

Philip Sabes

Starfish Neuroscience

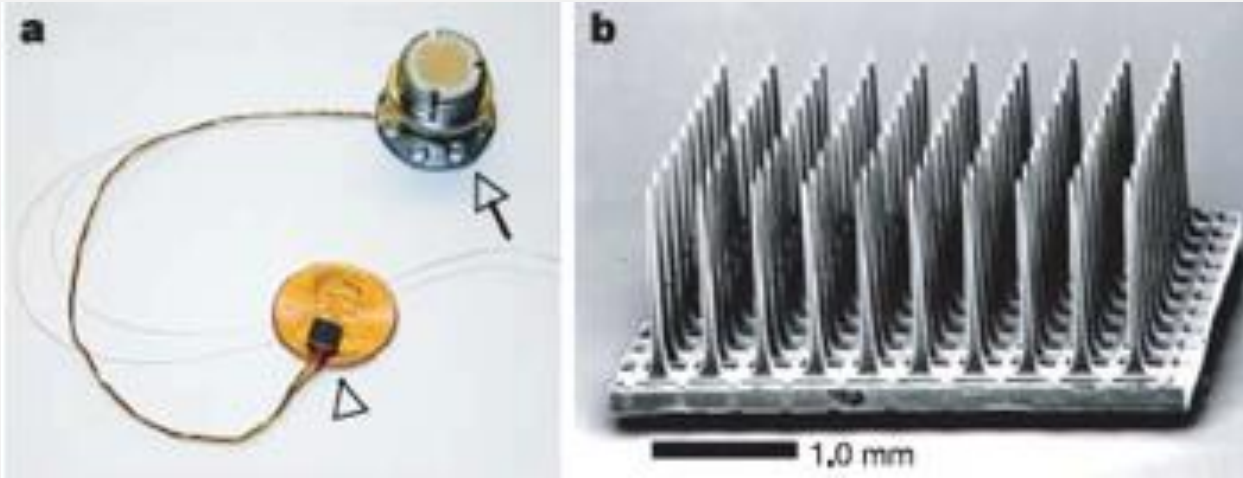
Professor Emeritus, University of California San Francisco



The future of brain interfacing

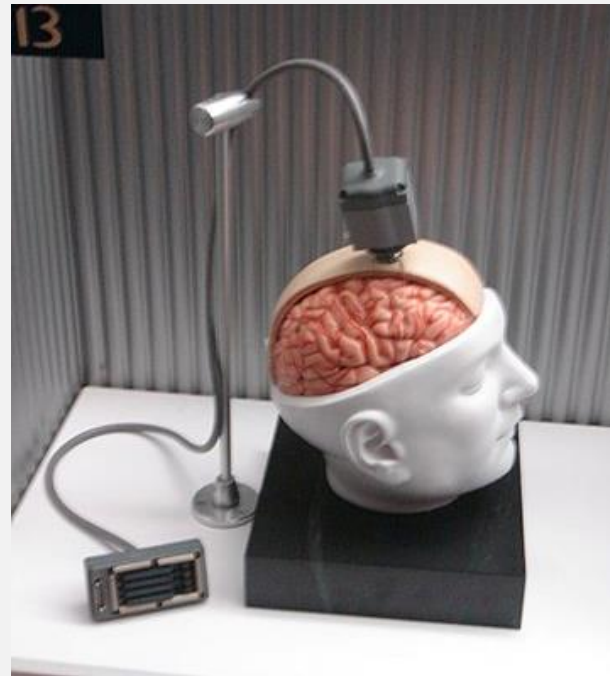
- Brain computer interfacing (BCI) vs. neuromodulation
- Monitoring vs. manipulating neural activity

