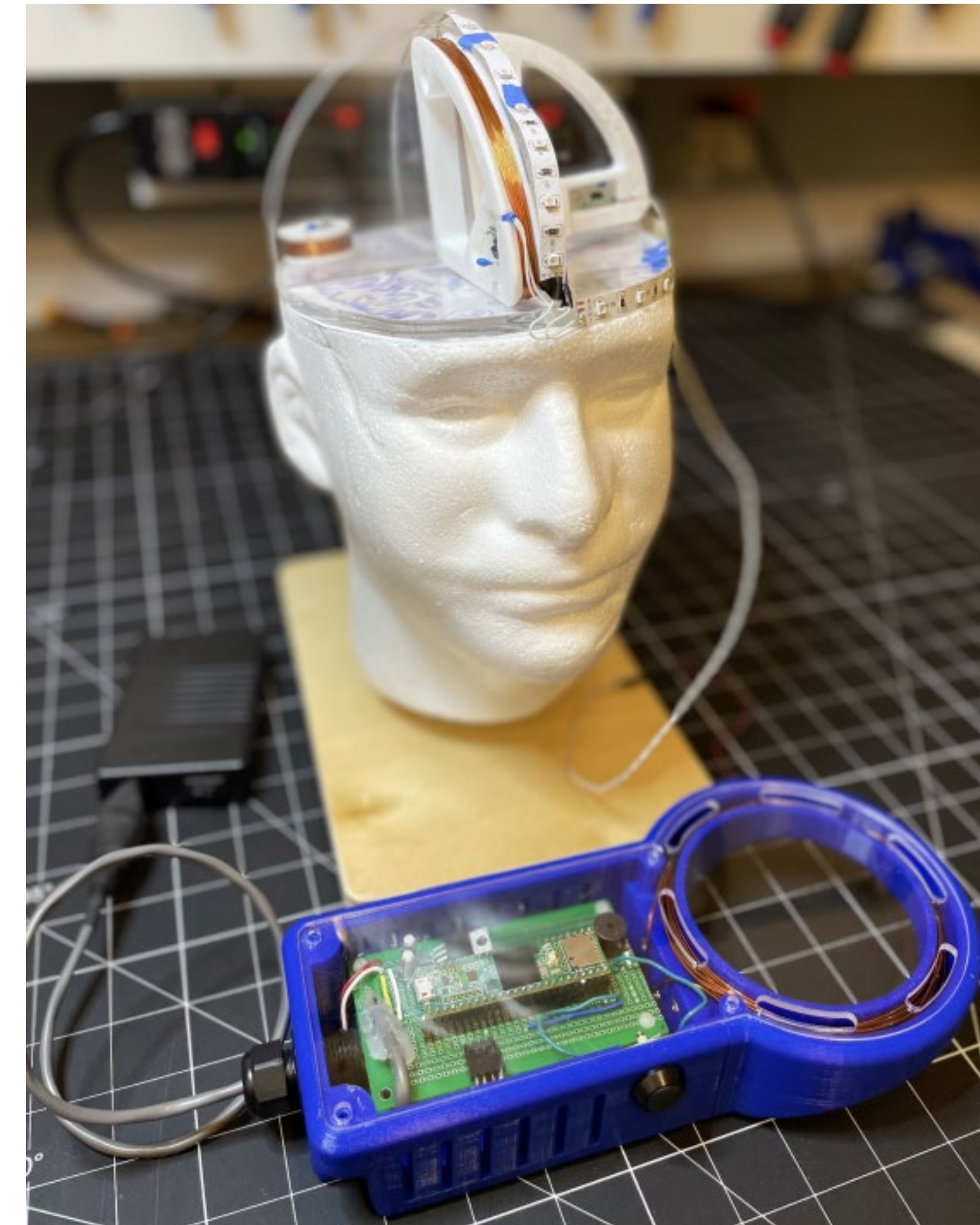


TMS and brain vs prototypes

We created a tool that imitates how a TMS device operates on a patient which clinicians draw parallels from to educate TMS patients.

