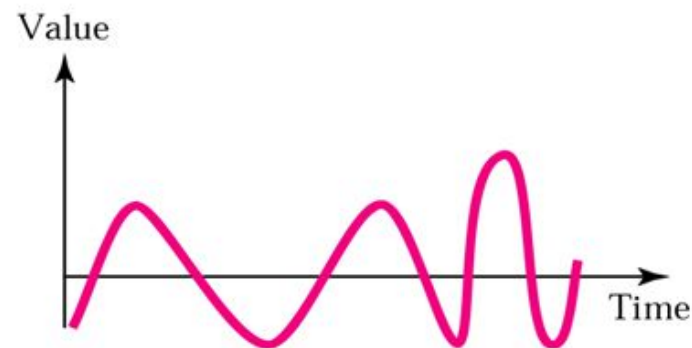


Embodied Interaction - Sensors and Embodiment

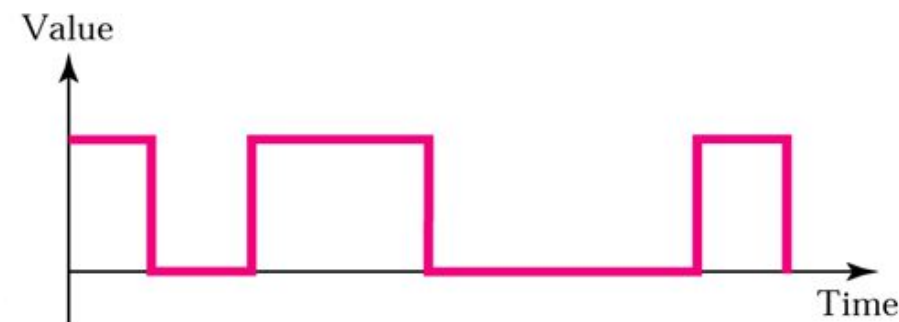
Luke Franzke - 2018

# Analog and Digital Signals

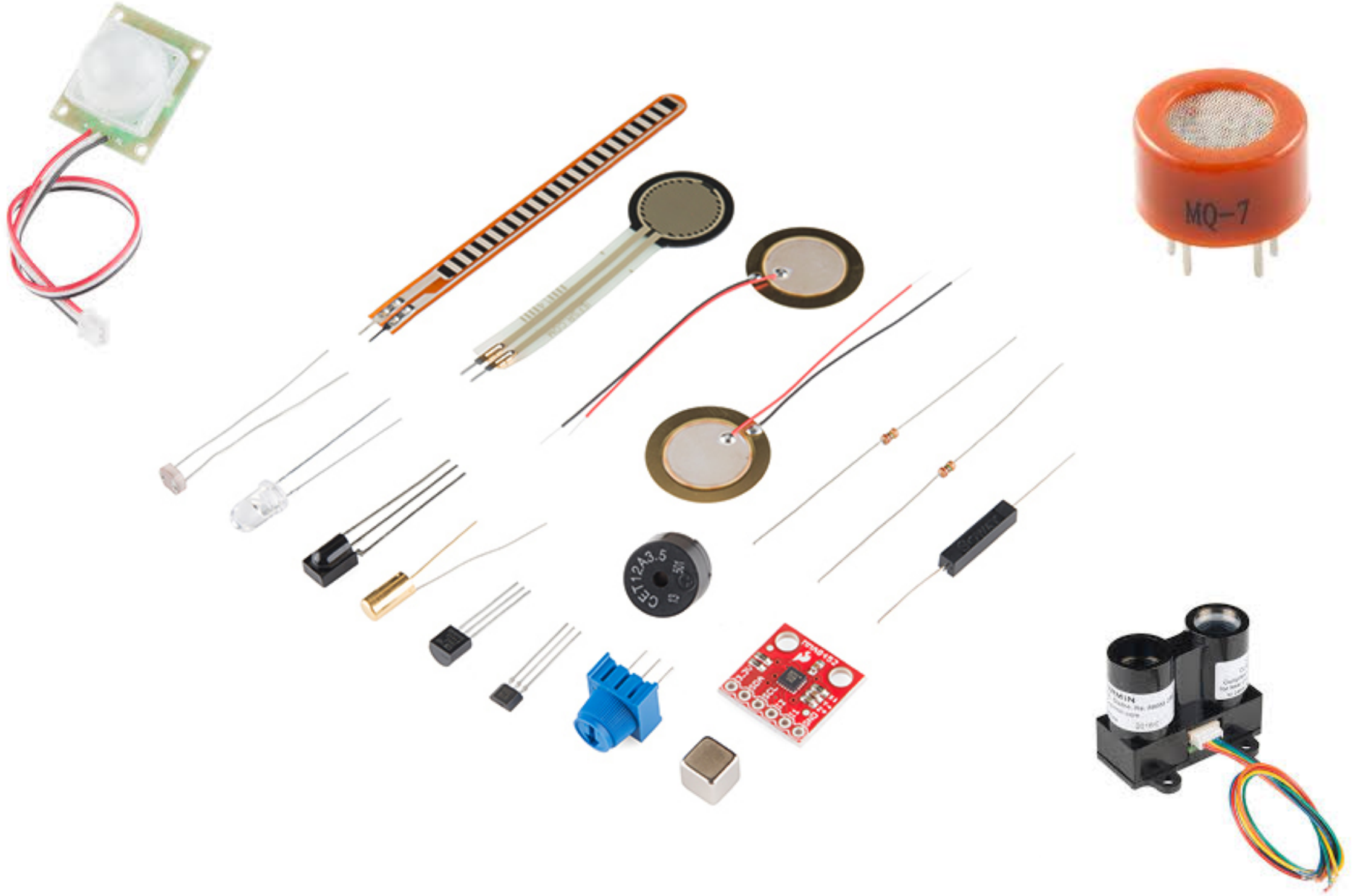
- An analog signal is a continuous wave form that changes smoothly over time
- A digital signal is discrete. It can have only a limited number of defined values, often as simple as 1 and 0