Brain Computer Interfaces

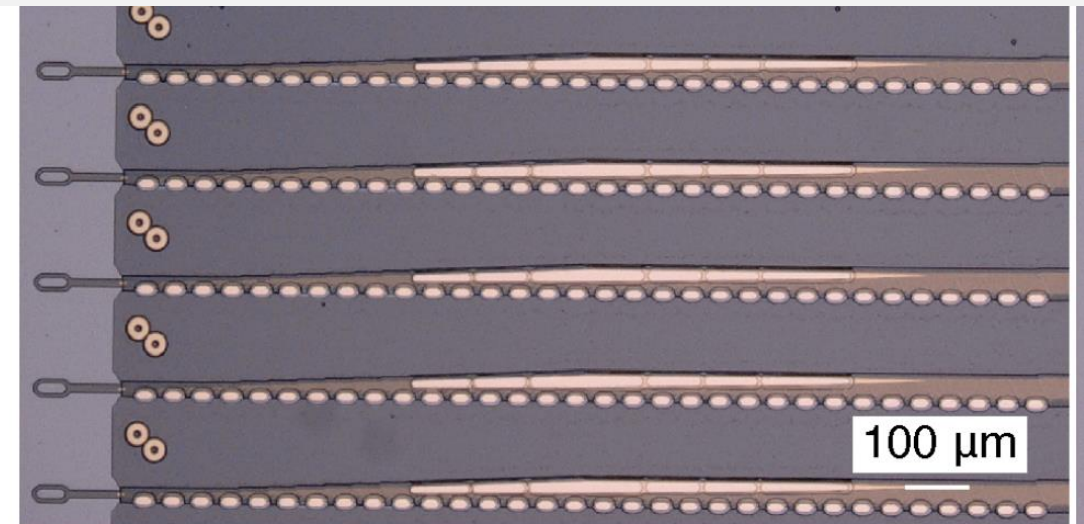
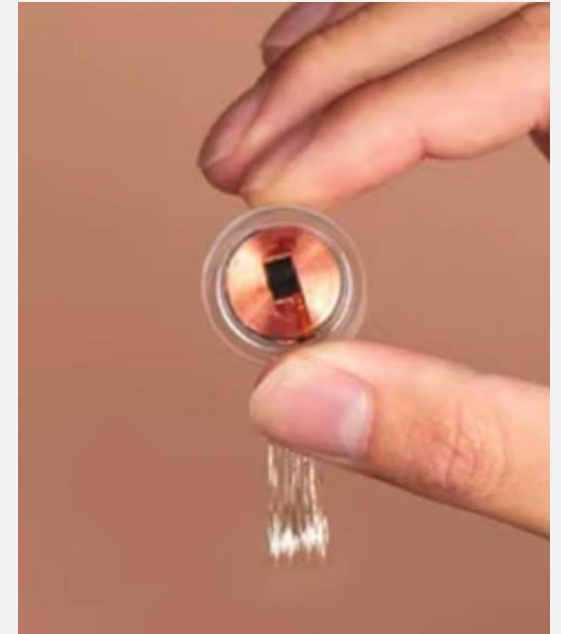


