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Think Like a Lawyer, Talk Like a Geek 2025: Get Fluent in Technology

The Human Brain: The Last Frontier of Privacy

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Panelists

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Program Objectives

- Learn:
  - About implanted and wearable neurotech products that can read the mind and stimulate the brain
  - About U.S. laws that regulate neural data
  - About U.S. pending legislation that would regulate neurotech

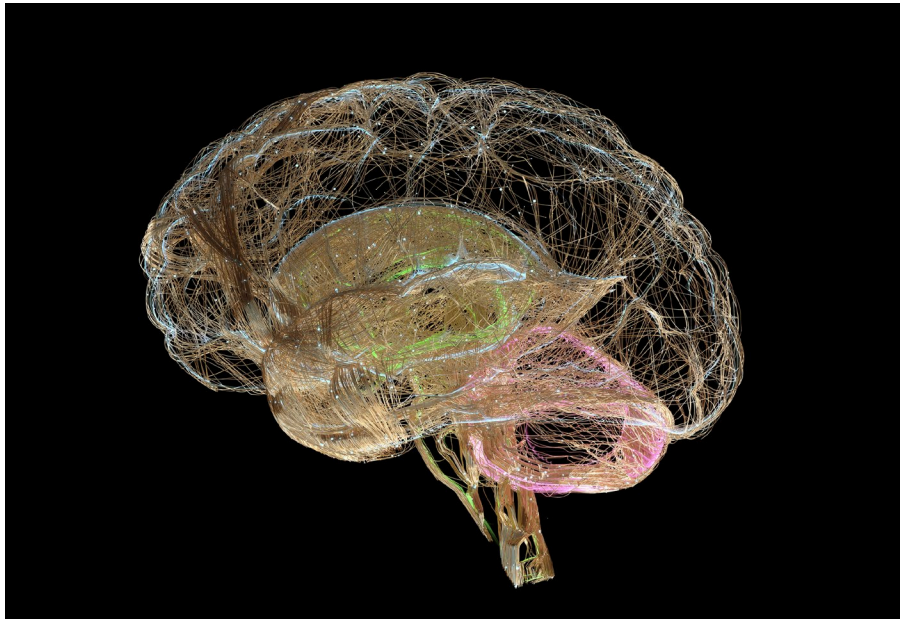
Polling Question

Which of the following can neurotech do?

a. Read the mind
b. Enable a paralyzed person to feel their paralyzed limb
c. Detect seizures in advance
d. Cause a charging bull to go docile

Neurotechnologies: a wide spectrum . . .

- Medical v. Consumer
- Invasive v. Non-Invasive
- How the signal is measured
- Where the signal is measured
- Device capabilities
  - Read Only vs. Write/Stimulate



→ Not all neurotech is the same

Neurotechnologies Spectrum

- Advancements provide range of uses
  - Wellness, Healthcare, Gaming, Communication, Device Control
- With ML/AI modeling techniques, devices can derive inferences about neural activity from a user
  - From Brain: mental states, perceptual content/recognition, emotions, attentional states, neurological disease
- Neurotechnology market size:
  - Estimated at $15.77 billion in 2025
  - Expected to reach $ 29.74 billion by 2030 (CAGR of 13.53%)
- Non-invasive form factors are becoming more mainstream:
  - Headbands, helmets, earbuds, wristbands, headsets