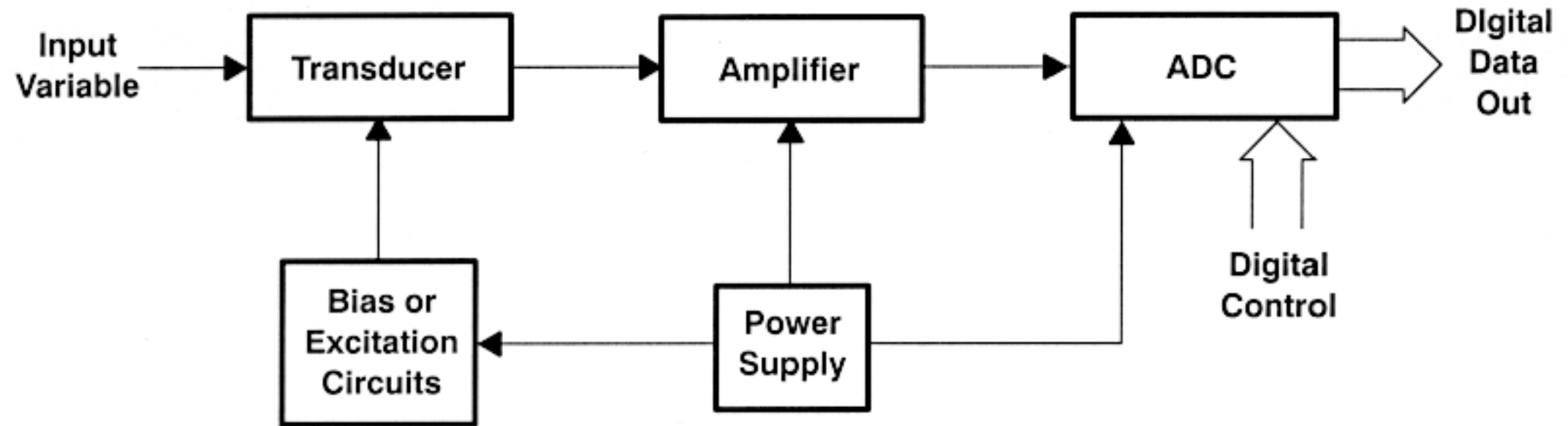
a. Analog signal

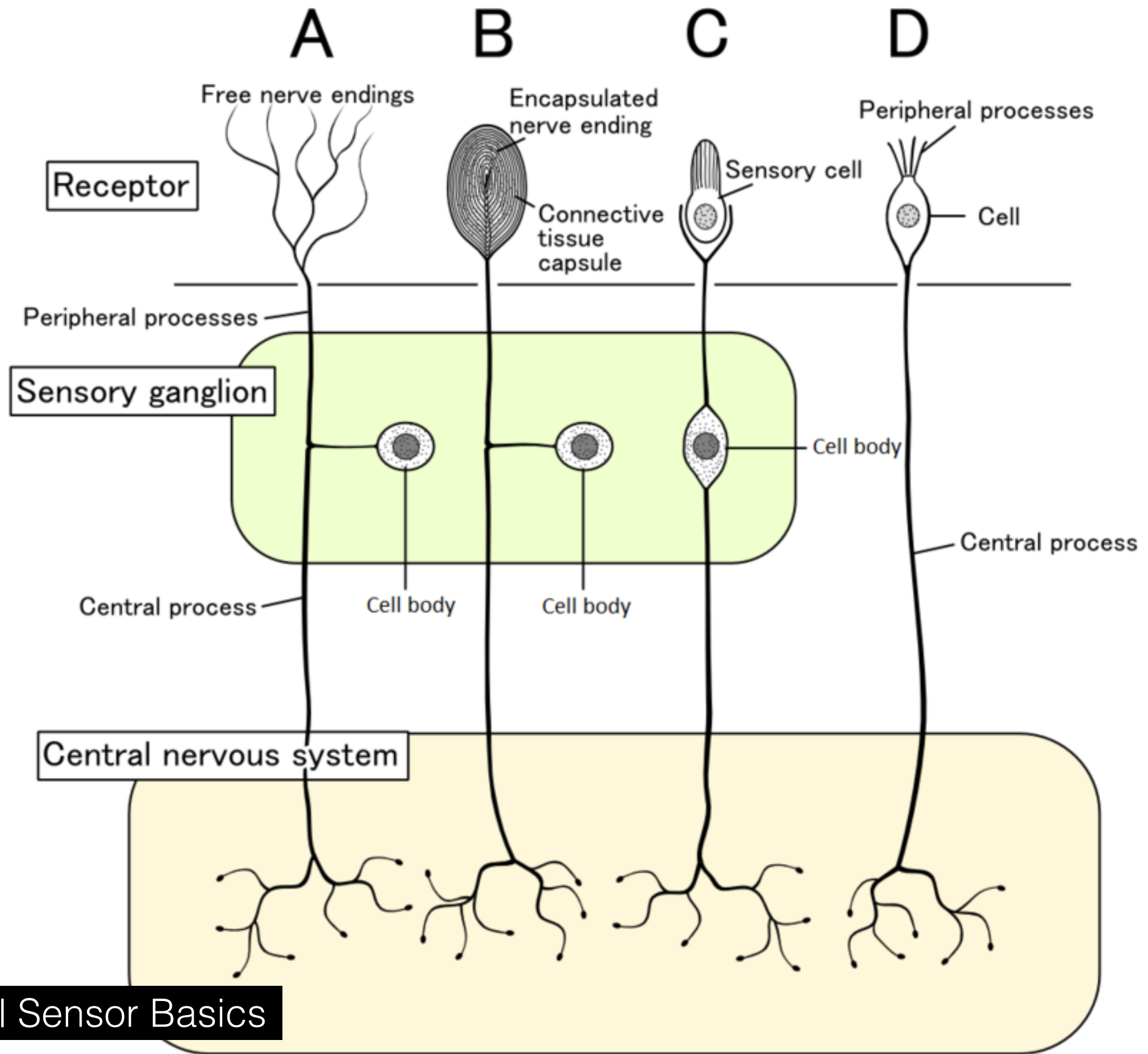


b. Digital signal



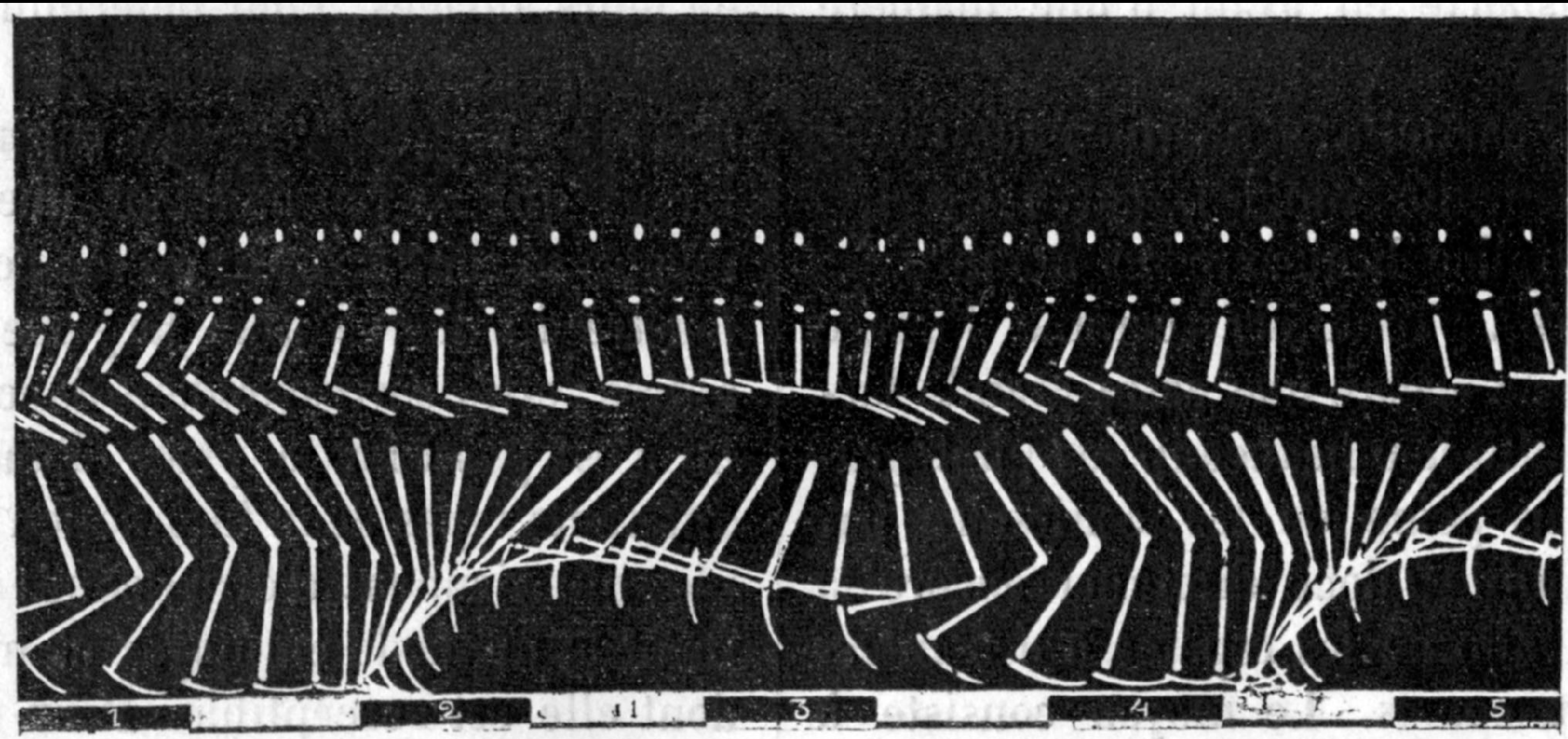
Types of Sensors





Biological Sensor Basics









Appropriation of our sensory and motor systems to aid higher level reasoning

Embodied Cognition

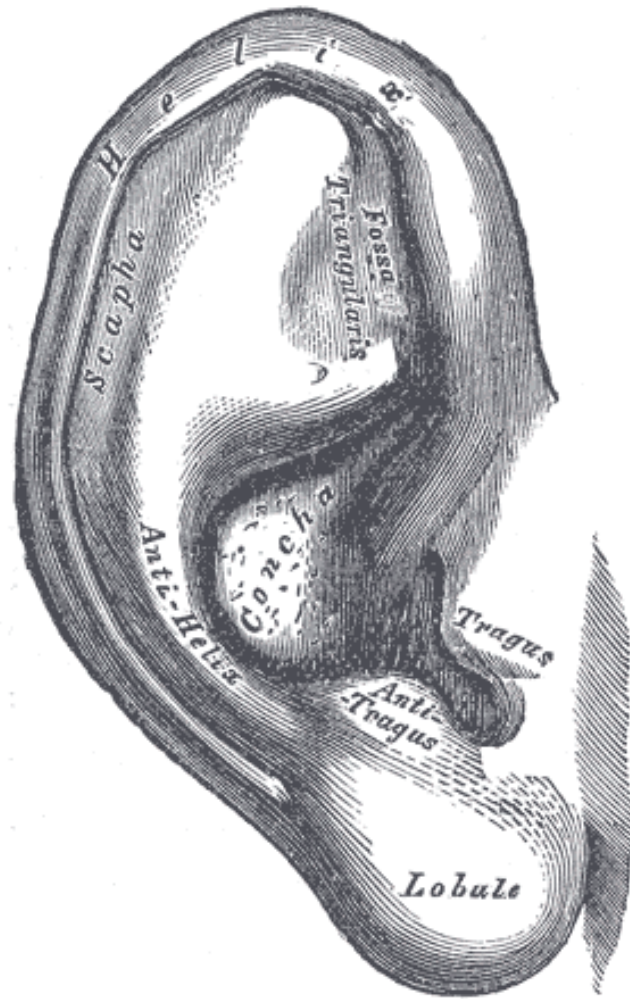
Giving thought to embodiment when designing interactions, leverages the full potential of our users cognitive abilities.

When designing interactions, we can include sensors and actuators, not as just inputs and outputs of digital system, but as an integral part of that computational system.

