Forum: Special Conference on Shaping Tomorrow (SPECON)

Issue: Safeguarding Neuroprivacy through the ethical regulation of brain computer interfaces

Student Officer: Dennis Markidis

Position: Deputy President

Personal Introduction

Dear all,

My name is Dennis Makridis, and I am a 17-year-old student at Byron College, It is my utmost honor and pleasure to serve as a Deputy President in this year's ACGMUN Special Conference. I would like to start by welcoming you all to the 9th ACGMUN conference and wish you a great experience. MUN has played a significant role in both advancing my public speaking abilities as well as improving my critical thinking skills.

Regulating BCI's to ensure their ethicality in our modern world is becoming more and more important. A lack of knowledge due to the constant adaptations of this new and emerging technology could make us blind to its effects if not regulated appropriately. The study guide will help you gain a more holistic understanding of the topic at hand. I suggest you also conduct your own research on the policy of the country you have been assigned, in order to participate efficiently in the debate. I look forward to meeting you all in person. If you have any questions regarding the topic or the procedures in general do not hesitate to contact me at dennismarkidis1@gmail.com

Topic Introduction

What are brain computer interfaces and how can we regulate them to insure their ethicality in regard to neuroprivacy? To be able to comprehend this question and answer it, we need to understand what neuroprivacy and brain computer interfaces are: "Neuroprivacy" refers specifically to the protection of neural data - also called Neurodata or brain data" [1]. "A brain computer interface (BCI) is a system that determines functional intent - the desire to change, move, control, or interact with

[1] Ienca, Marcello. "On Neurorights." *Frontiers*, 5 Dec. 2025, www.frontiersin.org/journals/human-neuroscience/articles/10.3389/fnhum.2021.701258/full

something in your environment - directly from your brain activity" [2]. Neuroprivacy has been a controversial topic in recent years and is one of the key discussion areas when BCIs are implemented and viewed. To safeguard neuroprivacy from the effects of BCI we need to assess the continuous and rapid development of A.I. and the advances made in the field of MedTech through the use of new technologies and medical systems. Neuroprivacy also extends its scope to various fields in modern society including the military industry, the medical industry as well as the commercial sector. In the military industry, BCI's can be seen in many sectors like soldier augmentation and cognitive enhancement as well as the training field. In the medical sector some of their uses include rehabilitation, prosthetics and communication support. Finally in the commercial sector we can see them used in digital entertainment but contradictingly so, also in workplace monitoring.

Those are some of the fields that BCI's expand into and regulating their use to ensure their ethicality seems more important than ever as showcased by the theme of this year's conference (Shaping Tomorrow). With the continued development of technology and the progressive and adaptive nature of our society, the future changes constantly. To be able to protect neuroprivacy and in turn the human rights of citizens globally safeguarding neuroprivacy and regulating BCI's is a critical step toward shaping the future ethically and progressively. Unfortunately, due to the uncertainty and unpredictability as well as inconsistency amongst those systems, it is difficult to set standard regulations that cover all the cases to insure that neuroprivacy is protected.

Definition of Key Terms

ALS

Amyotrophic lateral sclerosis (ALS), or 'Lou Gerhig's disease', is a progressive and fatal neuromuscular condition involving the gradual death of motor neurons, the neurons that control walking, speech, swallowing and breathing. This loss of motor neurons leads to muscular atrophy and progressive paralysis in patients.[3]

BCI

[2] "What Is BCI?" Cumming School of Medicine, 10 July 2023, cumming.ucalgary.ca/research/pediatric-bci/bci-program/what-bci Accessed 07 Dec. 2025.
[3] "Lou Gehrig's Disease or Amyotrophic Lateral Sclerosis (ALS)." *Paris* Brain Institute, 21 June 2022,parisbraininstitute.org/disease-files/lou-gerhigs-disease-or-amyotrophic-lateral-sclerosis-als Accessed 22 Dec. 2025.

A brain computer interface (BCI) is a system that determines functional intent - the desire to change, move, control, or interact with something in your environment - directly from your brain activity[4].