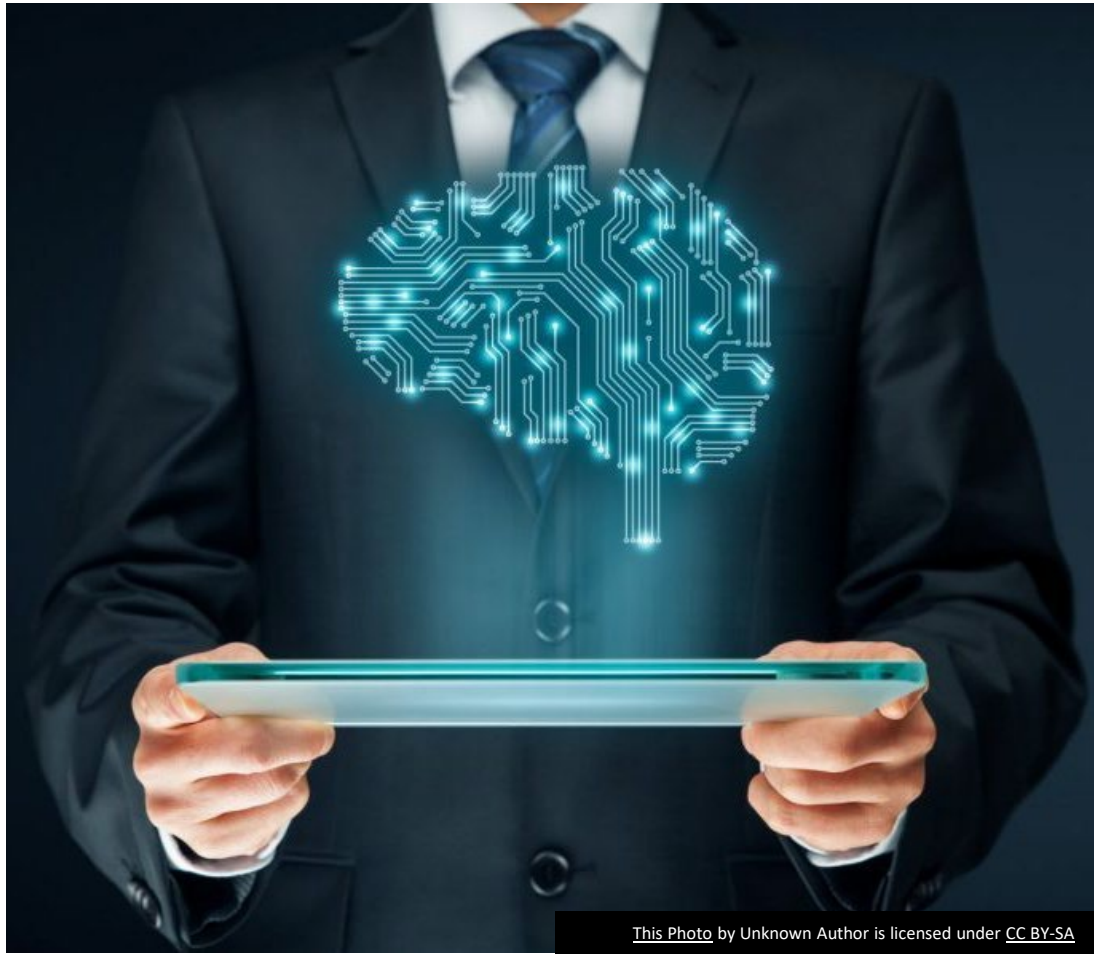
Neurotechnologies Spectrum

Category	Invasive Medical BCIs	Non-Invasive Medical BCIs	Non-Invasive Consumer BCIs	Non-Invasive Consumer Wearables
Invasiveness	Requires Surgery	External brain recording (e.g., on scalp)	External brain recording (e.g., on scalp)	External Peripheral recording (Muscle activity)
Core Technology	Cortical/Endovascular Implants	Electroencephalography (EEG), Functional Near-Infrared Spectroscopy (fNIRS)	EEG, fNIRS	Surface Electromyography (sEMG)
Primary Signal	Direct cortical/intracortical neural activity	Scalp electrical potentials or cerebral blood flow changes	Scalp electrical potentials or cerebral blood flow changes	Electrical signals from muscles
Potential Use Cases				
	Restoring Lost Function: Control of prostheses, computer cursors, speech decoding for patients with severe paralysis (SCI, ALS, tetraplegia)	**Neurorehabilitation:** Training brain regions for stroke recovery or movement disorders	**Wellness:** Sleep aid, improving focus/attention, meditation (neurofeedback)	**Computer Input/Device Control**
	Disease Management: Chronic pain, Parkinson's disease, epilepsy	**Neurofeedback:** Changing neural modulations to manage disorders like ADHD	**Gaming:** Alternate joystick controller, control of toys (e.g., drones)	**Robotic or Prosthetic Control**
		Biomarker Identification: Researching neurological disorders (e.g., Alzheimer's, depression).	**Enterprise:** Neuromarketing, user authentication, driver drowsiness detection	
Exemplary Companies	Neuralink, Synchron, Paradromics	MindMaze, Cognixion	Muse, Emotiv, Neurable	Meta, Wearable Devices Ltd (Mudra)

Purpose and Design of Neurotechnologies

- Purposes and user value vary depending on:
  - form factor
  - location of signal detection
  - ML/AI models deployed

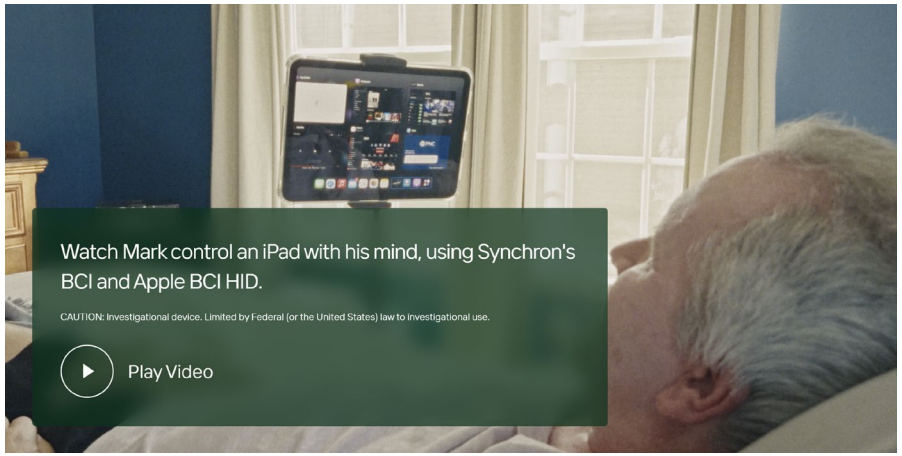
- Generalized vs. personalized models
  - Work for everyone “out of the box”
  - Require specific user model training/calibration