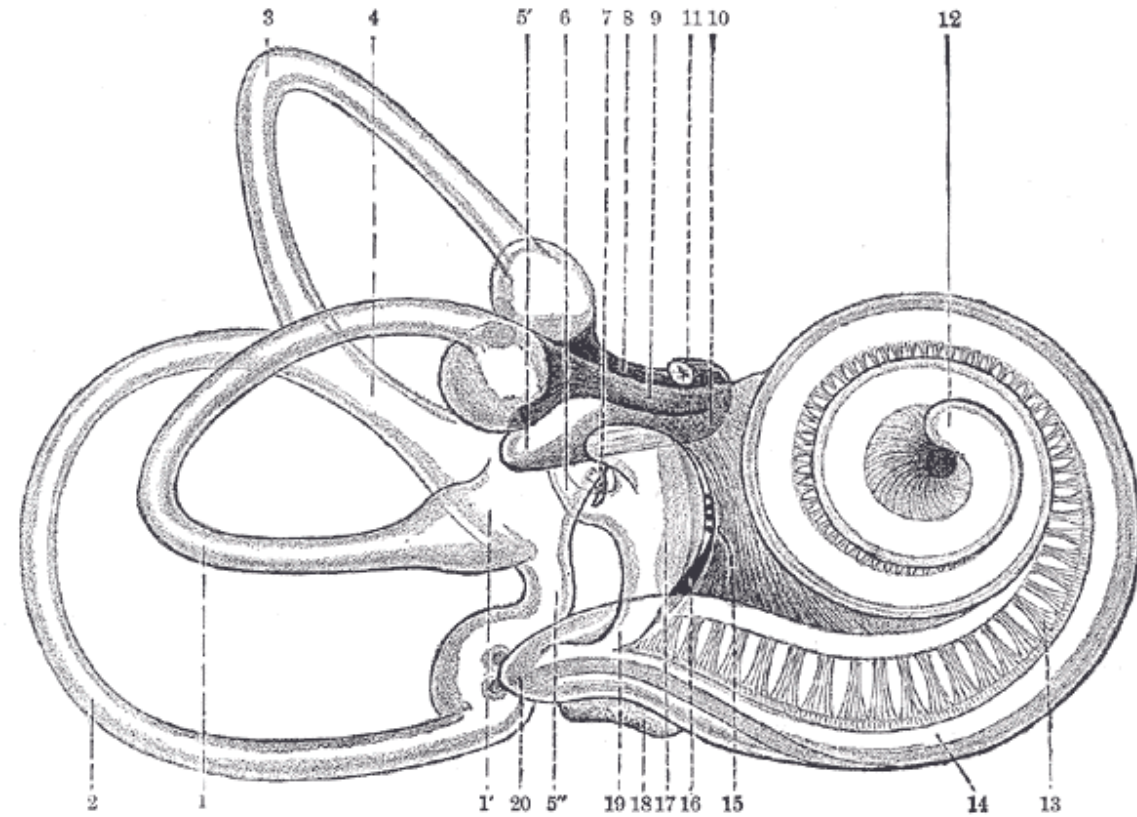


# Embodiment: Sense and Perception

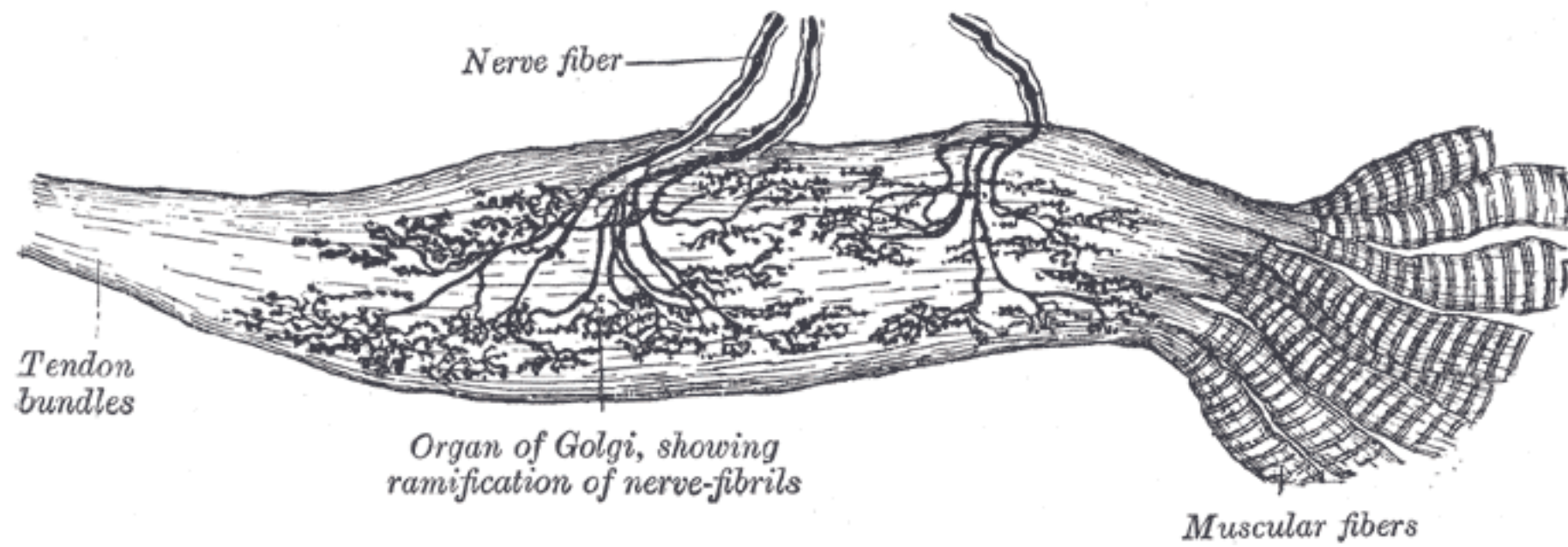
## Exteroception



## Proprioception

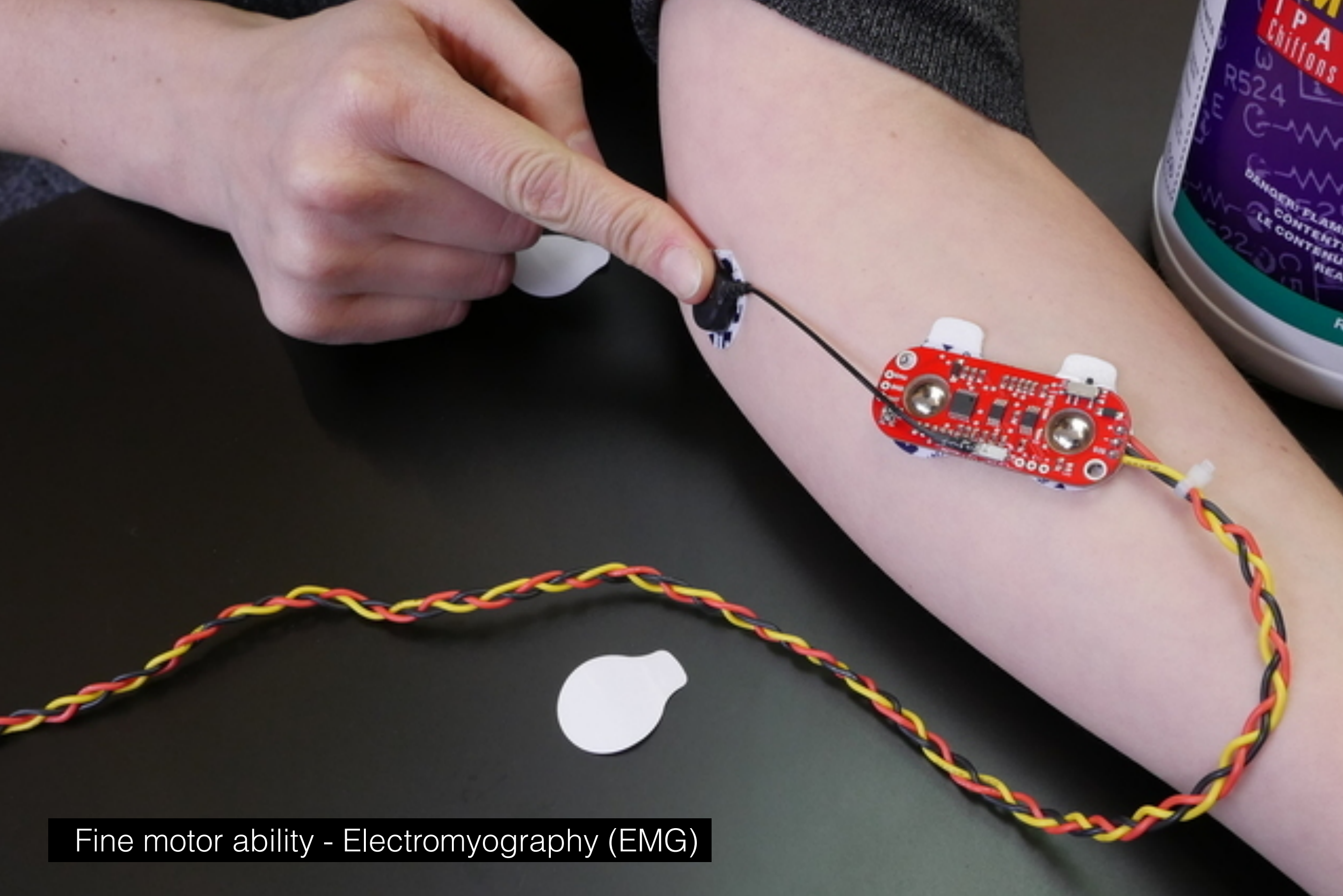