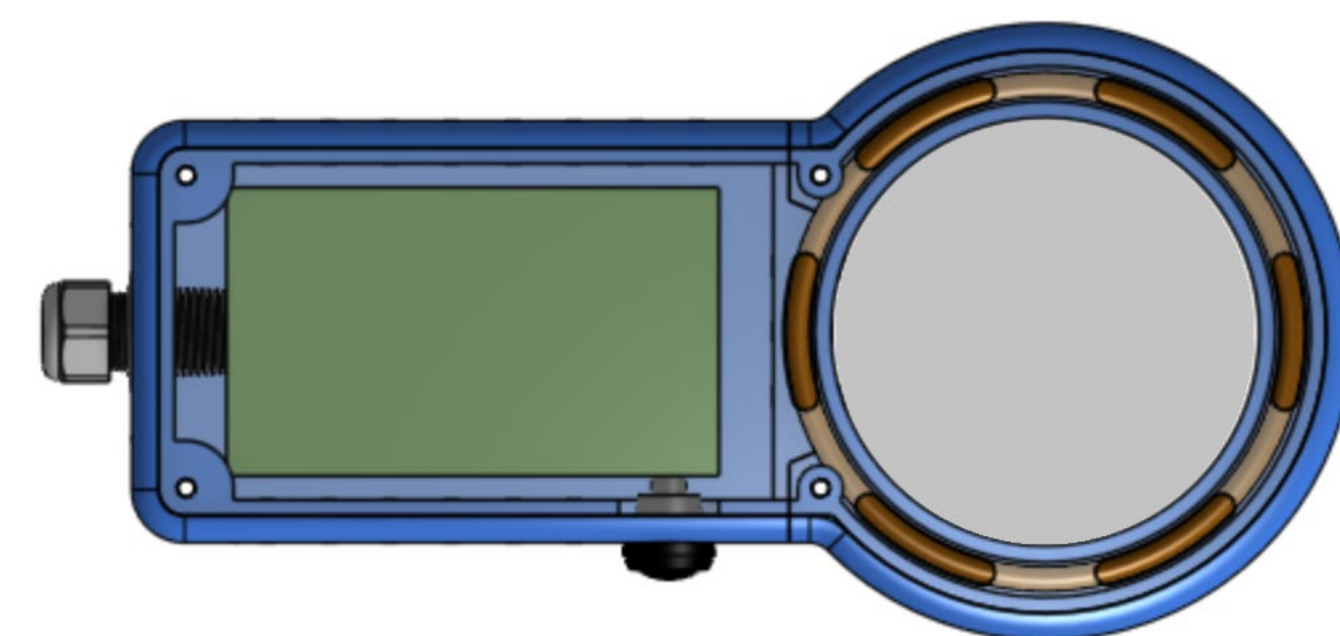
TMS Educational Prototype

- Miniature prototype of the TMS device and a representative model of a brain
- Demonstrates electromagnetic induction visually and interactively
- Created using off-the-shelf components and rapid prototyping methods



Features

mini-TMS device that mimics a real TMS device



Electromagnetic coils and circuit to generate time-varying magnetic fields.

