



Low-cost open-source hardware designs for biopotential amplification for neuroscience, prosthetics and more

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Things you are going to learn today!

WHAT

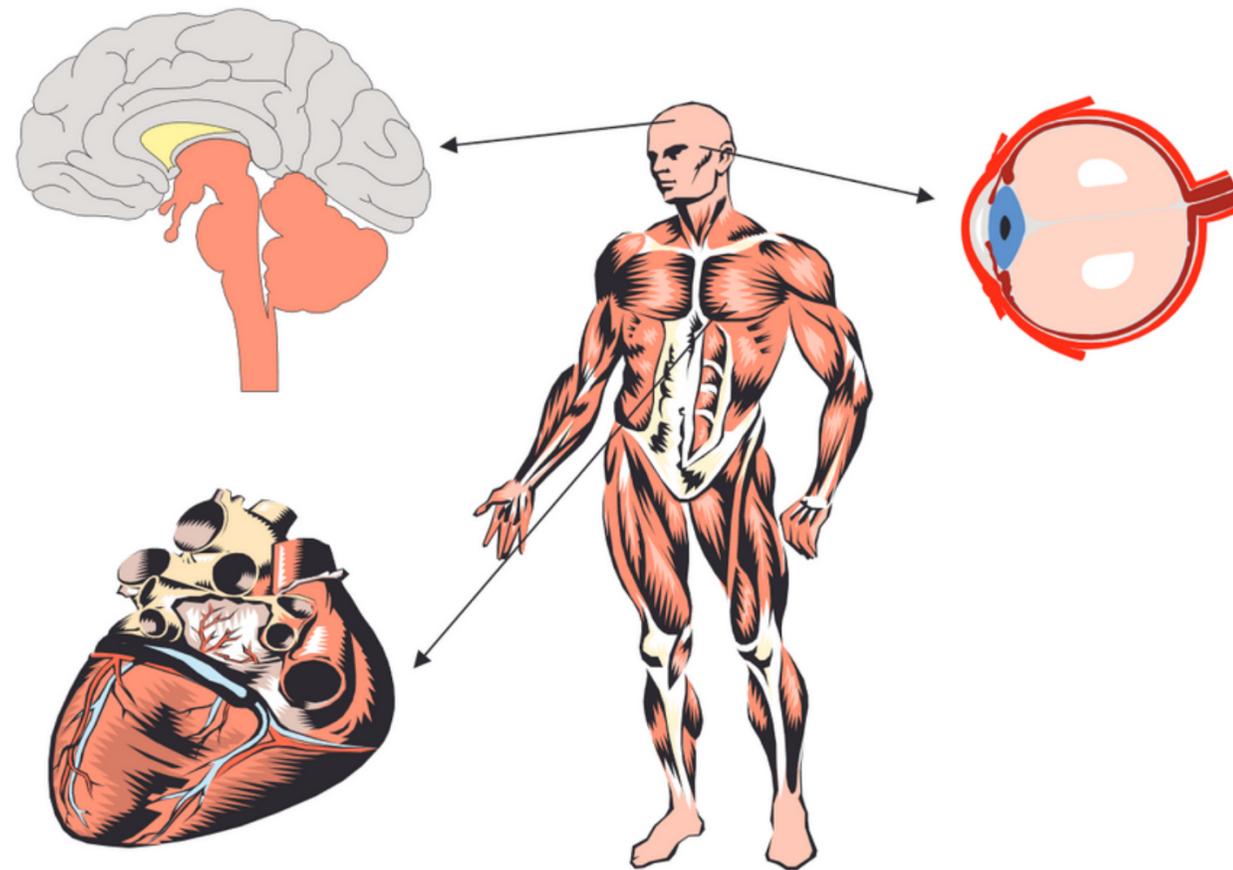
What are Biopotentials?
EEG, ECG, EMG, & EOG.

HOW

How to design hardware for
Biopotential signal Amplification?