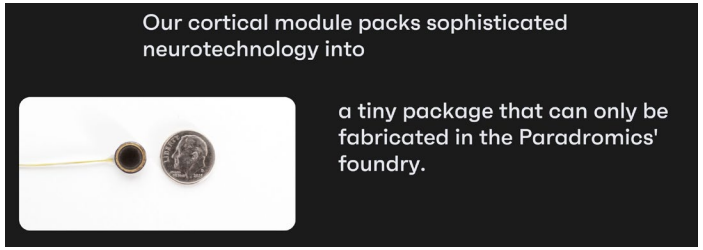


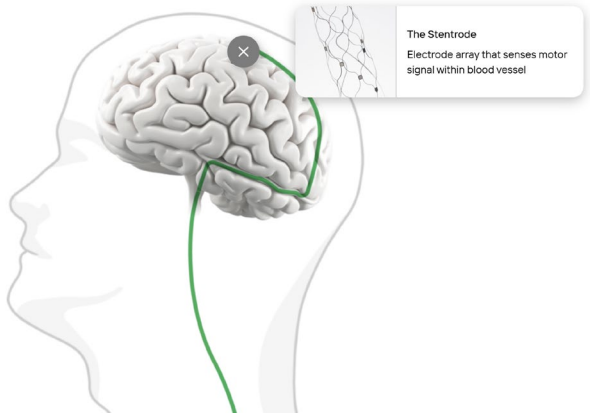
Brain-Computer-Interfaces (BCIs)

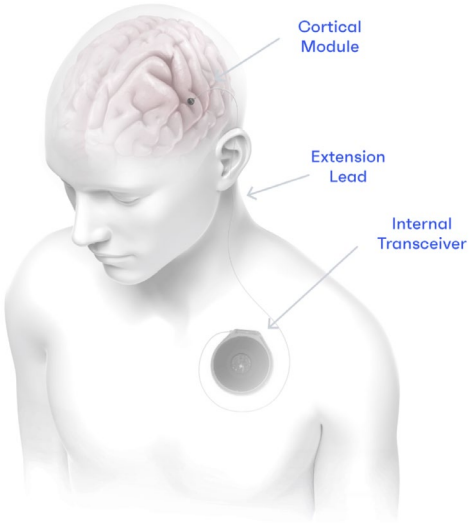
- BCI typically refers to devices with electrodes implanted in different areas of the brain
- BCIs can detect higher signal quality from the brain vs non-invasive wearables
  - Uniqueness of someone's brain signaling pattern
- Various medical applications
  - Mitigate/treat paralysis, ALS, epilepsy, post-stroke recovery
  - Control keyboards/mice, exoskeletons for walking, wheelchairs
  - Enable a person to communicate using brain signals ("silent speech")
  - Detect an oncoming epileptic seizure in advance
- Mostly in early clinical trial stages
  - Expected commercialization for medical purposes in about 5 years