Cognitive liberty

Cognitive liberty is the right to self-determination over our brains and mental experiences, as a right to both access and use technologies, but also a right to be free from interference with our mental privacy and freedom of thought.[5]

Invasive BCI

Invasive BCI Modalities refer to the signal acquisition techniques that require surgical intervention to place electrodes directly within the skull or brain tissue for recording neural activity.[6]

Neural data

Neural data refers to the large-scale datasets generated from modern recording technologies that capture neural activity, requiring advanced analytical methods for processing and interpreting high-dimensional, multi-time-series information.[7]

Neuroprivacy

Neuroprivacy refers specifically to the protection of neural data - also called Neurodata or brain data[8].

Non-invasive BCI

A Non-Invasive BCI is a type of Brain-Computer Interface that records brain activity without requiring surgical implantation of electrodes.[9]

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[4] "What Is BCI?" Cumming School of Medicine, 10 July 2023, cumming.ucalgary.ca/research/pediatric-bci/bci-program/what-bci Accessed 07 Dec. 2025.
[5] Mineo, Liz. "We Should Be Fighting for Our Cognitive Liberty, Says Ethics Expert." *Harvard Gazette*, 9 Nov. 2023, news.harvard.edu/gazette/story/2023/04/we-should-be-fighting-for-our-cognitive-liberty-says-ethics-expert/ Accessed 22 Dec. 2025.
[6] "Invasive BCI Modalities → Area → Sustainability." *ESG*, esg.sustainability-directory.com/area/invasive-bci-modalities/ Accessed 22 Dec. 2025.
[7] "Non-Invasive BCI → Area → Sustainability." *Lifestyle*, lifestyle.sustainability-directory.com/area/non-invasive-bci/ Accessed 22 Dec. 2025.
[8] Ienca, Marcello. "On Neurorights." *Frontiers*, 5 Dec. 2025, www.frontiersin.org/journals/human-neuroscience/articles/10.3389/fnhum 2021.701258/full
[9] *Neural Data - an Overview | Sciencedirect Topics*, www.sciencedirect.com/topics/engineering/neural-data Accessed 22 Dec. 2025.

Neurorights

Neurorights could be defined as ethical, legal, social or natural principles of freedom or entitlement related to a person's cerebral and mental domain.[10]

Human augmentation

Human augmentation is defined as the use of science or technology to modify human performance temporarily, or permanently, to exceed normal physical or psychological capabilities of a human body.[11]

Background Information

Invasive and non- invasive BCI's

BCI's are split into two categories, invasive and non-invasive. As a technology, they gained traction in the early stages of development as soon as medical importance was established. With time, their use in the medical field advanced and progressed into resolving serious medical issues like ALS and other neurological disorders. This proved their importance to the public and the medical sector thus leading to an increase in their popularity. Later on, the technology progressed even further and was adopted by more sectors, like the defense and entertainment sectors.

Their medical significance, though, came with many complications. As defined above, invasive BCI's require a surgical procedure to be integrated with the human body in order to perform their intended function, whether it is medical, recreational or performance enhancing related. Some examples include Neuralink, Utah Array, Connexus and Stentrode[12]. All of the examples are used in the medical field. Some are brain chip implants and others newer technologies like electrical stimulation systems. BCI's use in the medical field is prevalent. This has been a pattern that becomes evident in all invasive BCI applications. On the other hand, non-invasive BCI's don't require surgical intervention to be integrated with an individual. This makes them more widely applicable and that can be seen in

[10] *Neurotechnology and Neurorights - Privacy's Last Frontier | Past Events | Events | Think Tank | European Parliament*, www.europarl.europa.eu/thinktank/en/events/details/neurotechnology-and-neurorights-privacy-/20231019WKS05721 Accessed 22 Dec. 2025.
[11] Miron, Marina. *Vol.: (0123456789) Neuroethics (2025) 18:23*, pub.uni-bielefeld.de/download/3002408/3002409/s12152-025-09595-4.pdf Accessed 22 Dec. 2025.
[12] "Neuralink." *Wikipedia*, Wikimedia Foundation, 19 Dec. 2025, en.wikipedia.org/wiki/Neuralink Accessed 23 Dec. 2025.

examples like Galea[13]. Galea is an open BCI platform that is used by private entities to build BCI applications in sectors like education, health and entertainment. Some of the most common uses of non-invasive BCI's, include [14]EEG (Electroencephalography), FNIRS (Functional Near-inferred Spectroscopy) & MEG (Magnetoencephalography). These functions have been widely used in clinical research to develop new BCI systems. Some of them are consumer electronics to advance videographics, healthcare to help treat speech disorders and combat ALS and many other diseases as well as entertainment to provide realistic displays, and education to promote focus and improve communication. Furthermore, Non-invasive BCI's tend to be cheaper thus making them more popular. In some cases, however, they are inapplicable for more advanced and case specific medical uses.