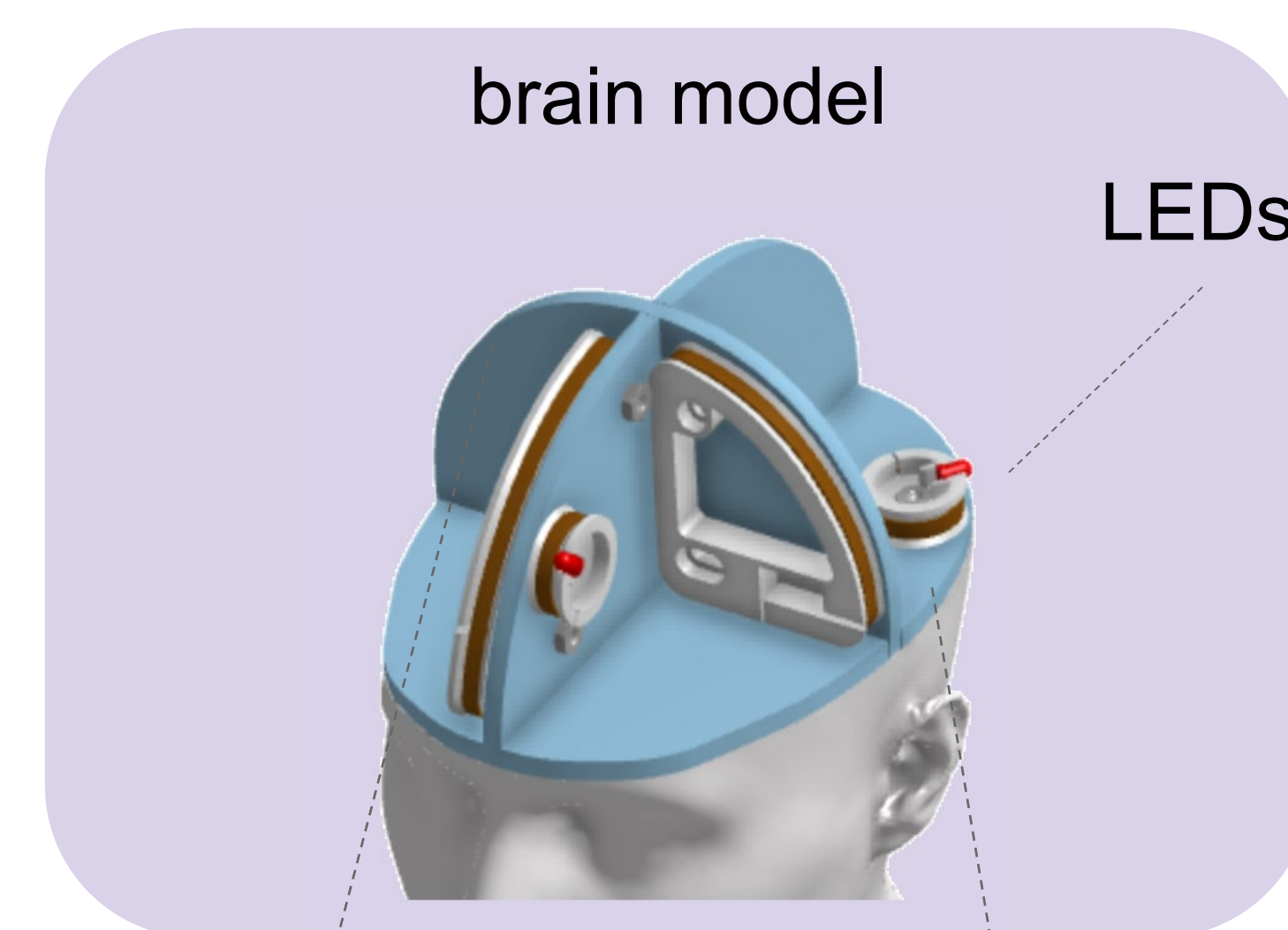


Protocols

- HI
- 1 Hz
- 10 Hz

The mini-TMS has a speaker and built-in settings that imitate TMS **stimulation and suppression protocols.**

Brain model to model neurological effects of TMS

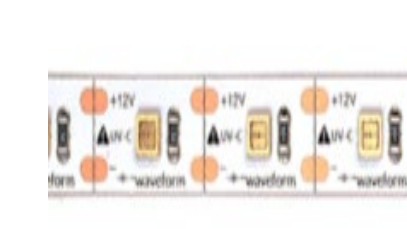


motor threshold



Moves when triggered by the mini-TMS to teach patients about **motor threshold**

network

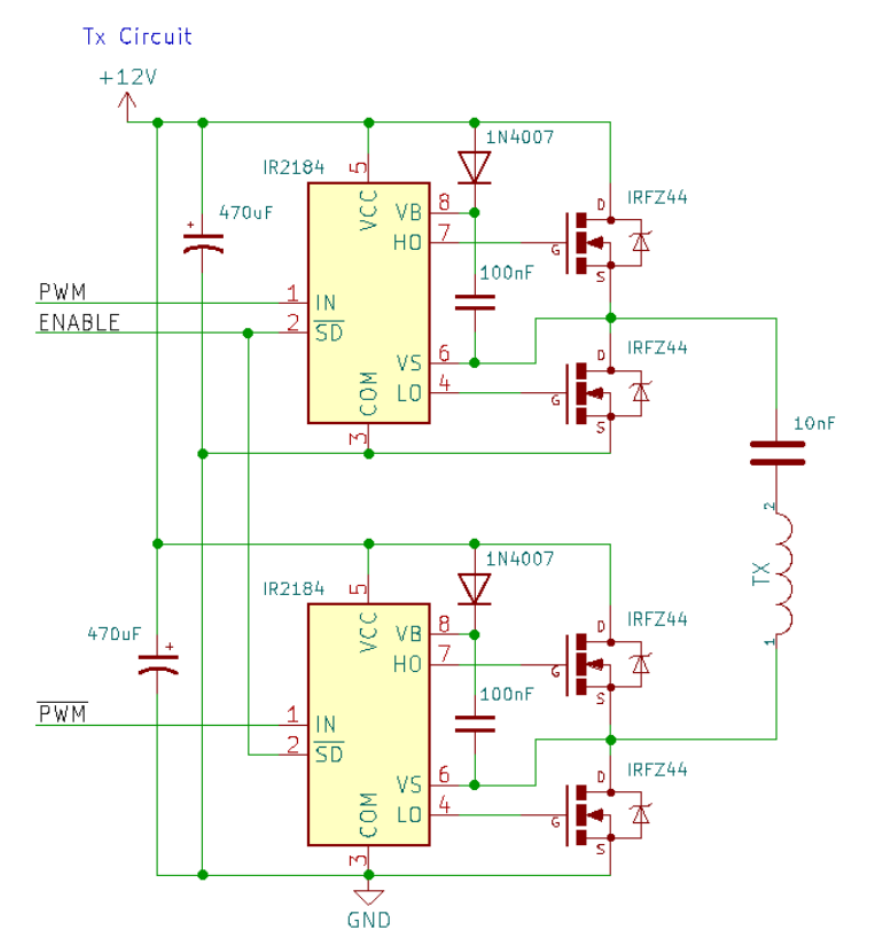


LED strips

LED strips light up when triggered to showcase **neuron network**

Future Use

- The prototype will be used during the consent process through pre-created videos or live during consultation with patients.
- There is potential for research in understanding how informed consent is related to TMS treatment outcomes.
- The prototype design can be open-sourced to allow other clinics to build their own.



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Acknowledgement

This project was made possible with funding and assistance from the Engineering Physics Project Lab and the NINET Lab.