WHY

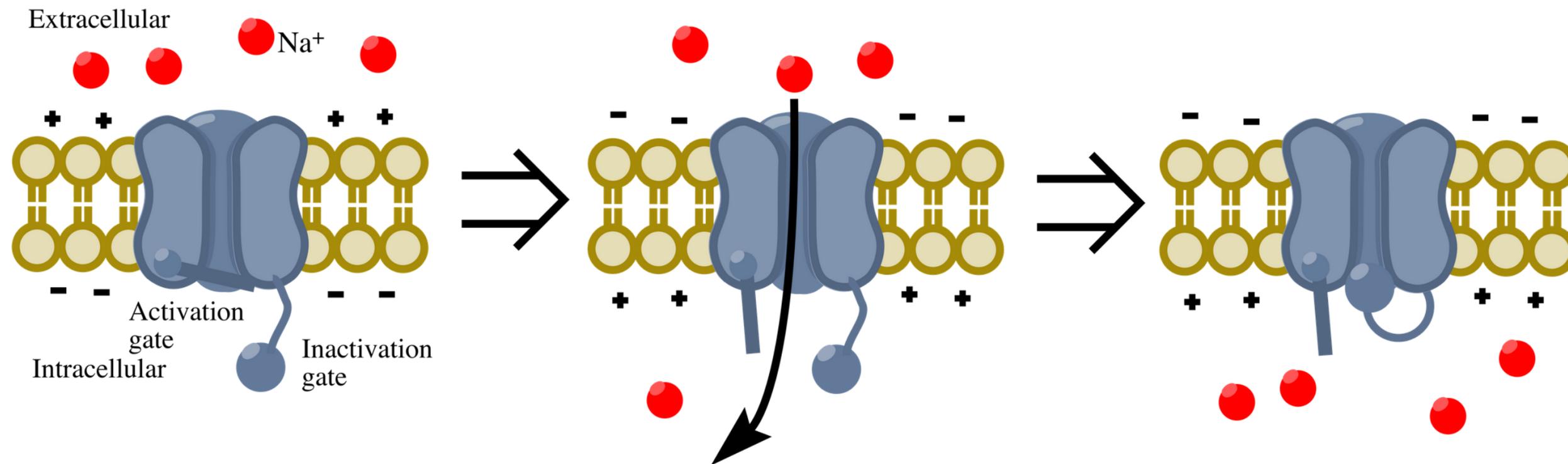
Why do we need affordable
BioAmp hardware?



EEG - Brain
ECG - Heart
EMG - Muscle
EOG - Eye

Action potential generation!

Sodium Potassium Ion channels



How to design hardware for Biopotential signal Amplification?