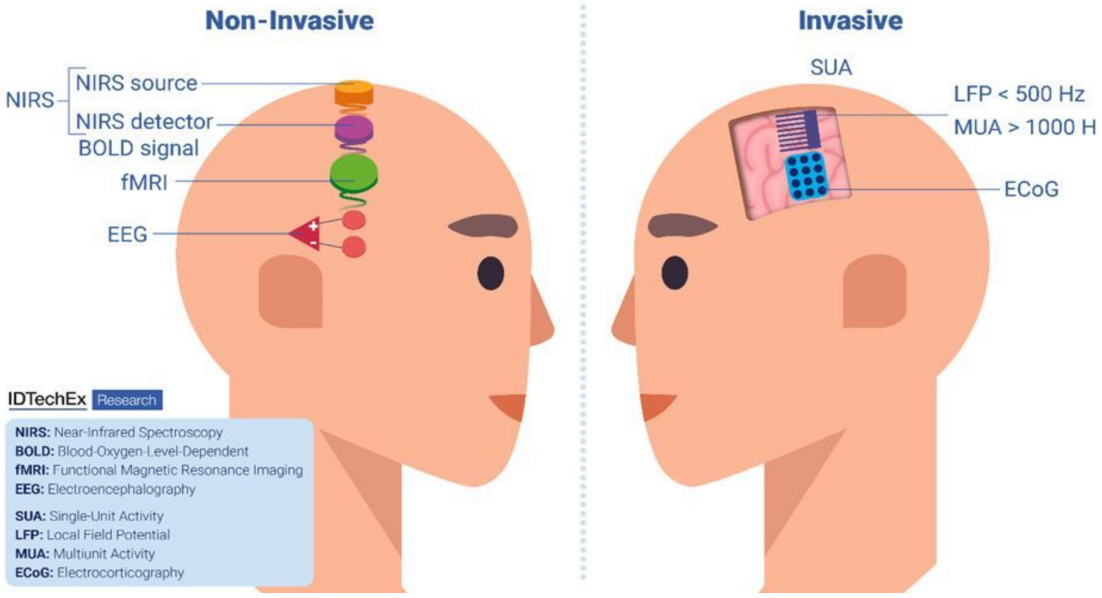

Figure 1 BCI visual representation[15]

Application of BCI's

[13] *OpenBCI*, openbci.com/ Accessed 23 Dec. 2025.
[14] says:, Muhammad Daly, and MedTechNews.Uk says: "Brain-Computer Interfaces: A Comprehensive Review of Technology, Applications, Ethical Implications, and Future Directions." *MedTechNews*, 15 Mar. 2025,medtechnews.uk/research-reports/brain-computer-interfaces-a-comprehensive-review-of-technology-applications-iethical-implications-and-future-directions/ Accessed 23 Dec. 2025.
[15] "Idtechex Asks: Will the Brain-Computer Interface Market Thrive before Neuralink?" *Electronics for Engineers*, 25 Sept. 2024, efemag.co.uk/idtechex-asks-will-the-brain-computer-interface-market-thrive-before-neuralink/ Accessed 28 Dec. 2025.

Neural data processing is an Innovative process that decodes and stores brain signals to translate them into actionable outputs. Those outputs include movement and communication commands. This is how all BCI devices work. It uses non-invasive or invasive sensors to analyse brain activity and patterns that can then be used to either enhance or alter the function of the person it is applied on. That's why its uses are so varied.

When it comes to assessing and looking at the applications of BCIs the sectors they expand upon are vast. In medicine BCIs are utilized for rehabilitation stroke recovery, motor control, communication support for patients with ALS or paralysis and assistive devices for disabled individuals[16]. As technology and medicine develop perpetually, BCI's have become undoubtedly essential in resolving complex medical issues. But as with any change or progression in any sector, that of BCI's also has its challenges. Due to the variety and unique nature of medical issues as well as the diversity of symptoms patients experience, the approach of a single, uniform logic is often problematic. As a result, both the application and regulation of BCIs are significantly challenging. The proper regulation of BCIs is not only paramountly important to ensure its ethical use, it is also a measure to protect patients' safety and ensure their prosperity.