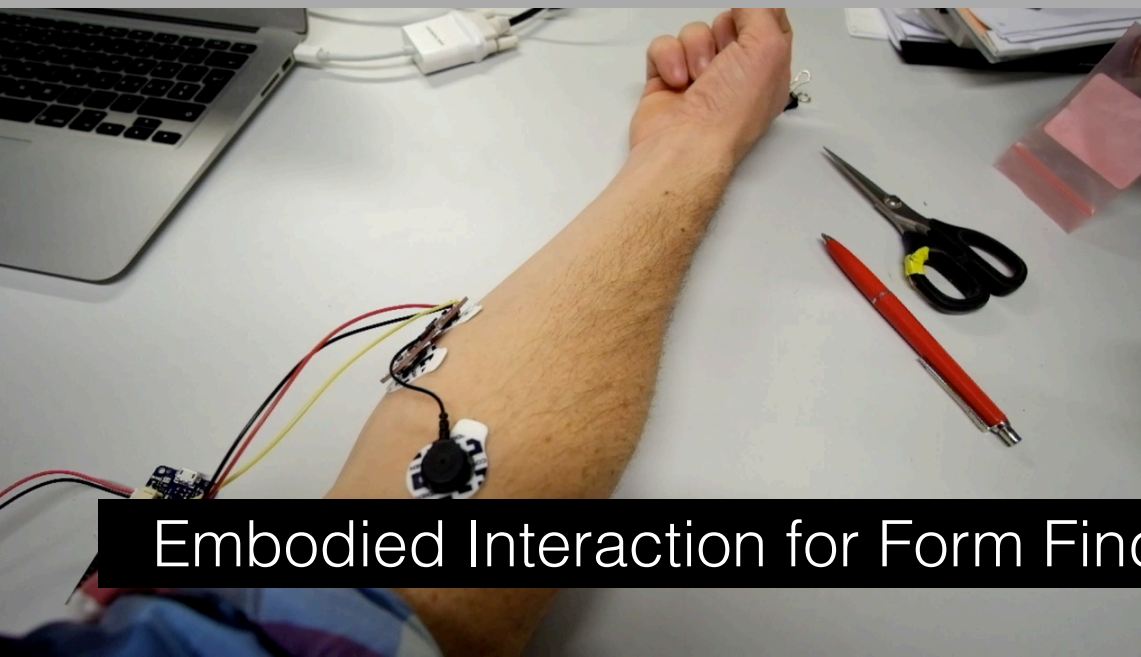


Golgi tendon organ

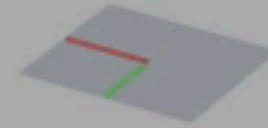




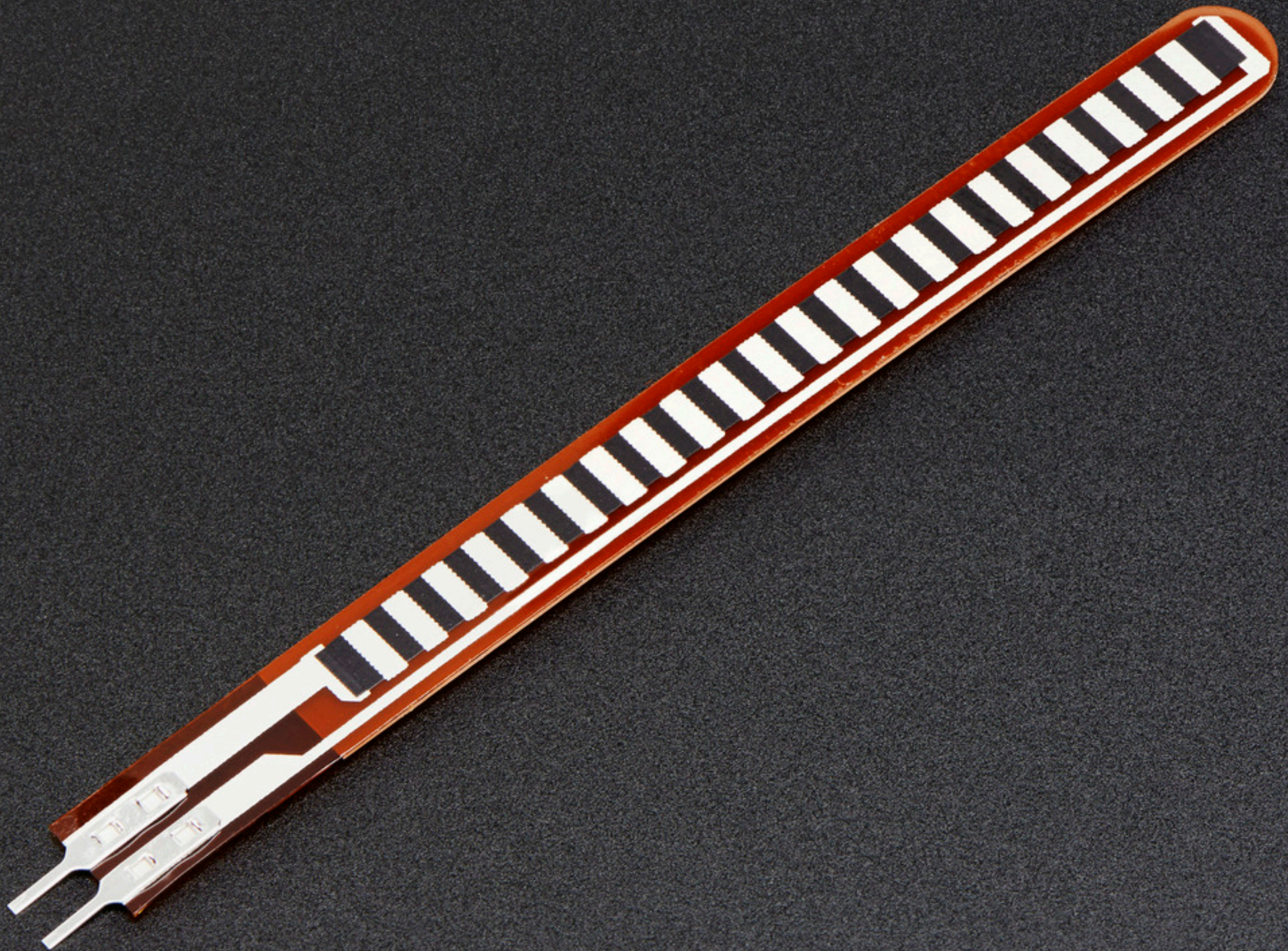
Fine motor ability - Electromyography (EMG)