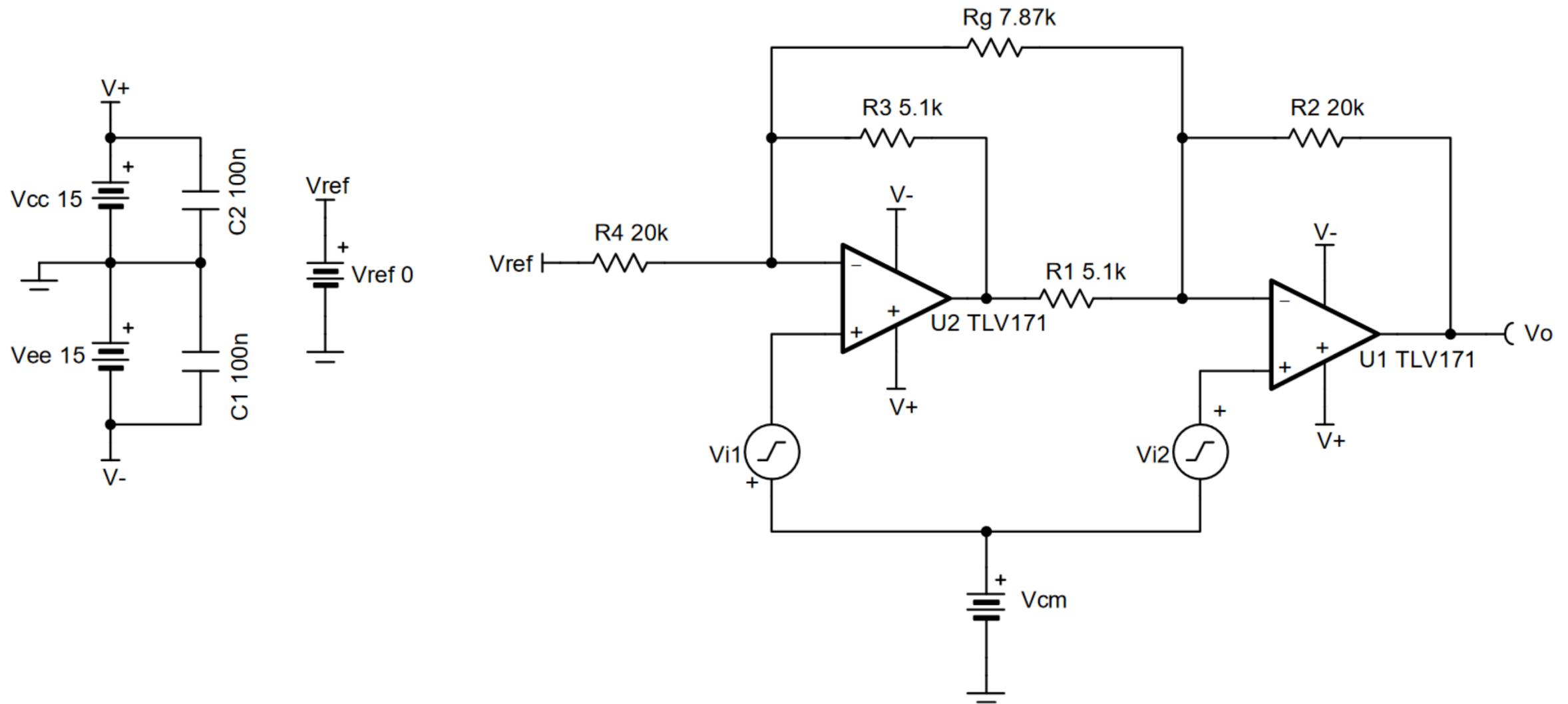
Requirements of a BioAmp

- High input impedance.
- High CMRR (>100dB).
- Low output impedance.
- Flexible Gain control.
- Target protection.
- Low power consumption.