Another major and more commercial application of BCI's are consumeristic applications. Those include gaming, entertainment and fitness devices.[17] When it comes to gaming and entertainment, due to the shift in consumer interest during the past decade, more and more businesses have entered the sector. BCI's have been used to provide more realistic and authentic gaming and entertainment experiences through devices like headsets, vision goggles and many other digital systems that immerse users into the gaming and entertainment world. While it might seem harmless, it is crucial to introduce those experiences with the appropriate information and guidance of professionals and adults. If not done so, the kids can end up facing serious consequences, for instance addiction. Kids can get drawn to the gaming experience and find themselves in a position where they occupy most of their time playing videogames. This can lead to other problems like social separation as well as isolation. In extreme

[16] Liu XY;Wang WL;Liu M;Chen MY;Pereira T;Doda DY;Ke YF;Wang SY;Wen D;Tong XG;Li WG;Yang Y;Han XD;Sun YL;Song X;Hao CY;Zhang ZH;Liu XY;Li CY;Peng R;Song XX;Yasi A;Pang MJ;Zhang K;He RN;Wu L;Chen SG;Chen WJ;Chao YG;Hu CG;Zhang H;Zhou M;Wang K;Liu PF;Chen C;Ge. "Recent Applications of EEG-Based Brain-Computer-Interface in the Medical Field." *Military Medical Research*, U.S. National Library of Medicine, pubmed.ncbi.nlm.nih.gov/40128831/ Accessed 23 Dec. 2025.

[17] Ahn, Minkyu, et al. "A Review of Brain-Computer Interface Games and an Opinion Survey from Researchers, Developers and Users." *MDPI*, Multidisciplinary Digital Publishing Institute, 11 Aug. 2014, www.mdpi.com/1424-8220/14/8/1460 Accessed 23 Dec.2025.

cases a very serious consequence could be derealization. Kids or even adults might lose their sense and ability to separate virtual experiences from reality.[18] This could be taken advantage of by gaming brands, as they could use BCI's to gain further insight into consumers' preferences through devices like EEG's that detect electromagnetic brain signals to detect emotional responses. Those consequences mentioned above are just some examples, but they do showcase the severity of the misuse of BCI's even in the gaming and entertainment industry thus outlining the importance to regulate them accordingly.

Apart from the entertainment sector, BCI's have made a recent presence in the workplace. Some companies have started implementing programs involving non-invasive BCI's to provide management with critical assessment tools and also help employees boost their productivity as well as their cognitive abilities.[19] Fujitsu for instance, a company based in Japan, has started developing Electroencephalography (EEG) fatigue detection technologies used in industrial settings to schedule breaks and reduce mistakes. This technology helps reduce work stress, while also avoiding fatigue related workplace accidents caused due to the fact that workers could be overworked or too physically and mentally exhausted to perform certain tasks.[20] Another significant company is Emotive. This company has developed EEG brain computer interfaces to help better understand cognitive states like focus, stress, and engagement in workplace settings. Jones Lang LaSalle (JLL) partnered with Emotiv to study how different office environments impact employee engagement and well-being by measuring brain activity during work tasks, helping inform office design decisions aimed at boosting focus and productivity. This is also being used as an assessment tool to see which tasks individual employees complete with the most focus and use that to harness their ability towards performing this task and boost a company's productivity.

Another industry, in which BCIs are used, is the military. BCI's made their first presence in the military industry during the early seventies.[21]The first country to adopt experimental programs focusing

[18] Amir, Muhammad. "Brain–Computer Interface Innovations for Virtual Reality Interaction." *Academia International Research Journal (Multi Disciplinary)*, academia.edu.pk/index.php/AIRJ/article/view/1102 Accessed 23 Dec. 2025.
[19] "Brain-Computer Interfaces-Based Fatigue Detection in Industrial Operations." *Patsnp Eureka*, eureka.patsnap.com/report-brain-computer-interfaces-based-fatigue-detection-in-industrial-operations Accessed 27 Dec. 2025.
[20] "Empowering Employees to Optimize Their Workday." *EMOTIV*, www.emotiv.com/blogs/news/eeg-technology-for-employee-wellness Accessed 27 Dec. 2025.
[21] "Brain–Computer Interface." *Wikipedia*, Wikimedia Foundation, 22 Dec. 2025, en.wikipedia.org/wiki/Brain%E2%80%93computer_interface Accessed 27 Dec. 2025.