Embodied Interaction for Form Finding

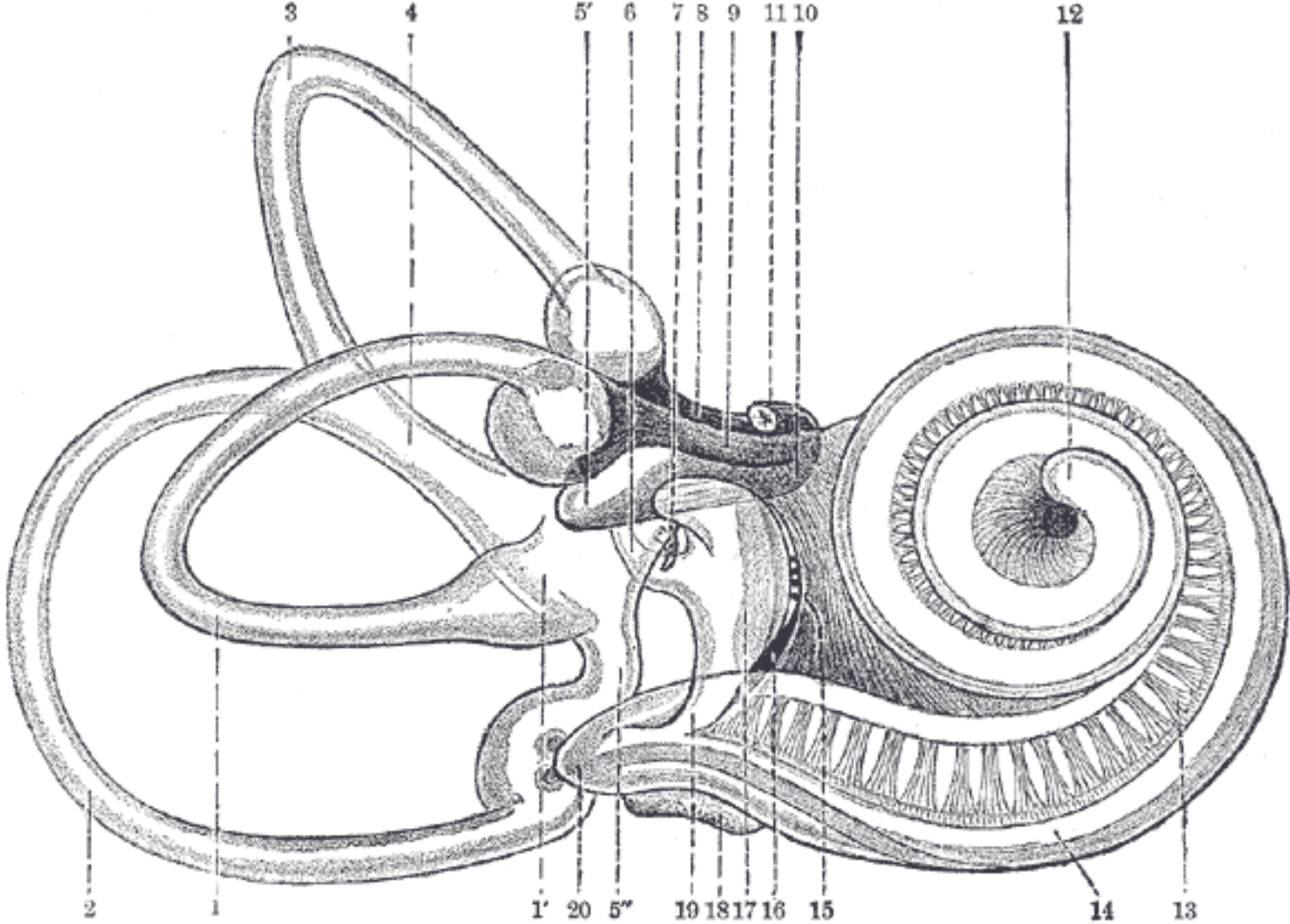




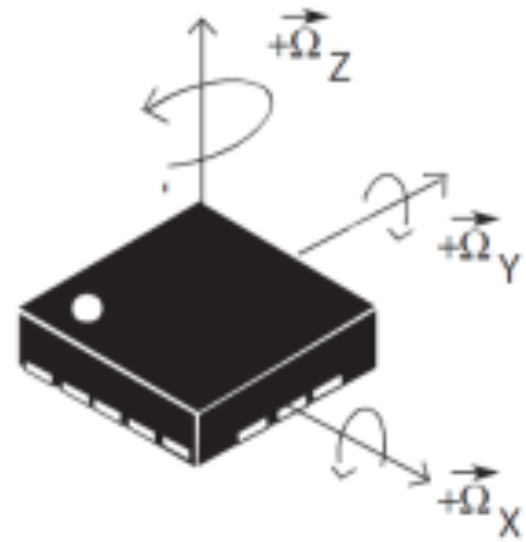


Bend Sensors

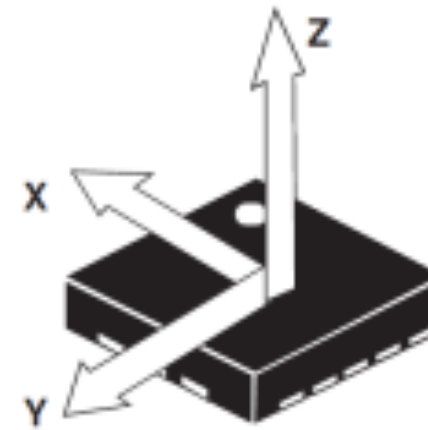




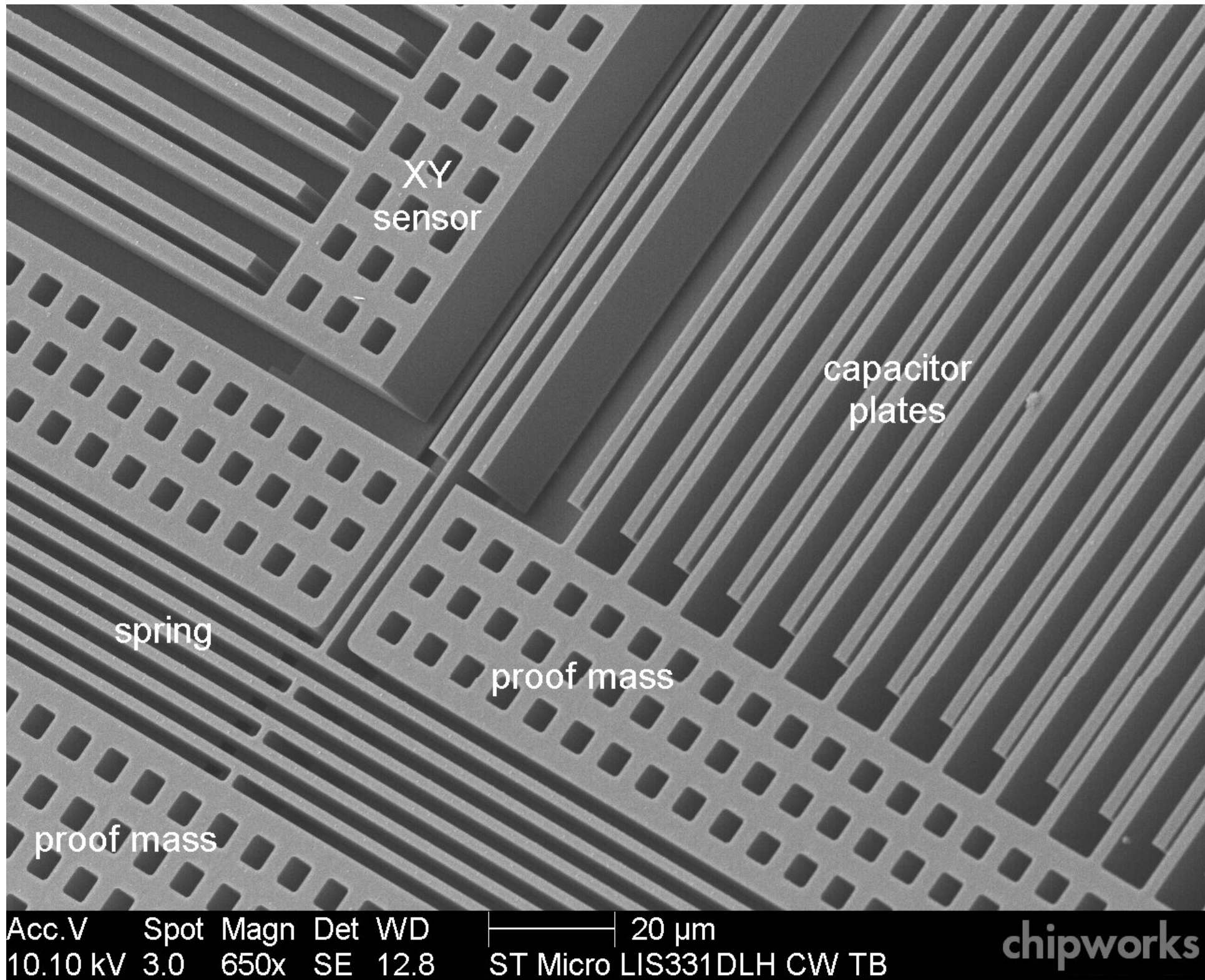
Spatial Orientation: Vestibular system