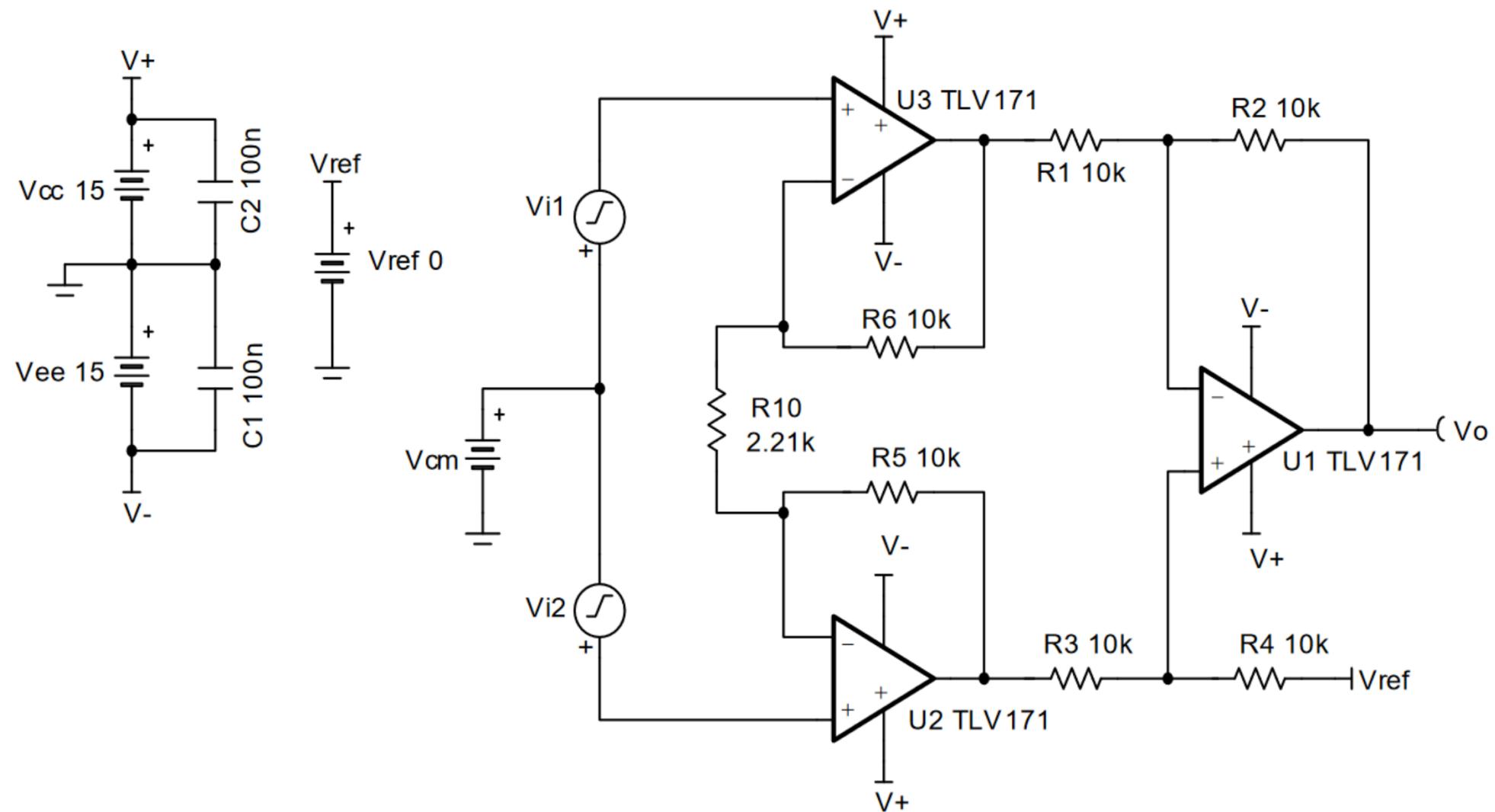


Instrumentation Amplifiers

2 opAmp Design



3 opAmp Design



03

Why do we need affordable BioAmp hardware?

I believe Biology with technology is the next big revolution. To make sure everybody gets the equal opportunity to make a change, we need a supply of affordable development tools!



01

Research-grade Neuroscience hardware .

02

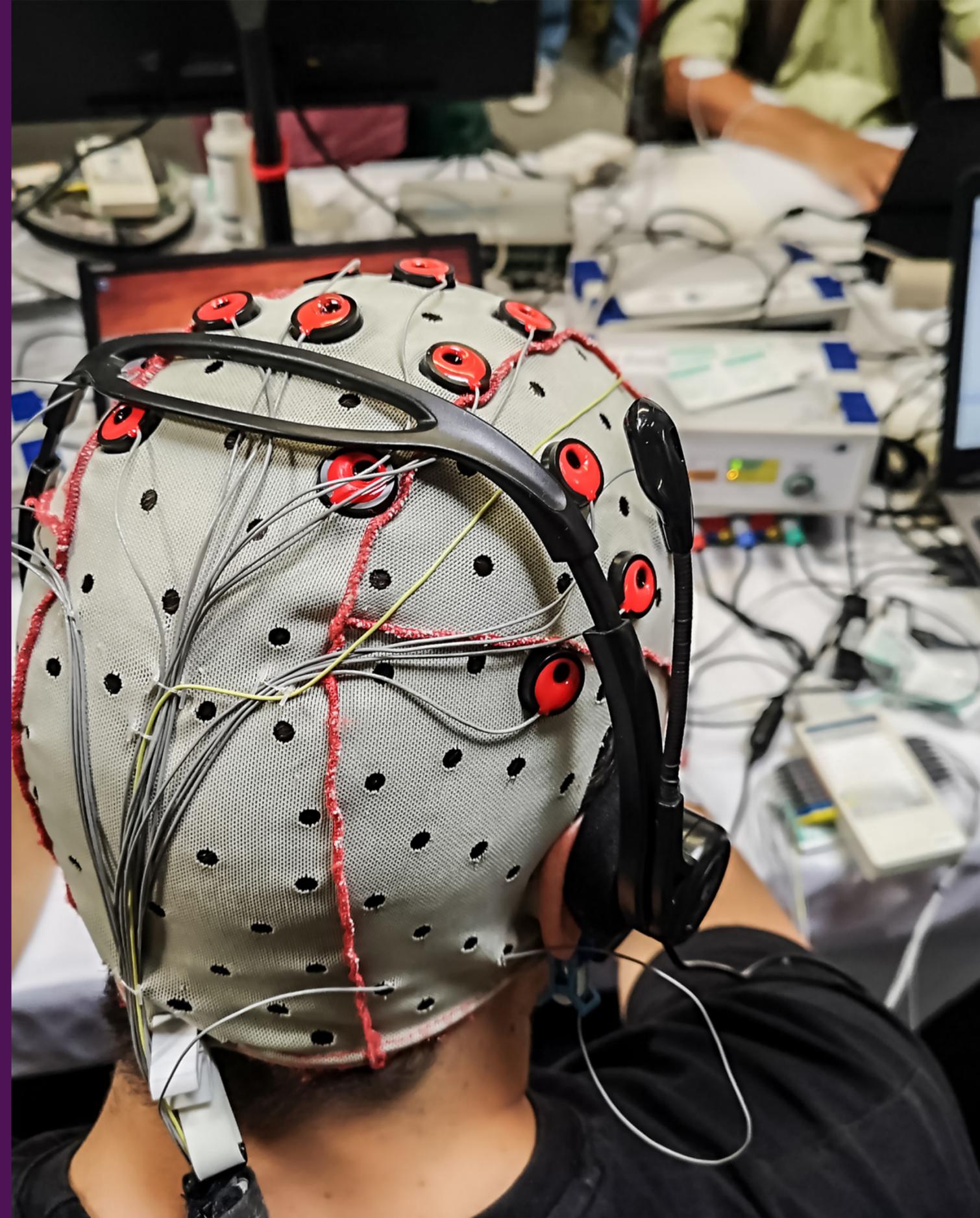
Affordable AFE for prosthetics control.