on the use of BCI's in their military was the USA through the Defence Advanced Research Projects Agency (DARPA).In the early 2000s, China, the UK and Germany followed the USA's footsteps and started experimenting with new BCI based programs. At first all countries focused simply on tracking their soldiers' fatigue and mental state to ensure that they are able to cope effectively.[22] Fast forward to today, companies like Neuroba, started developing and experimenting with technologies to enhance situational awareness for soldiers. This enables cognitive augmentation to improve memory and decision making as well as direct neural control of drones and robotic systems and remote surveillance operations. While those capabilities could greatly boost the military capabilities of every country, many concerns have been raised in regard to the aftermath of performing such operations to enable soldiers to use BCI's.

Ethical and human rights concerns

Assessing the principles and ethical core values of BCI's has been proven challenging. As a result of their unique nature, BCIs should be overviewed and assessed on three factors: Cognitive liberty, mental privacy, and autonomy [23]. Those factors highlight the rights of individuals to make self-aware and conscious decisions, while at the same time ensuring their decisions are informed and protected, as well as not influenced by third parties in a deceiving way. BCI's are a technology that interferes with a human's brain to alter or enhance their brain activity. This can lead to a consequential alteration of the freedom of thought and bodily autonomy of an individual. BCI's have the ability to change a person's actions through their technological capabilities. If misused or misinterpreted by the human brain due to technological and technical errors made during their creation they can have catastrophic effects. To minimize those effects, it is imperative to look into applying appropriate regulations and measures.

Informed consent is a term that is used to describe conscious decision making based on having the appropriate information [24].However, this term has an ambiguous nature that can sometimes lead to confusion and clarity issues around the meaning of the term. This has raised ethical concerns amongst many, claiming that without it, consumers are rendered unable to make conscious decisions. Informed

[22] Neuroba. "The Future of Brain-Computer Interface Technology in Military and Defense." *Neuroba*, 20 Jan. 2025, www.neuroba.com/post/the-future-of-brain-computer-interface-technology-in-military-and-defense-neuroba Accessed 27 Dec. 2025.
[23] *Springer*, link.springer.com/content/pdf/10.1186/s41110-017-0050-1.pdf Accessed 28 Dec. 2025.
[24] Burwell, Sasha, et al. "Ethical Aspects of Brain Computer Interfaces: A Scoping Review - BMC Medical Ethics." *SpringerLink*, BioMed Central, 9 Nov. 2017, link.springer.com/article/10.1186/s12910-017-0220-y Accessed 28 Dec. 2025.

consent is a person's right to make choices based on them getting the information required to make their decision upon a given matter. With BCI's this has been proven extremely difficult to define. What is adequate enough considered as? BCI's are not a new technology yet their constant development and technological growth has placed even professionals in the field in a position where their constant adaptations make them very difficult to fully understand. This means that sometimes even they can't be certain of the full potential outcomes of a BCI device and how it can impact positively or negatively a person using it. It is undeniable that BCI's play a crucial part in many sectors, especially in the medical field. This makes them irreplaceable and crucial due to their life altering and saving capabilities. Thus, it is important to ensure that even the general public has some background knowledge on the matter, not to alter their outcomes or perceptions but to insure their right to make decisions and give consent in a way that is impartial and informed.

This challenge only enlarges when it comes to protecting vulnerable populations. The ethical concerns posed both by governments and NGO agencies specializing in the protection of children's rights have been many. This can be justified due to the lack of awareness and ability younger individuals have to make informed decisions. One thinking of vulnerability one group finds itself at the top of the list, children[25]. Children are unable to make informed decisions on their own and that's why legally their guardians make the decision for them. This has a very solid and ethical basis, but when it comes to BCI's as outlined above even guardians or professionals may not be able to fully comprehend or predict the outcomes of an invasive BCI being used on an adult let alone a child. This challenge has raised a very controversial issue amongst the regulatory community as well as the medical one. Should such decisions be made by the guardians, the doctors, or the child when they grow older if possible, depending on the circumstances and time constraints arising with each situation.