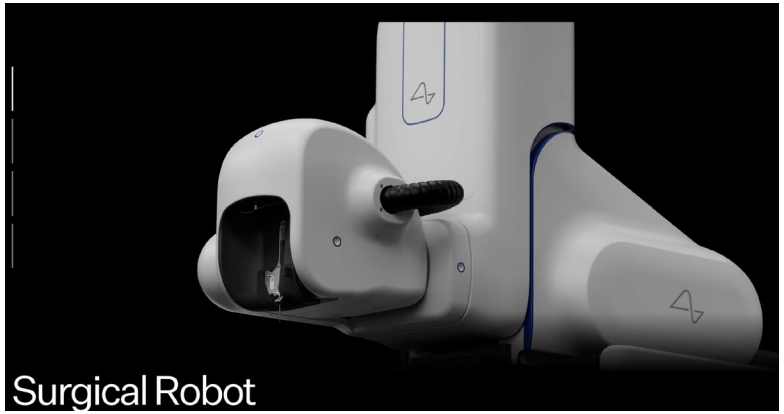
Invasive BCIs: Examples

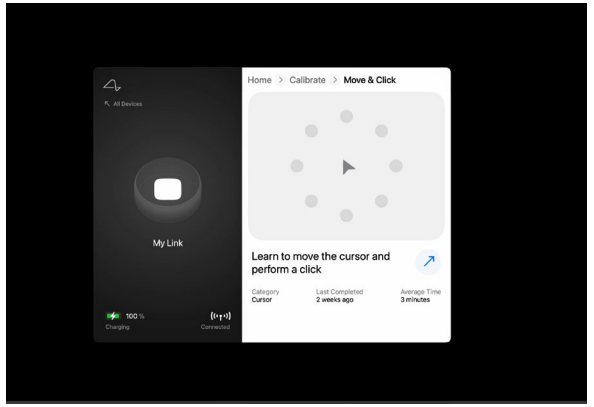












Non-Invasive BCIs: Examples

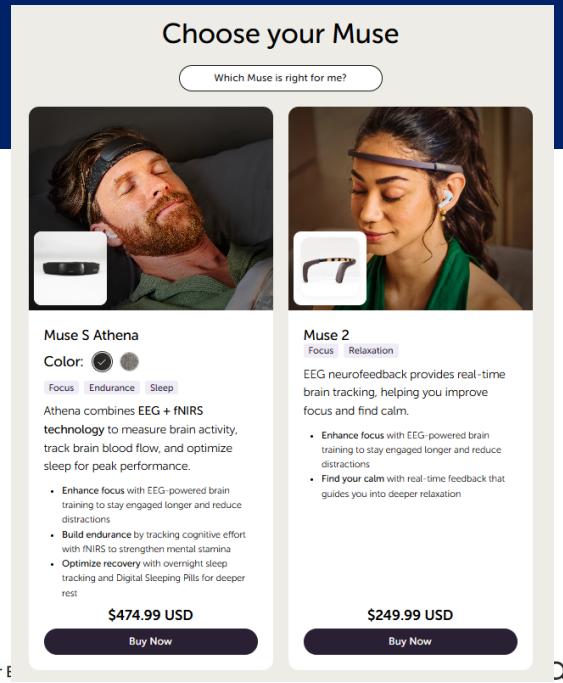
ZDNET

Why you can trust ZDNET: **Our process**

Home / Tech / Wearables / Headphones

These brain-reading headphones track mental burnout - and warn you before exhaustion hits

Neurable returns with the MW75 Neuro LT,



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14-Channel Wireless EEG Headset

EMOTIV's industry-leading wireless EEG headset

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High density EEG

Gel Sensor Saline Sensor

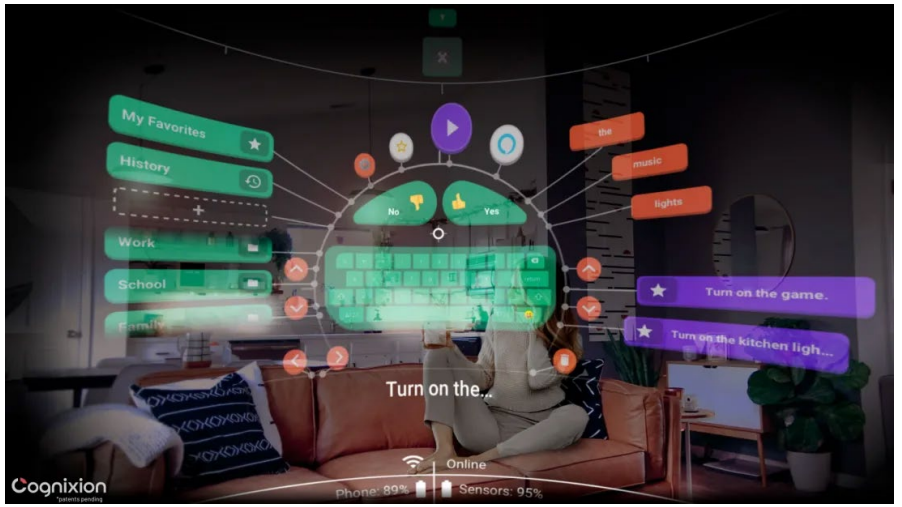
Augmented Reality BCI Longitudinal Study for Persons With ALS, Stroke, TBI and SCI Utilizing Cognixion + Apple Vision Pro

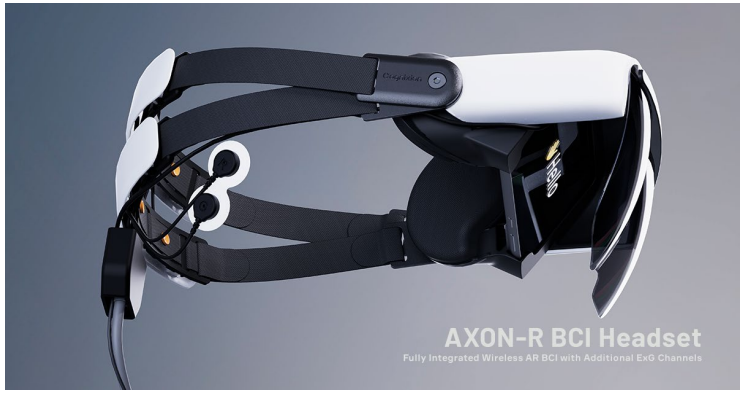
ClinicalTrials.gov ID NCT07209943

Sponsor Cognixion

Information provided by Cognixion (Responsible Party)

