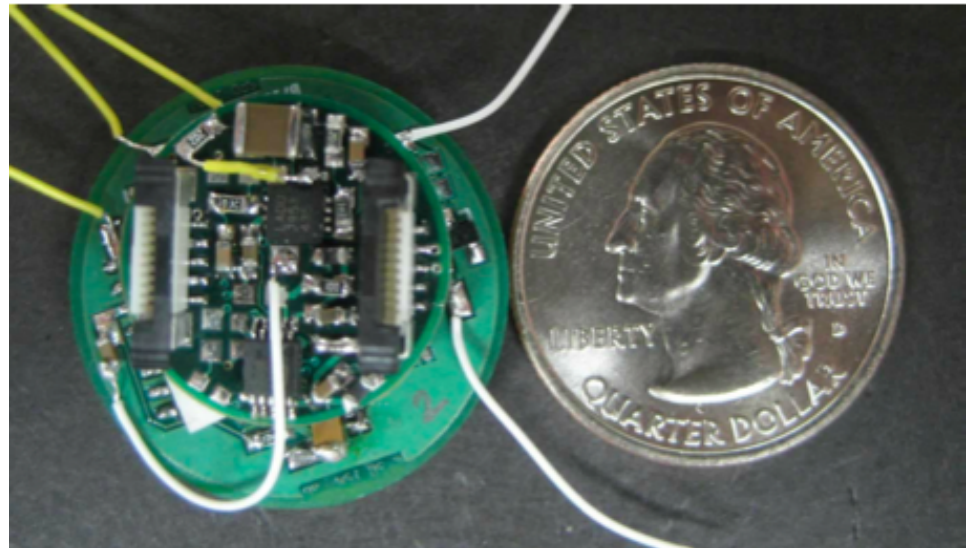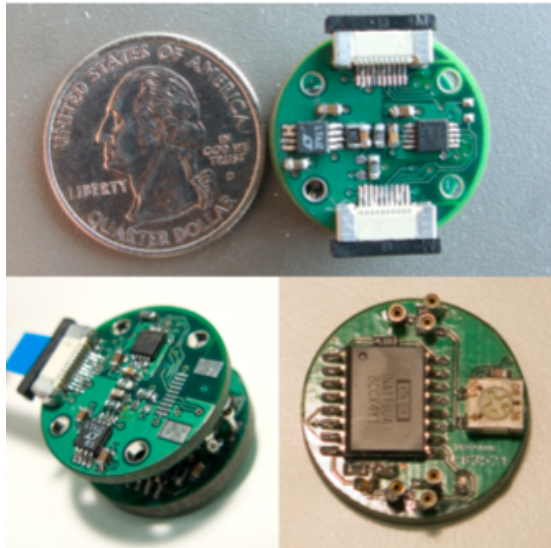Non-contact electrode for EEG & EKG

- Electrode
    - 2 US quarter sized PCBs
    - Insulated copper fill through capacitive coupling
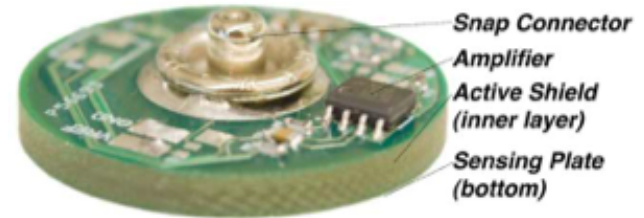
Schematic of the electrode

- Ultra-high input impedance front end amplifier
    high-pass filter

    ➢ INA116
      LMP7702

- Differential Amplifier
    band-pass filter

    ➢ LTC6078
      LT6010

- Analog-to-digital Converter

    ➢ AD7691
      ADS1299

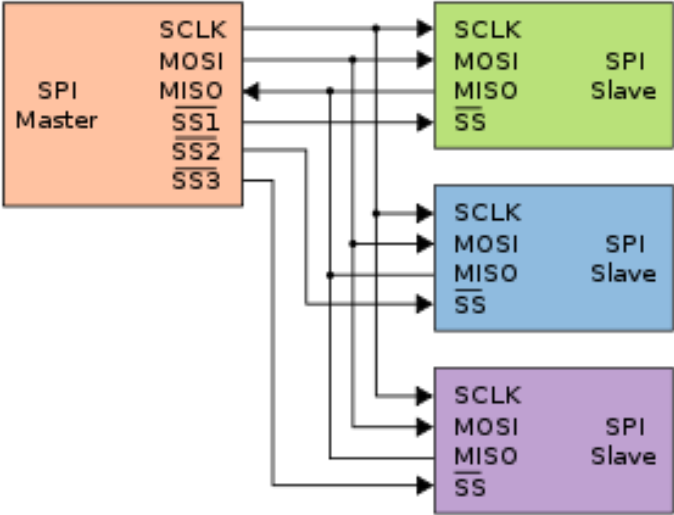- Microcontroller

    ➢ Arduino (instead of PIC24F16KA102)