Military personnel have been used as experimental groups throughout medical history when it comes to enhancing their battle capabilities or simply testing new bioweapons or medicine as a whole. This has raised multiple ethical concerns in regard to the use of human life to test or enhance medical knowledge. One of the many examples of that is [26] The Edgewood Arsenal human experiments. These experiments involved the U.S. army's Chemical Corps. They conducted classified research on chemical agents, including psychoactive drugs like LSD and PCP, and nerve agents such as sarin and VX. About

[25] Bergeron D;Iorio-Morin C;Bonizzato M;Lajoie G;Orr Gaucher N;Racine É;Weil AG; "Use of Invasive Brain-Computer Interfaces in Pediatric Neurosurgery: Technical and Ethical Considerations." *Journal of Child Neurology*, U.S. National Library of Medicine, pubmed.ncbi.nlm.nih.gov/37116888/ Accessed 28 Dec. 2025.
[26] "Edgewood Arsenal Human Experiments." *Wikipedia*, Wikimedia Foundation, 24 Oct. 2025, en.wikipedia.org/wiki/Edgewood_Arsenal_human_experiments Accessed 28 Dec. 2025.

7,000 soldiers from 1948 to 1975 participated in tests designed to study incapacitating and protective effects of chemical substances. Even in modern times this group is obligated to carry out all tasks asked by their superiors without asking for explanations or voicing their concerns. That's what they have been trained for. This can be taken advantage of in many ways. It is completely unethical and although not so common now days it is not unprecedented to say that it is still something that needs proper oversight and third party supervision from both NGOs as well as the government's regulatory bodies to insure that soldiers are not being used as experimental groups in such research unless specific and informed impartial consent has been given without any coercion taking place.

This is not only a concern raised for the military though; While not as severe, many specialists and even private individuals have voiced concerns about the invasive practice of collecting data from employees and how that data can be used. Some even raised concerns that Neurodata collected by the company of the employee could be misused. For example, they could sell the data collected to other companies. This has led to further debate on whether BCIs and the benefits they provide both for the employees and the employers outweigh the potential downside and ethical violations of employees' neural data.

As is abundantly clear, the challenges and ethical concerns of BCI's need to be addressed. The coercion to adopt BCI's in the military or simply in any other environment due to the pressure of reaching the cognitive enhancement others might have should not be ignored. Additionally mental manipulation as well as marketing and commercial ploys should not be produced through the illegal or even legal sale of neural data to subconsciously control consumers choices as that also presents an ethical concern. Thus, the urgency to regulate BCI's and their activity is becoming more and more potent

Major Countries and Organisations involved

Chile

Chile is playing a leading role in regulating BCI's and neurotechnology use by becoming the first country in the world to include neurorights in its constitution. In 2021, The Chilean government approved a constitutional amendment. The amendment, protected the mental privacy of Chilean citizens and insured the non-discrimination in access to neurotechnology, treating personal brain data as a protected legal category that cannot be bought, sold, or manipulated [27]. This legislative effort responds to the rapid development of technologies such as BCIs that can read or interact with brain activity,

[27] Unesco. "Chile: Pioneering the Protection of Neurorights." *The UNESCO Courier*, courier.unesco.org/en/articles/chile-pioneering-protection-neurorights?utm Accessed 17 Jan. 2026.

aiming to ensure ethical safeguards are in place before such technologies became widespread**.** This effort has led to an increase in privacy protection and thus having an overall positive effect on the citizens of Chile as well as the progress made in regards to protecting neuroprivacy through regulating BCIs.

China

China has issued official ethical guidelines for BCI research to help govern the development and application of these technologies, emphasizing responsible conduct, risk control and respect for participants' rights[28]. These guidelines categorize BCIs by invasiveness, distinguish between therapeutic uses, such as helping people with neurological disabilities and augmentative uses, including enhancing the abilities of healthy individuals, and call for moderation to reduce social inequality, ensuring ethical oversight of both invasive and non-invasive BCI research. The success of the measures has not yet been proven, due to the fact that they were introduced very recently. That aside, the measures have the potential to make positive change overall.

United States of America (USA)

[29]The US Senate has introduced the Management of Individuals' Neural Data Act of 2025 which directed the Federal Trade Commission (FTC) to study how neural data information, that derived from brain activity, such as that collected by brain computer interfaces, should be governed and protected at the federal level. This has led to a more vocal concern about the regulation of BCIs pushing for change. In addition, state governments like [30]Colorado and California have already amended their privacy laws to explicitly include neural data as a sensitive category of personal information, requiring express consent and enhanced protections before such data can be collected or used. Those laws can be legally enforced and thus have helped those states take the first steps towards protecting their citizens' neuroprivacy.