Last Update Posted 2025-10-07





Non-Invasive BCIs: Consumer Use Cases

- Meditation training
- Sleep aid
- Managing stress, depression, anxiety, focus, and productivity
- “Neurogaming”

Non-Invasive BCIs: Sample Business Cases

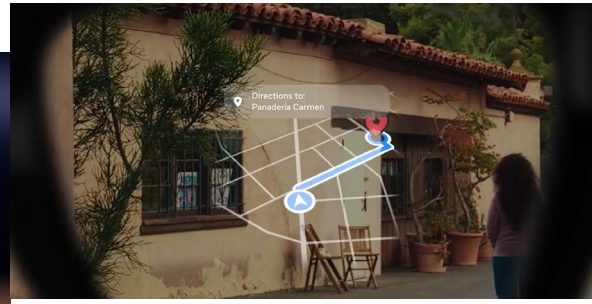
- Monitor employee engagement at work
- Monitor employee attentiveness when driving a car or train, flying a plane, or on a dangerous factory floor or construction zone
- Monitor student engagement in a classroom
- Improve the results of advertising campaigns by detecting and adapting to viewer response
- Use of brain data to uniquely identify a person

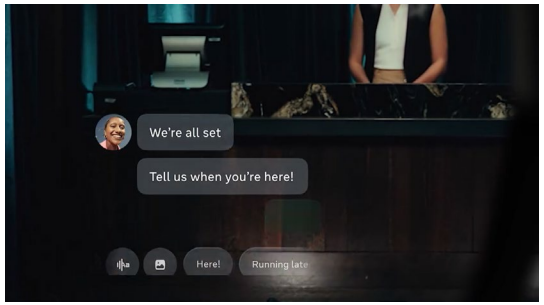
Hypothetical/Potential Government Use Cases

- Law enforcement/Forensics
  - Investigate crime by detecting a suspect's brain reaction to being shown a murder weapon
  - Detect truthfulness
- Military
  - Augmenting the physical and mental abilities of soldiers
  - Controlling drones/weapons