Gyroscope



Accelerometer



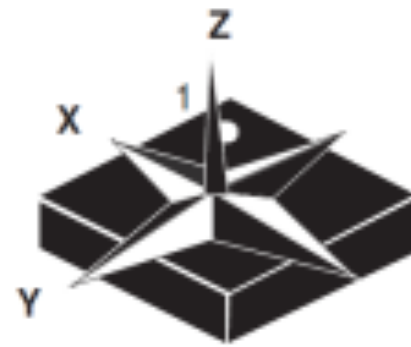
Spatial Orientation: MEMS sensors





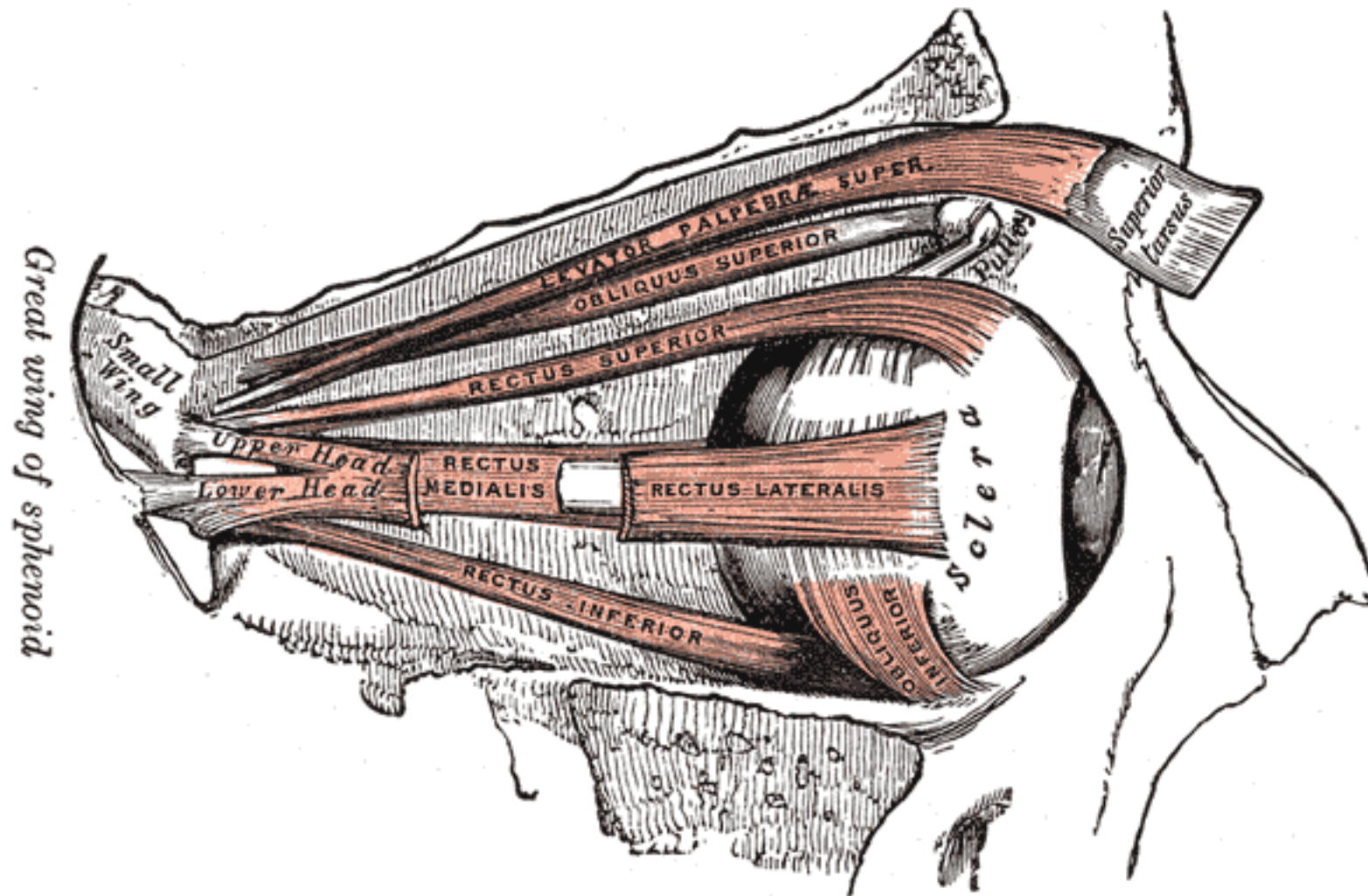
Orientation



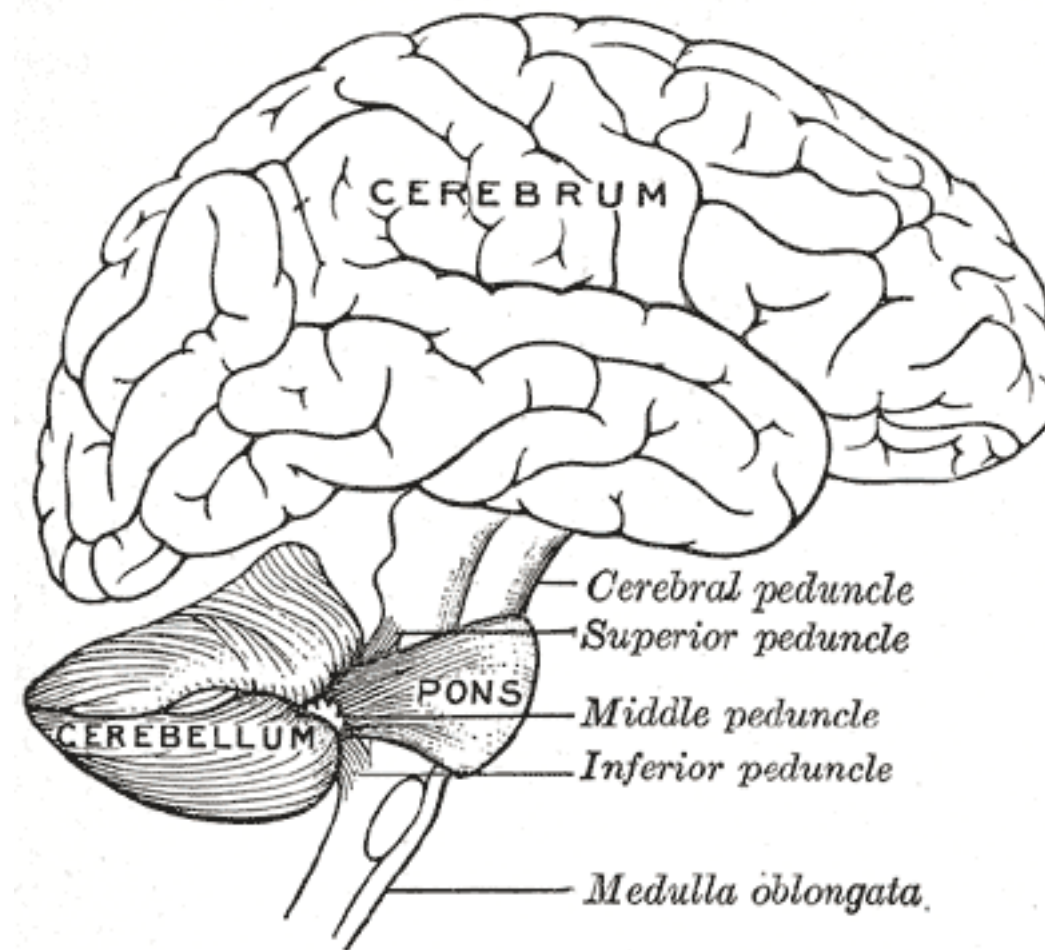


Magnetometer

Orientation: Magnometer,