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[28] *Translation Ethics Guidelines for Brain-Computer Interface ...*, cset.georgetown.edu/wp-content/uploads/t0584_brain_computer_ethics_EN.pdf Accessed 16 Jan. 2026.
[29] *S.Amdt.2925 to s.2296 - 119th Congress (2025-2026) | Congress.Gov | Library of Congress*, www.congress.gov/amendment/119th-congress/senate-amendment/2925 Accessed 16 Jan. 2026.
[30] "Colorado and California Get Ahead of Neural Data Regulation." *BakerHostetler*, 18 Oct. 2024, www.bakerlaw.com/insights/colorado-and-california-get-ahead-of-neural-data-regulation/?utm Accessed 17 Jan. 2026.

Food and Drug Administration (FDA)

[31]The Food and Drug Administration (FDA) issued a formal guidance document to help manufacturers and researchers develop implantable BCI medical devices. This guidance outlines nonbinding recommendations on what should be included in preclinical testing, clinical study designs, risk management, device documentation, software considerations, and safety evaluations to support Investigational Device Exemption (IDE) applications for implantable BCIs intended to restore motor or sensory functions in patients. This reflects the FDA's role in setting regulatory expectations for safety and effectiveness as BCI technologies transition from research to clinical use.

The European Union (EU)

European institutions are increasingly addressing the ethical and legal implications of brain-computer interfaces (BCIs) and other neurotechnologies. Draft guidelines from the Council of Europe extend existing data protection and human rights standards to the field of neuroscience emphasizing safeguards for neural data, mental privacy and informed consent when technologies such as BCIs are used [32]. Additionally, a European Parliament study examines the risks posed by advanced neurotechnologies, including potential misuse of brain data and threats to cognitive autonomy, and stresses the need to adapt current EU laws to ensure that innovation in BCIs develops in line with fundamental rights and democratic values [33].

Blocs Expected

Alliance 1: Countries with more regulation in regards to BCIs and neuroprivacy

United States, Chile, Brazil, France, Germany, Spain, Israel, Italy, Japan (alliance one has expanded into the BCI technology but has proportionally regulated its use to ensure that neuroprivacy isn't compromised. Additionally, this alliance aims to increase awareness and

[31] *An Introduction to FDA's Regulation of Medical Devices Elias Mallis Director*, www.fda.gov/media/123602/download Accessed 16 Jan. 2026.
[32] *Rm.Coe.Int*, rm.coe.int/t-pd-2025-1-draft-guidelines-neuroscience-after-plenary-2025-september/4880287a0c Accessed 17 Jan. 2026.
[33] *Briefing Stoa Options Brief EPRS | European Parliamentary Research Service*, www.europarl.europa.eu/RegData/etudes/STUD/2024/757807/EPRS_STU(2024)757807(ANN01)_EN.pdf Accessed 16 Jan. 2026.

transparency when it comes to the use of BCIs, as well as regulate and protect neuroprivacy to an even greater extent.)

Alliance 2: Countries that have expanded into BCIs but have failed to regulate them proportionally

China, Russia, India, Iran, Turkey, Saudi Arabia, United Arab Emirates, Egypt

(Alliance two has also had some success in entering the BCI market but it is lacking in regulatory measures to protect neuroprivacy and prevent ethical breaches. This alliance is more focused on developing this technology further, but lacks interest in protecting the neuroprivacy of its citizens proportional to the level of development of the BCI technology)

Timeline of Events

Date	Description of Event
1950 to 1975	Edgewood Arsenal: around 7,000 soldiers were exposed to chemical agents and psychoactive substances, influencing future neurological research ethics.
1973 to 1999	Non-invasive BCIs using EEG were developed for medical and research purposes.
2000 to 2009	Both invasive and non-invasive BCIs advanced, restoring movement and communication in patients with paralysis and (ALS)
2010 to 2019	Invasive BCIs progressed rapidly raising ethical concerns about consent, brain data, and long-term risks.