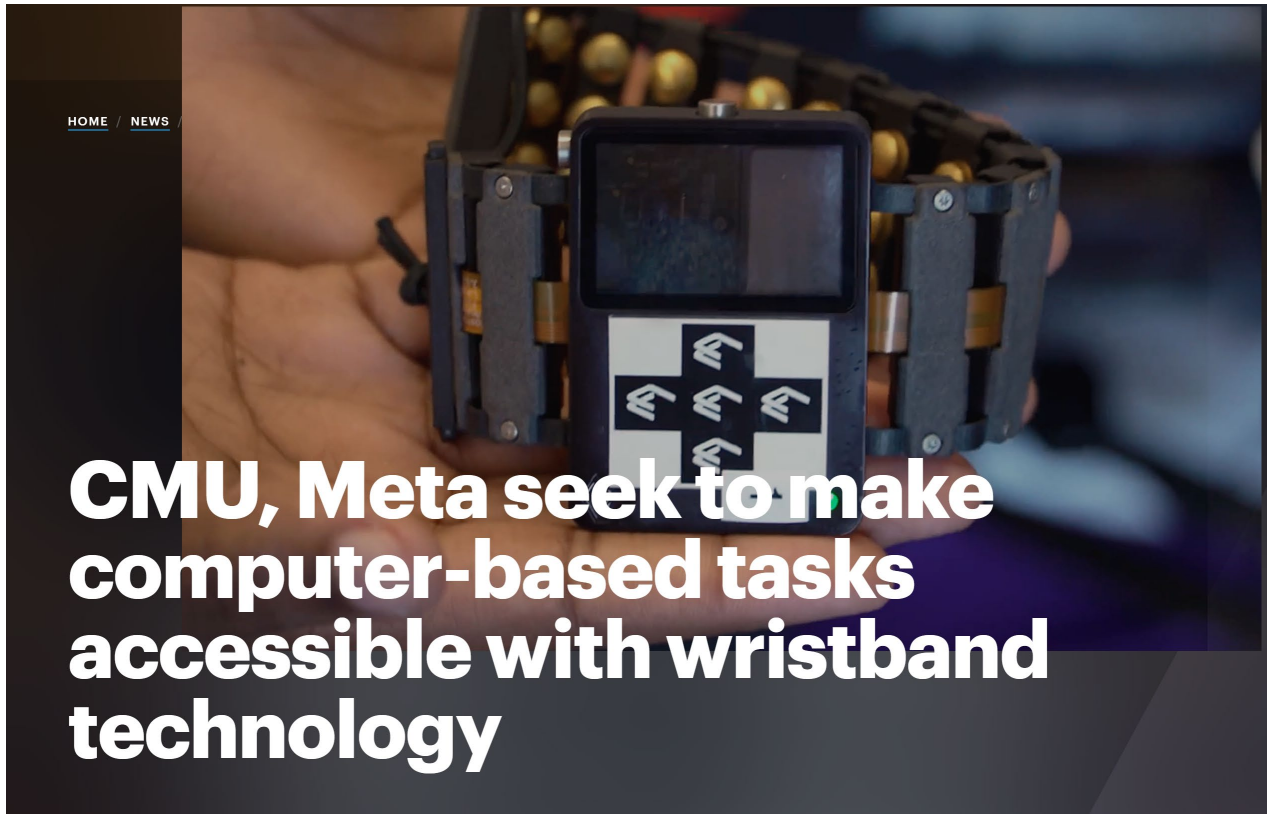
Non-Invasive Wearable Interfaces: sEMG

	 mudra LINK	 mudra BAND For Apple Watch
Integration	Standalone wristband	Apple Watch band
Mapping - Customized interaction	✓	Not Supported
Controlled Devices	Any BLE device that accepts mouse or keyboard inputs	Apple TV, Mac, iPhone & iPad
Toggling Betwen Devices	Not Supported	✓
Instant Air-Touch Activation	✓	✓
Operation	Single-button control	Via Watch Face App





Safer Consumer Accessibility: Wearable Interfaces



State Laws Regulating Neural Privacy

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Cooley

Four U.S. States Regulate Mental Privacy

- State Consumer Privacy Laws
  - Colorado
  - California
  - Connecticut
- State Genetic Privacy law
  - Montana

Legal Requirements for Handling Neural Data

- Privacy Policy
- Consent or Opt-out right
- Access, correction, deletion rights, and opt-out rights
- Special requirements for selling SPI or using SPI for targeted advertising
- Data Protection Impact Assessments
- Data Minimization
- Purpose Limitation
- Security
- Contracts with Service Providers / Processors
- No discrimination based on SPI
- Additional requirements for SPI of kids and teens

Colorado H.B. 24-1058

- Amended the Colorado Privacy Act ("CPA"), including to add "Biological Data" to the definition of "Sensitive Data" within the meaning of the CPA
- Signed into law on April 17, 2024
- **Definitions:**
  - Neural Data: "information that is generated by the measurement of the activity of an individual's central or peripheral nervous systems and that can be processed by or with the assistance of a device."
  - Biological Data: "data generated by technical processing, measurement, or analysis of an individual's biological, genetic, biochemical, physiological, or neural properties, compositions, or activities of an individual's body or bodily functions, which data is used or intended to be used, singly or in combination with other personal data for identification purposes. 'Biological Data' includes 'Neural Data'."

Colorado H.B. 24-1058
A closer look:

- Biological Data: "data generated by technical processing, measurement, or analysis of an individual's biological, genetic, biochemical, physiological, or neural properties, compositions, or activities of an individual's body or bodily functions, ***which data is used or intended to be used, singly or in combination with other personal data for identification purposes***. 'Biological Data' includes 'Neural Data'."
- Ambiguous whether Neural Data is covered if it is not used for identification purposes. Most commentators say it is not.
- Numerous researchers are creating ways to use brain data to authenticate individuals.

Colorado Requirements for Sensitive Data

Post a privacy notice informing individuals about the neural data they collect and their use, retention and disclosure of this information, including each purpose for which each kind of personal information is used and the kinds of third parties they share it with.

Obtain clear, freely given, informed, specific, affirmative and unambiguous consent from an individual before collecting or using their neural data, which such consent must include a disclosure re the names of any third parties to which the information is sold.

Consent wording must inform individuals of the names of any third parties to which the business sells this information.

Refresh each individual's consent every 24 months, absent having interacted with the individual in the meantime, or provide a user-controlled interface for the individual to manage their opt-out preferences at any time.

Refrain from using dark patterns when obtaining consent from individuals.

Delete or de-identify this information when it is no longer necessary for the purpose for which it was collected, and in any event when an individual has withdrawn consent for its use.

Inform individuals of the purposes for which it uses this data and only collect such information that is reasonably necessary to fulfill, or that is compatible with, those purposes, absent additional consent.

Afford individuals the right and ability to access, correct and delete this information in the business's possession or control, and to opt out of the sale of this information or use for targeted advertising or to make important automated decisions.

Conduct data protection assessments addressing the collection, use, retention and disclosure of this information.

Do not use this data for unlawful discrimination.

Take reasonable measures to secure this data.

Colorado Practice Tips

- Colorado Privacy Act + Regulations + H.B. 24-1058 → must be read together.
- The Colorado Privacy Act's requirements on biometric data, which includes biological data, apply to businesses *even if they do not otherwise meet the applicability requirements of the Colorado Privacy Act*.