EAGLE software for board design

- Schematic

- Copper fill layer

- Active shield layer

Snap Connector
Amplifier
Active Shield
(inner layer)
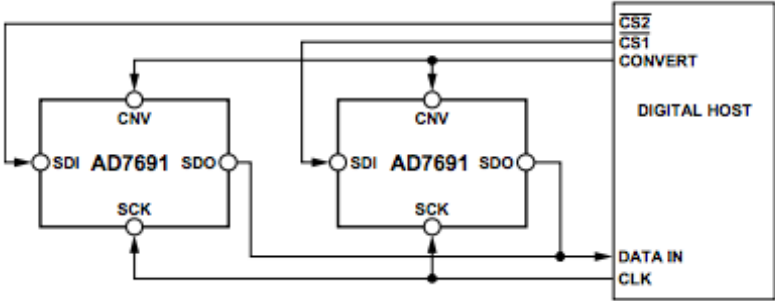Sensing Plate
(bottom)

Daisy-chain multiple ADCs

- Serial Peripheral Interface (SPI)
- Single Master to Multiple Slaves

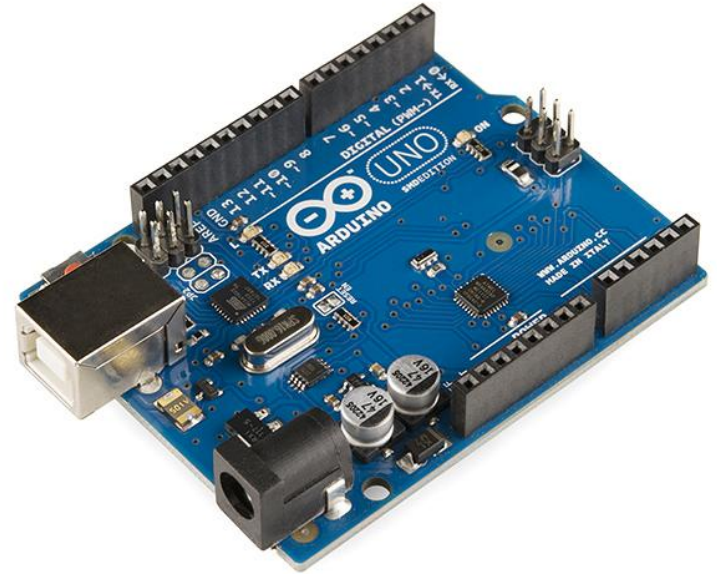- Example of 2 AD7691s connected to an SPI-compatible digital host
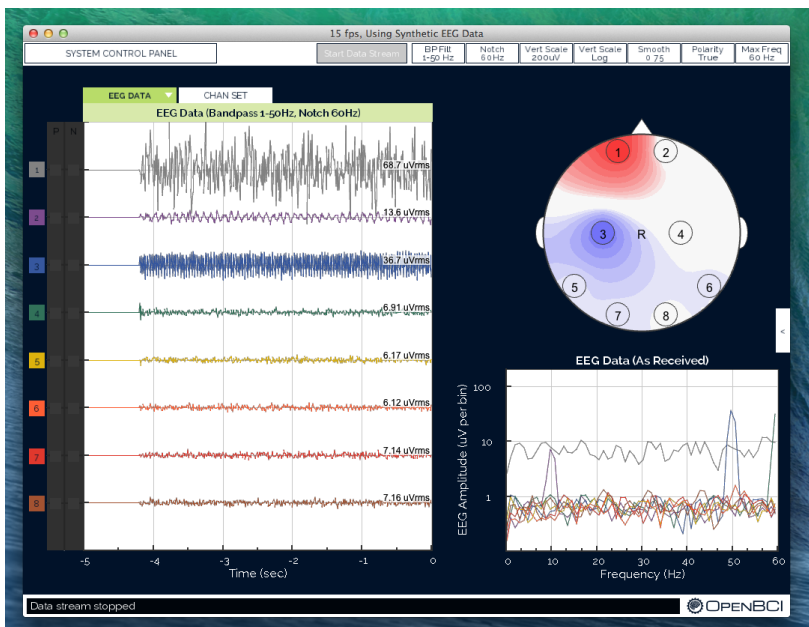
Microcontroller

Arduino One

SPI Libraries for Arduino

OpenBCI/GitHub Libraries for Arduino <=> TI ADS1299

Software

OpenBCI GUI

Runs in Processing