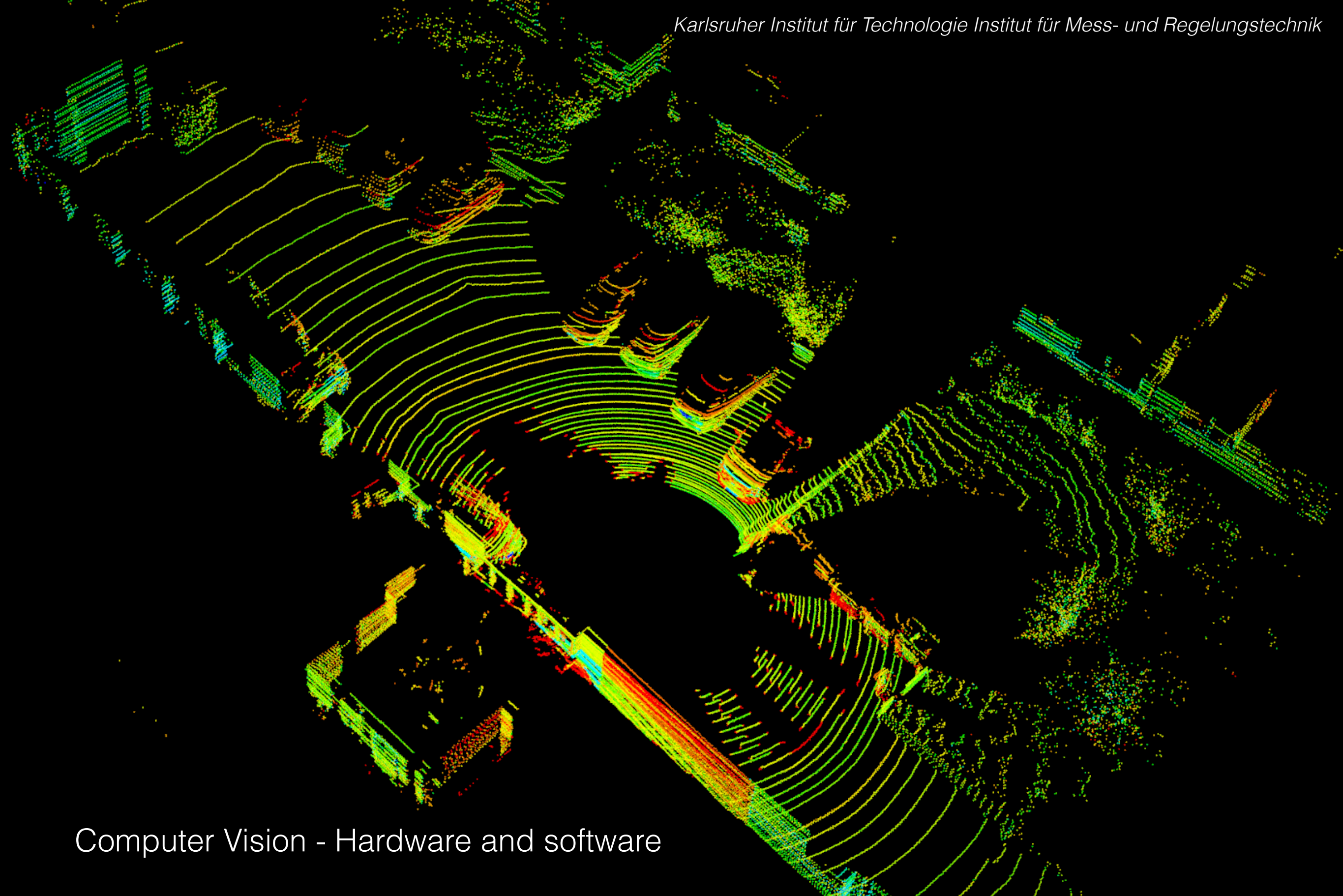








Computer Vision - Hardware and software



Beyond the our Proprioception

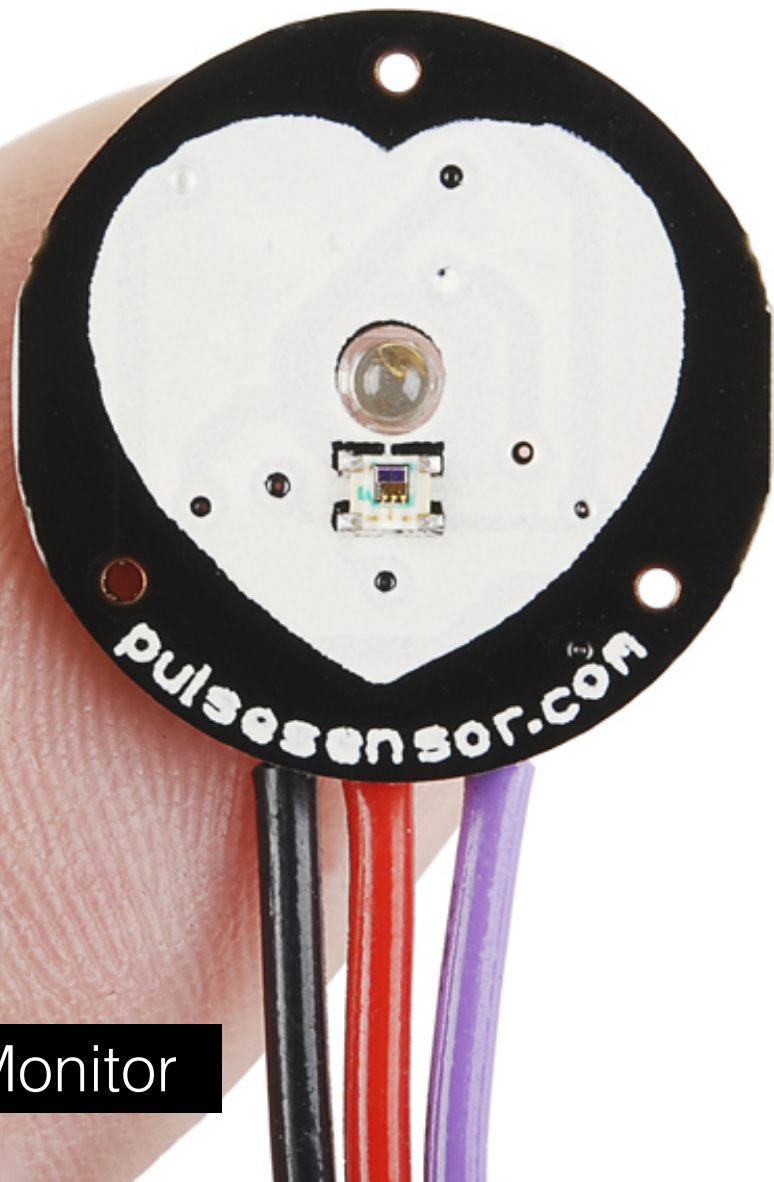




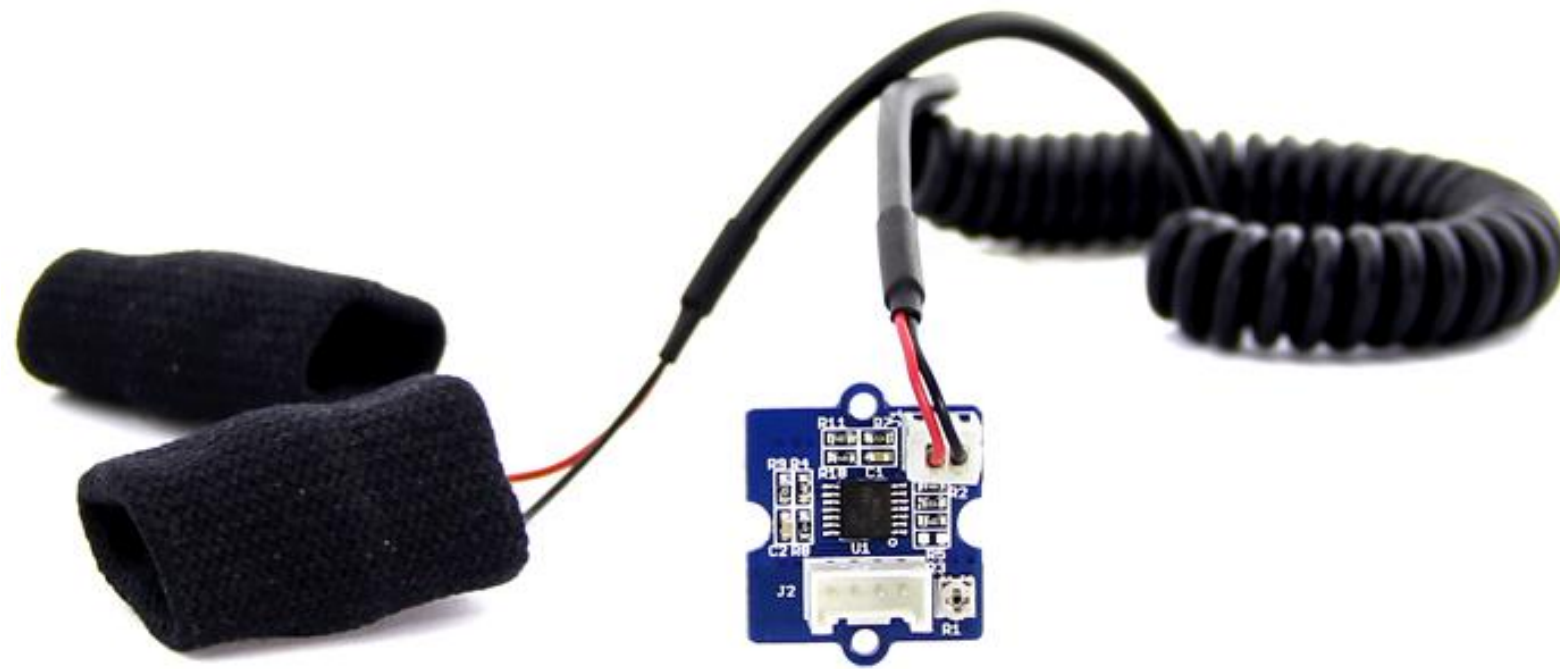
Body Sensors: The autonomic nervous system