California S.B. 1223

- Amended the CCPA, including to add “Neural Data” to the definition of “Sensitive Personal Information” within the meaning of the CCPA
- Neural Data: “information that is generated by measuring the activity of a consumer’s central or peripheral nervous system, and that is not inferred from nonneural information.”

California Requirements for Sensitive Personal Information

- Similar to Colorado's Privacy Act; however, notable differences include:
  - More granular consumer "right to know"
  - "Notice At Collection" of data
  - Rather than a requirement that individuals opt *in* to the processing of their SPI, the CCPA instead provides a right to opt *out* of the processing of such information other than for specified purposes.
    - However, consumers do *not* have the right to opt-out of the use and disclosure of SPI if the SPI is not used by the business to infer characteristics about them.
  - Privacy policy must state retention period or criteria for retention period of SPI.

California Practice Tips

- CCPA + Regulations + S.B. 1223 → must be read together.
- California's law applies to employee data, whereas the Colorado Privacy Act exempts employee data.

Montana's S.B. 163

- Montana was the third state to specifically protect neural data.
- Law added "neural data" to Montana's Genetic Information Privacy Act.
- Neural data = information that is generated by the measurement of the activity of an individual's central or peripheral nervous system, and that can be processed by or with the assistance of a device.
- Covers neural data of Montana residents.
- Applies to "entities" as narrowly (and confusingly) defined

Montana S.B. 163
A closer look:

- Entity: “"Entity" means a partnership, corporation, association, or public or private organization of any character that: (a) offers consumer genetic testing products or services directly to a consumer; or (b) collects, uses, or analyzes genetic data.”
- Ambiguous whether the law only covers entities that offer genetic testing products & services.
- Legislative history suggest the law was not intended to be limited this way.

Montana Requirements on entities that handle neural data:

- Two different privacy policies.
  - One: A high-level privacy policy overview with basic essential information about the entity's collection, use and disclosure of neural data.
  - Two: A prominent publicly available privacy notice that includes, at least, information about the entity's data collection, consent, use, access, disclosure, transfer, security, retention and deletion practices for neural data.
- Obtain initial express consent for the collection, use or disclosure of a consumer's neural data. Such consent must specify how the entity may share the neural data.
- Obtain a consumer's separate express consent to transfer or disclose a consumer's neural data to any third party other than the entity's processors. This consent must include the name of the third party to which the neural data is transferred or disclosed.
- Obtain a consumer's separate express consent to use neural data beyond the primary purpose and inherent contextual uses.
- Obtain a consumer's informed express consent to transfer or disclose a consumer's neural data to third persons for research purposes.
- Obtain a consumer's express consent to market to the consumer based on the consumer's neural data.

Montana Requirements on entities that handle neural data:

- Obtain a consumer's express consent to sell the consumer's neural data in exchange for valuable consideration.
- Comply with applicable law requiring valid legal process before disclosing neural data to law enforcement or any other governmental agency, absent a consumer's express consent.
- Develop, implement and maintain a comprehensive security program to protect consumers' neural data against unauthorized access, use and disclosure.
- Provide a process for consumers to access and delete their neural data, and revoke any consent provided by the consumer with regard to their neural data.
- Neural data collected in Montana may not be stored within the territorial boundaries of any country currently sanctioned by the US or designated as a foreign adversary of the US.
- Neural data collected in Montana may only be transferred or stored outside of the US with the consent of the consumer.
- Entities may not disclose a consumer's neural data to any entity offering health insurance, life insurance or long-term care insurance, or to the consumer's employer, absent the consumer's express consent.

Connecticut S.B 1295

- Signed by Governor June 24, 2025
- Amendment adds neural data to definition of sensitive data.
- “Neural Data” means any information that is generated by measuring the activity of an individual’s central nervous system.
- Of the four laws, this is the only one that covers the central, but not the peripheral, nervous system.

Connecticut S.B 1295

- Opt-in, affirmative consent before processing neural data, with no dark patterns.
- May not process neural data unless reasonably necessary in relation to the purposes for which such data are processed.
- Privacy notice must contain a statement disclosing whether the controller collects, uses or sells personal data, including neural data, for the purpose of training large language models.
- May not sell the neural data of a consumer without the consumer's consent
- Must conduct privacy impact assessments regarding handling of neural data
- Consumer right to access a list of the third parties to whom a controller sold personal data

Connecticut Practice Tips

- There are no regulations, but the CT AG actively enforces, publishes an FAQ, and reports on enforcement each spring.
- The Connecticut Data Privacy Act applies to entities that control or process consumers' sensitive data, which includes neural data, *even if they do not otherwise meet the applicability requirements of the Connecticut Data Privacy Act*.

Standard of Consent

High standard of consent

- Consent must be clear, affirmative, freely given, specific, informed, and unambiguous, and cannot be obtained through dark patterns.