BRAINGATE
TURNING THOUGHT INTO ACTION

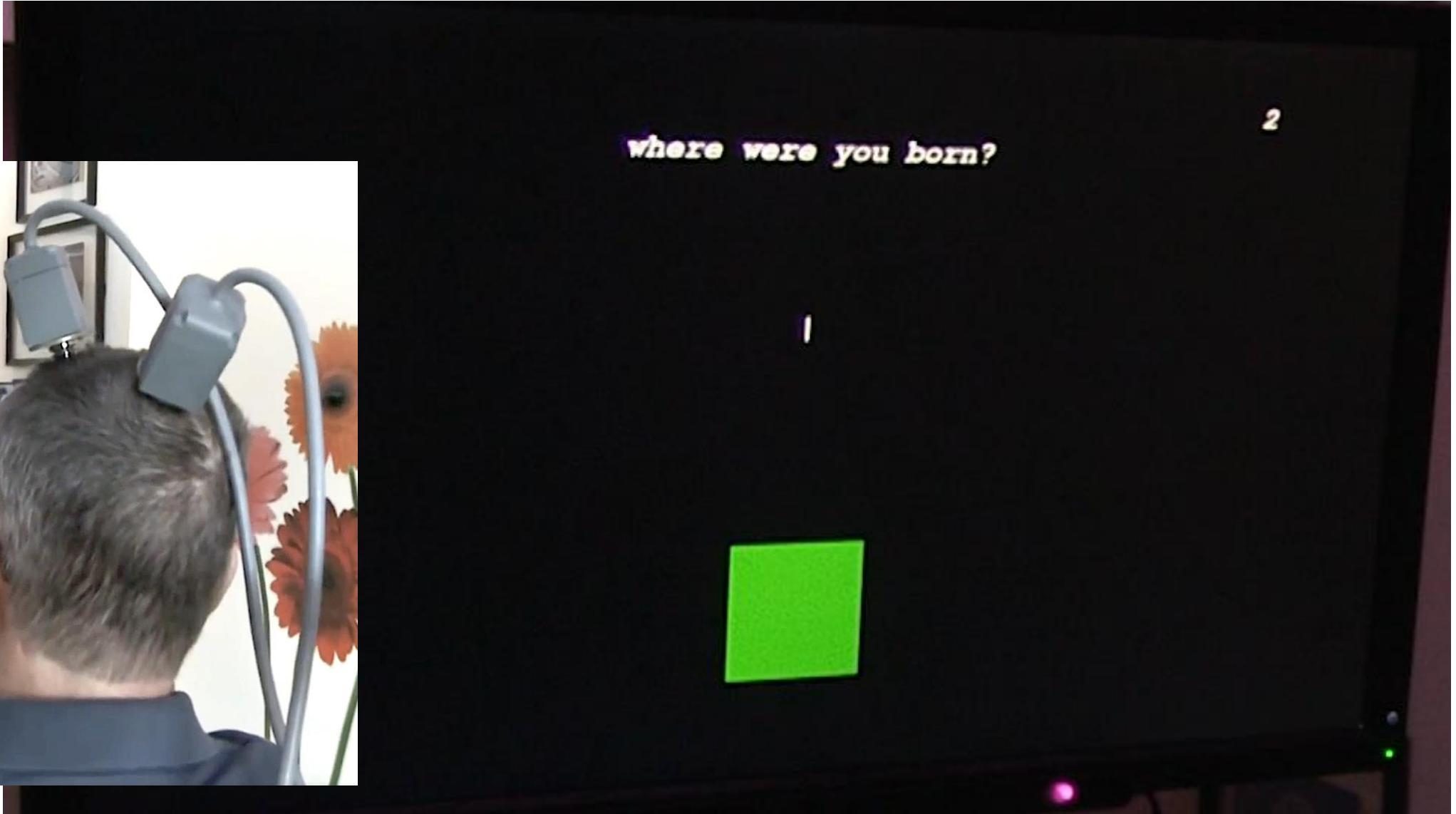
BLACKROCK[®]
MICROSYSTEMS



NEURALINK



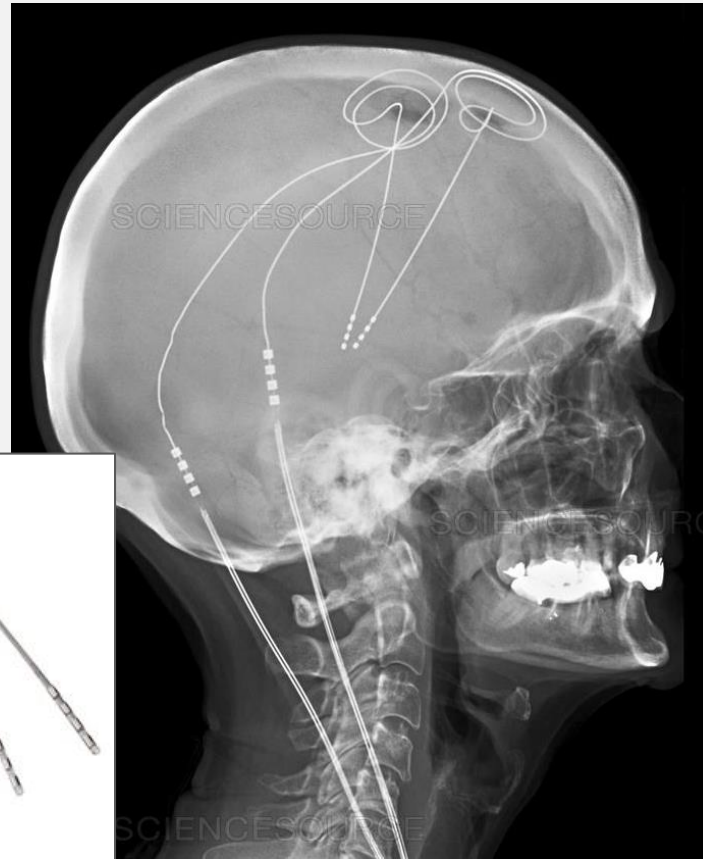
PBS NewsHour



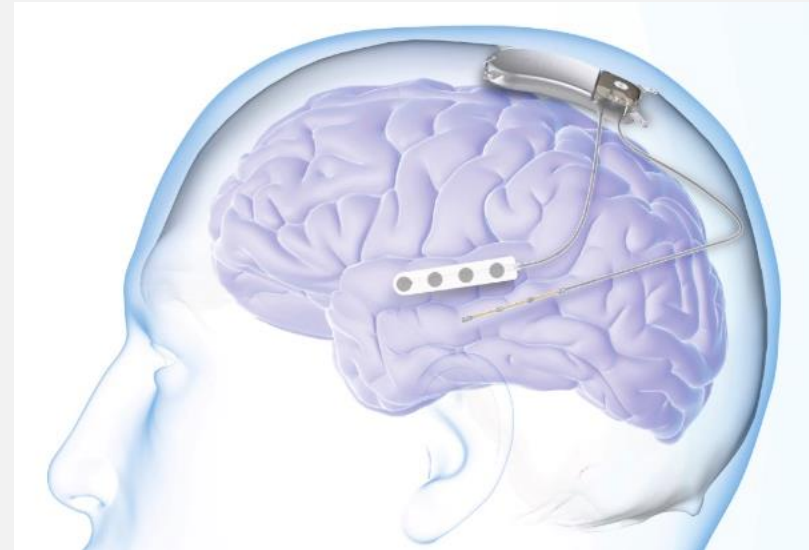
Willett, Avansino, Hochberg, Henderson, & Shenoy. *bioRxiv* (2020)