Polygraph Test

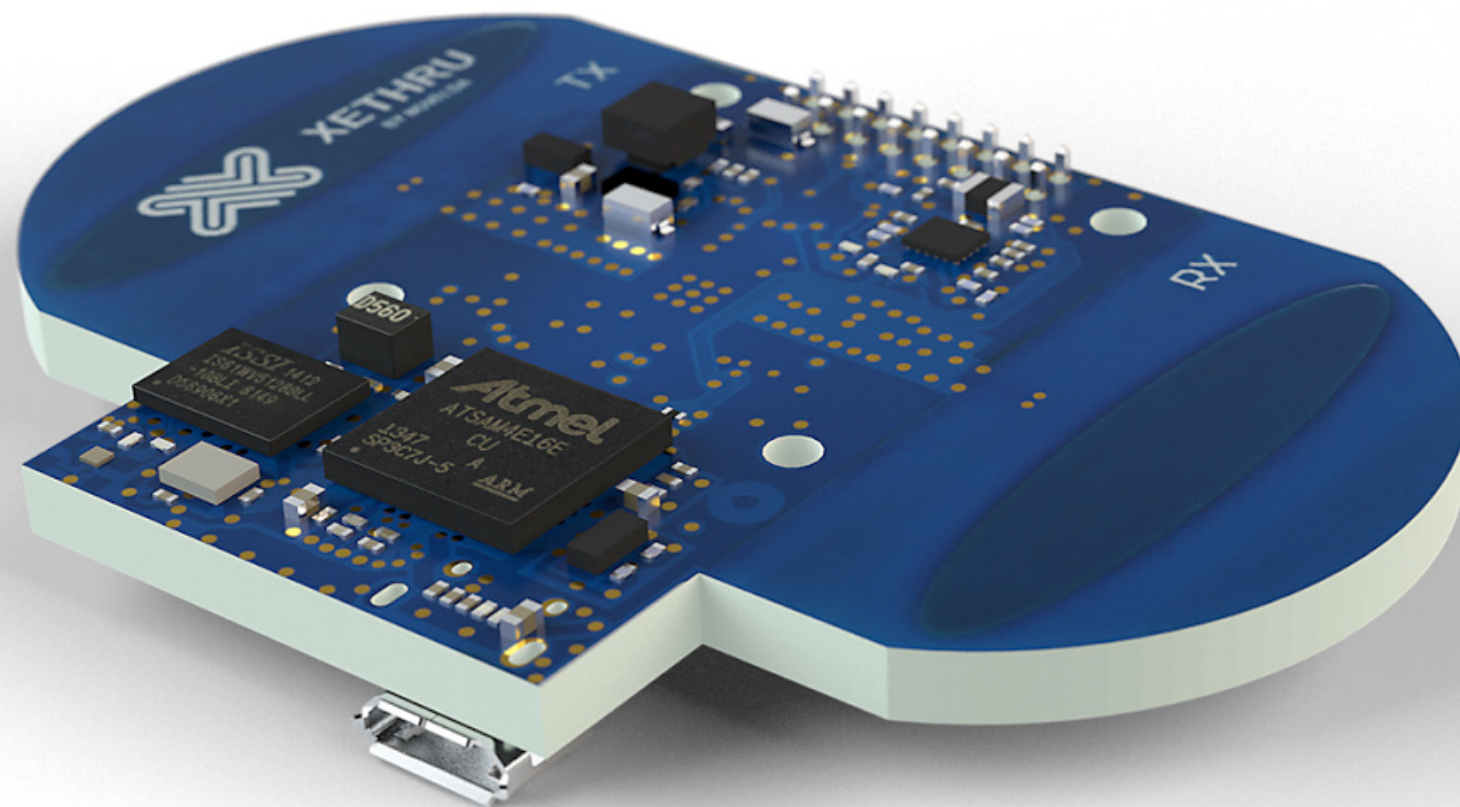




Pulse Monitor



Galvanic Skin Response

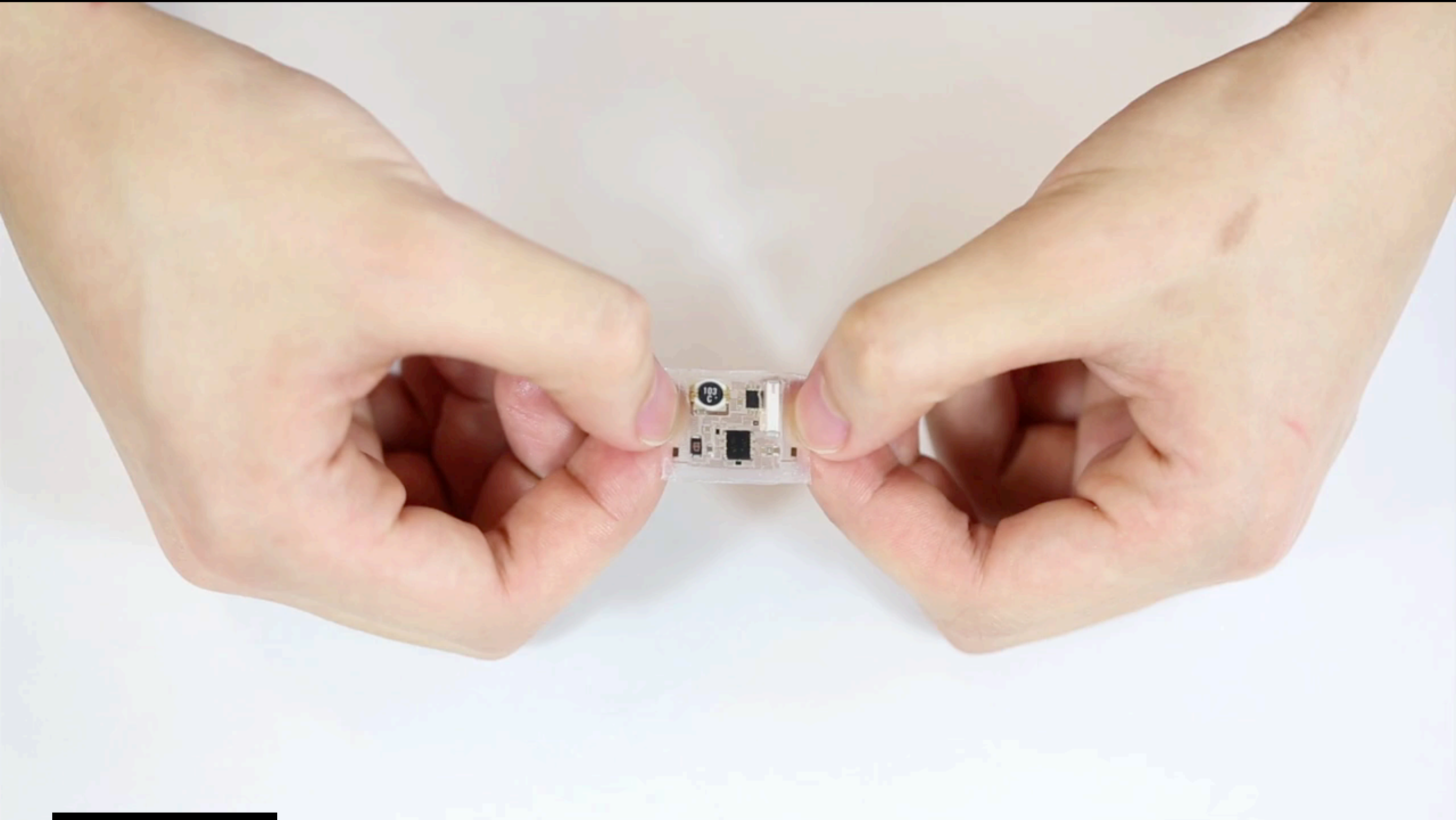


Radar: XeThru Breathing Sensor

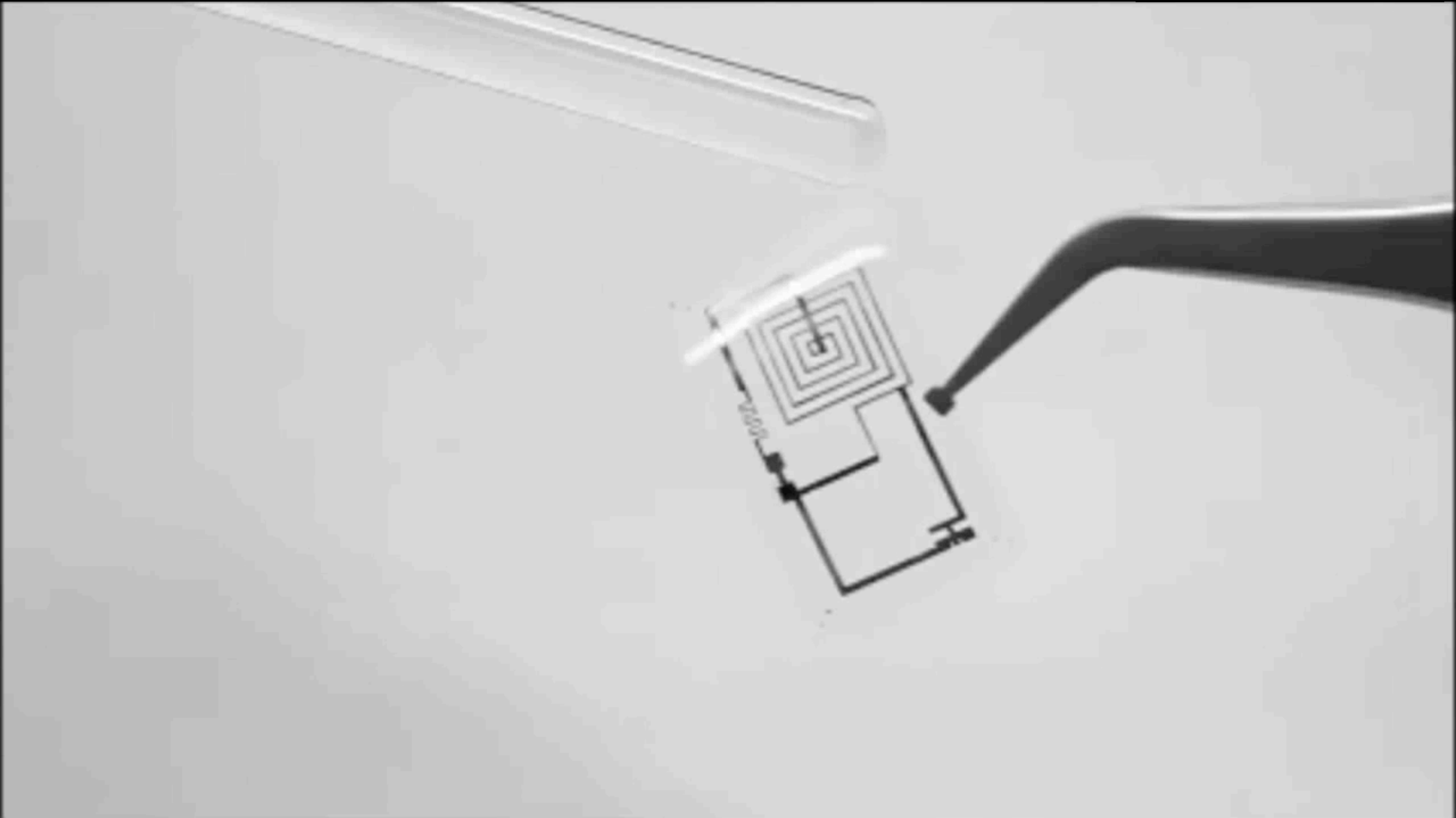


Future Sensors



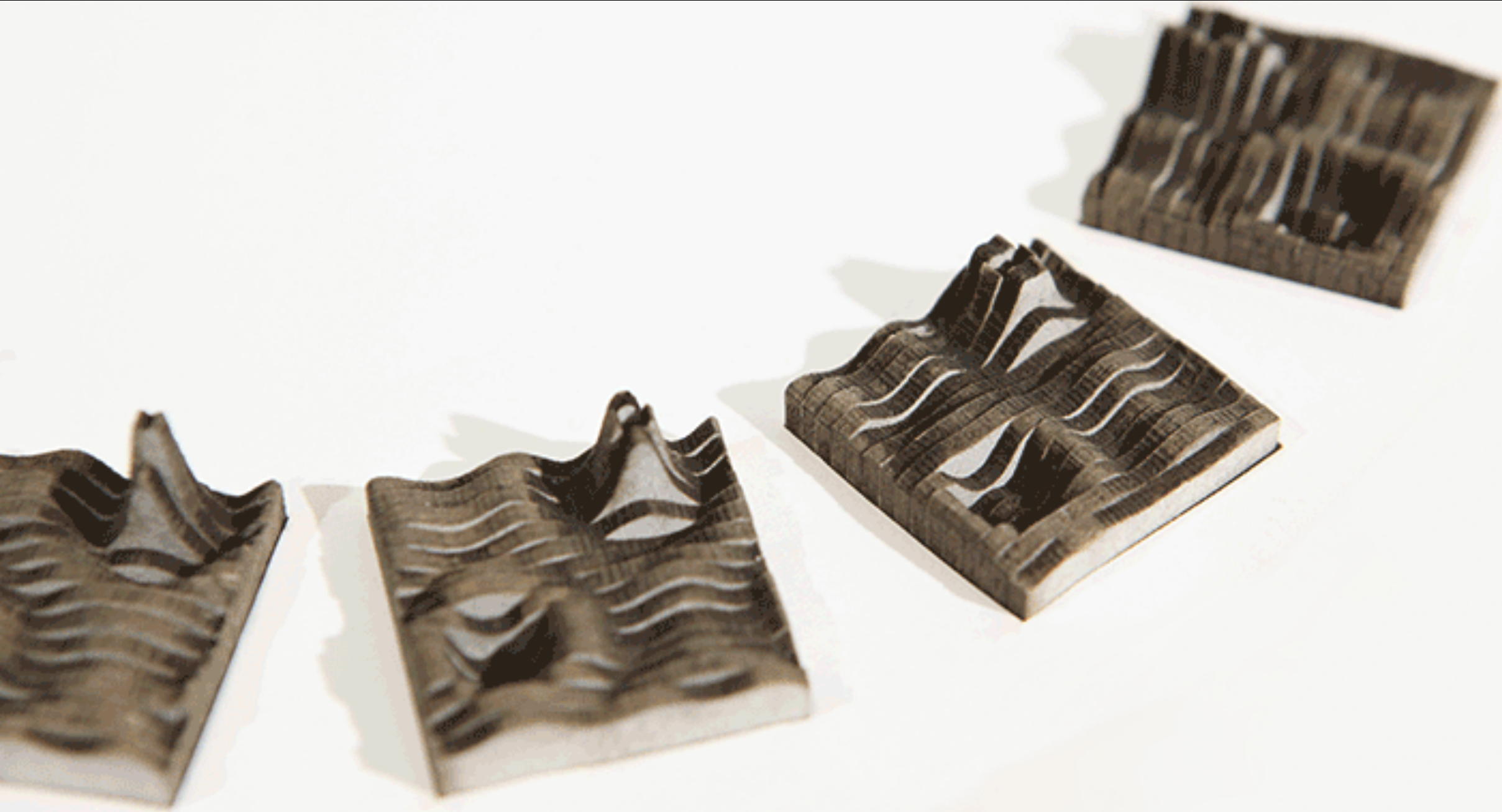








Biochemical Sensors



Embodied Interaction - Embodiment and Data

Luke Franzke - 2018