Stand-alone consent

Separate consent for sale of SPI to each third party – must name third parties

Consent refreshed each 24 months of no interaction, or provide preference setting available any time

Method to revoke consent

- As easy as providing consent
- Honor within as little as 15 days in some states

Accessibility and language in which business ordinarily interacts with consumers

Some states do not require consent, but merely right to opt-out

Exceptions to consent requirement

If necessary to provide a requested service to the individual

If necessary to improve a service requested by the individual

Additional exceptions and exemptions

Opt-out rights

Opt-out allowed after any required initial consents

Right to opt-out of sale, targeted advertising and important automated decisions

Deidentification of Personal Data

Standard of de-identification:

- Cannot reasonably be re-identified to the individual or their device or household
- Reasonable measures to ensure data is not re-identified
- Public commitment not to re-identify
- Contractually commit third parties not to re-identify; and reasonably monitor and enforce their compliance

De-identified data is not covered by the laws

Pseudonymized personal information

Some states reduce compliance burdens for pseudonymized data. (Connecticut & Colorado)

The rights to access, correction, deletion, and data portability do not apply to pseudonymous data

Pseudonymized data cannot be attributed to a specific consumer without additional information, and that additional information must be kept separately and protected by technical and organizational measures to prevent re-attribution to an identified or identifiable consumer.

Neural Privacy Legislation Pending

Add any subtitle here

California Pending Legislation

California A.B. 1221	Would prohibit employers from using workplace surveillance tools that collect, obtain or infer a worker's neural data.
California A.B. 1337	Would require state agencies to keep record of the source of neural data, provide a privacy notice to individuals including their neural data access rights, include provisions in contracts with contractors, and rules of conduct for persons who handle neural data. Would prohibit agencies from using neural data for purposes beyond the purposes for which it was collected, and otherwise as required by state law. Limits on disclosure of neural data absent consent. Breach notification.
California S.B. 354	Would require insurance licensees to not process a consumer's neural data other than in relation to an insurance transaction, to post a privacy notice to individuals, to give consumers privacy rights, and to include provisions in contracts with service providers. Security, breach notification and record retention periods.
California S.B. 435	Would cover neural data as sensitive personal information under the CCPA even if the neural data is publicly available.
California S.B. 44	A business that makes available a brain-computer interface to a California person may use neural data collected through the BCI only for the purpose for which the neural data was collected and delete the neural data when the purpose for which the neural data was collected is accomplished. "Brain-computer interface" means a system that allows direct communication and control between a person's brain and an external device.

Massachusetts Pending Legislation

Massachusetts H.B. 103	Would prohibit collecting or processing neural data, except where such collection or processing is strictly necessary to provide or maintain a specific product or service requested by the individual to whom the data pertains. Prior consent required to transfer neural data unless required by federal law or to protect person from imminent injury. May not process neural data for the purposes of targeted advertising. Access, correction, deletion rights. May not retaliate for exercising these rights. Privacy by design. Privacy policy. Consent withdrawal. Right to opt-out of transfers and profiling. Requirements on service providers.
Massachusetts S.B. 2516 and S.B. 2608	S.B. 2608 replaced S.B. 2516 in September. Two different versions of a general consumer privacy law that would include neural data in its definition of sensitive personal information.

Illinois Pending Legislation

Illinois H.B. 2984	Would amend the state's biometric information privacy act (BIPA) to add neural data to the definition of biometric identifier.

Federal Neurorights Legislation Pending

- The MIND Act, S. 2925
  - Introduced by Chuck Schumer, Maria Cantwell and Ed Markey
- Would require the FTC to spend one year conferring with stakeholders to explore:
  - whether the existing legal regime adequately addresses neurotechnology
  - whether there are any gaps in current laws
  - what additional protections should be implemented to protect individuals from neurotechnologies that can be used in harmful ways.
- FTC is to report its findings to Congress and the public, and repeat the study annually.
- The MIND Act would allocate USD10 million to the FTC for its work.

The MIND Act

- Would cover both implanted brain-computer interfaces and wearable neurotech devices which can detect activity from the central or peripheral nervous system.
- Would apply not only to data collected from the nervous system, but also to other data that can infer, predict or reveal cognitive, emotional or psychological states or neurological conditions.
  - Heart rate variability, eye movement, voice analysis, facial expressions and sleep patterns

MIND Act Motivators

- Mind and behavior manipulation, monetization of neural data, neuromarketing, erosion of personal autonomy, discrimination and exploitation, surveillance, and access to the minds of U.S. citizens by foreign actors.
- Misuse of neural data in the employment, health care, financial services, housing and education industries, and in law enforcement and the criminal justice system
- Legislation calls to incentivize neurotech businesses to self-regulate

Key Takeaway Points

Neurotech is the next frontier in privacy law

- Companies will begin using neurotech to monitor employees
- Businesses will use neurotech to advertise
- Laws are in their infancy
- 2026 will be a big year for neurotech legislation

Thank You!

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