Neuromodulation

Deep brain stimulation Medtronic



Seizure disruption Neuropace



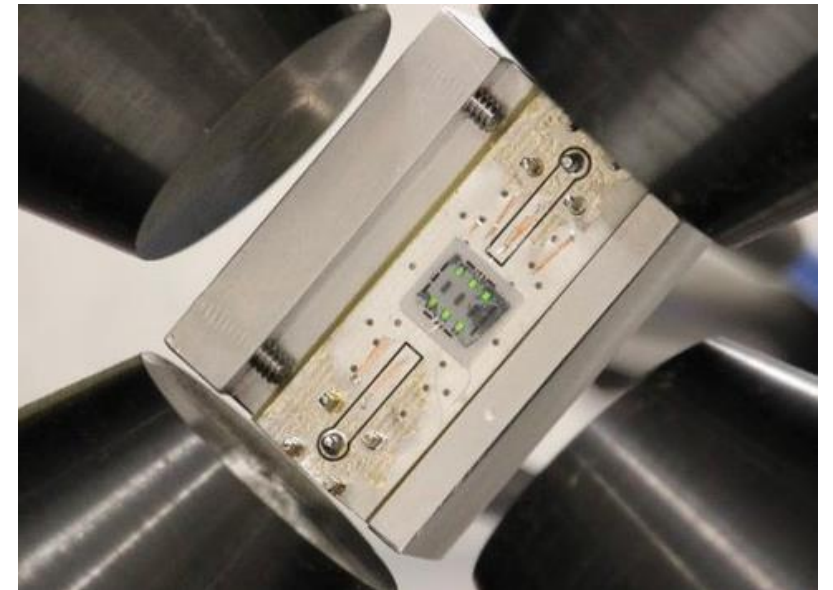
Non-invasive brain monitoring

Magnetoencephalography (MEG)

Conventional MEG



millimeter-scale magnetometers



Sonera Magnetics