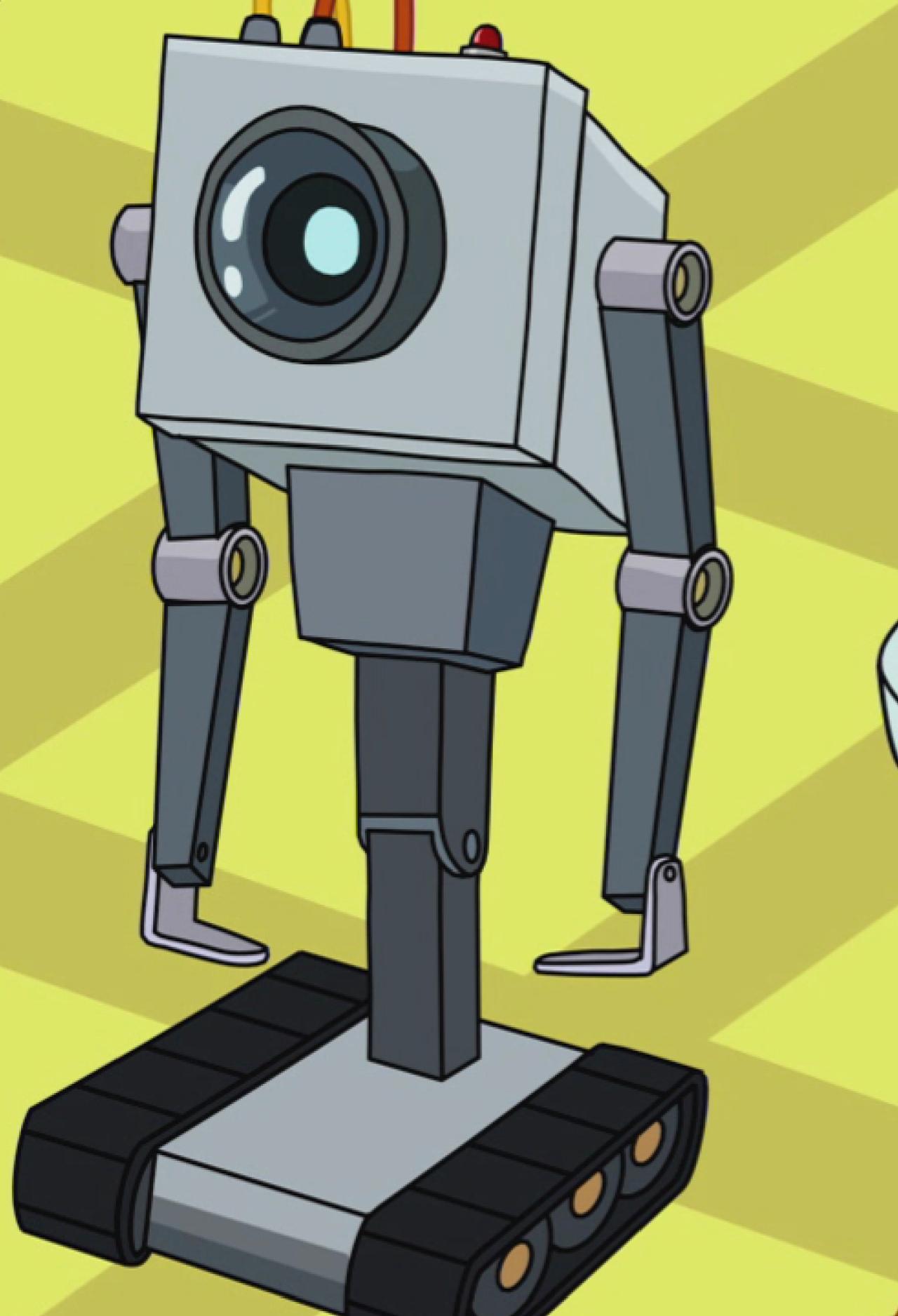
Starting with

Digital telepathy

In the future there will be a way to automate responses based on pre-written keywords and through machine learning.

Presentations are communication tools that can be used as demonstrations, lectures, speeches, reports, and more. It is mostly presented before an audience.





Butter Robot

A real mesh of living neurons trained to pass butter with sensory inputs like vision, orientation, and motor control.

This idea is not my own, I stole it from Rick from "Rick & Morty".