20 May 2021	Chilean Senate approved neurorights protections for mental privacy and cognitive autonomy.
25 October 2021	Neurorights were introduced into Chilean law.
2023 to 2024	China issued BCI ethical guidelines, and European institutions drafted rules to protect mental privacy and neural data.
2024	The European Parliament published a study highlighting BCI risks and calling for EU legal updates.
2025	The US Senate introduced the Management of Individuals Neural Data Act and the FDA issued guidance on implanted BCI devices.

Relevant UN Resolutions, Treaties & Events

Recommendation on the Ethics of Neurotechnology

Adopted by UNESCO on 5 November 2025 and entered into force on the 12th of November 2025, this resolution highlights the importance of protecting neuroprivacy and ensuring that all BCI technology (neurotechnology) is regulated and used ethically [34]. Its key components are Neurotechnology, mental privacy, freedom of thought, autonomy, human dignity, consent, safety, fairness and governance.

Neurotechnology and human rights

[34] "A UNESCO Project Equips Local Communities to Conserve Biodiversity in Kanchenjunga." *UNESCO.Org*, 9 Jan. 2026, www.unesco.org/en Accessed 11 Jan. 2026.

Adopted by the United Nations Human Rights Council (HRC) on the 2nd of April 2025, this resolution highlights the importance of addressing privacy, human dignity, autonomy, non-discrimination, accountability, protection from misuse and state regulation [35]. If applied by nations, through state regulation tackling all the key aspects of this resolution can provide a sufficient solution when it comes to protecting neuroprivacy through ensuring the ethical regulation of BCI's.

Previous Attempts to Solve the Issue

Council of Europe Convention 108+ (2020)

In the past, there have been notable attempts to protect human rights and neuroprivacy through regulating BCI's. One of those attempts is the 108+ convention of 2020 which outlines, stronger protection of personal and sensitive data, updated rules for digital and automated processing, expanded individual rights and transparency, greater accountability and breach notification as well as clear safeguards for cross-border data flows[36]. Its strength is that it covers general data protection adapted to neural data. This fosters better regulatory control and improves neuroprivacy protection as a result. Contradictingly, due to the fact that neuroprivacy protection is not explicitly covered, the convention can't ensure proper oversight and regulation for neuroprivacy purposes specifically.

EU AI Act (2024)

Another attempt to protect neuroprivacy indirectly is the 2024 EU AI Act [37]. This act covers risk-based AI rules, high risk oversight, transparency, human control, data governance, enforcement as well as penalties, innovation support and banned practices. Its key benefit is that there are specific mechanisms ensuring that if there is lack of compliance the response will not just be limited to recommendations or verbal oppositions but rather more direct penalties for those who do not comply with the act. However, the act was not specific to BCI's, creating room for misuse by countries and their governments as well as companies to avoid the acts' legally binding regulations.

European Brain Council Charter (2025)

[35] "Document Viewer." *United Nations*, docs.un.org/en/A/HRC/RES/58/6 Accessed 11 Jan. 2026.
[36] *Convention 108+ : The Modernised Version of a Landmark Instrument - Data Protection*, www.coe.int/en/web/data-protection/-/modernisation-of-convention-108 Accessed 29 Dec. 2025.
[37] "Artificial Intelligence Act." *Artificial Intelligence Act EU Official Text - AI Act*, aiactinfo.eu/ Accessed 30 Dec. 2025.

Finally, another important attempt to resolve the issue at hand was the European Charter for the Responsible Development of Neurotechnologies[38]. This document outlines the concepts and the importance of ethical and human-centered neurotechnology development, equality of access, protection of privacy, prevention of misuse, public and stakeholder engagement, trust and wellbeing, responsible innovation guiding policy and business as well as sustainable economic growth. Even though this document covers key areas that could help in combating the issue of protecting neuroprivacy, since this is a non-binding ethical framework promoting responsible innovation, it is voluntary and unenforced, making its application and change in regards with the issue minimal.

Possible Solutions

Establishing regulatory mechanisms through international cooperation

Reliant solutions to protect neuroprivacy through ethically regulating BCI's are not straightforward to come up with yet their presence is more needed than ever. Due to the complexity and evolutionary structure that BCI's have, placing regulatory mechanisms is hard. One way to create such mechanisms would be through multilateral agreements between nations. Through those agreements countries could use information sharing strategies to create multinational regulatory bodies. The UN alongside other international agencies could monitor those bodies to ensure their proper operation. One example could be a European regulatory body that through cooperation and collaboration between countries, could sufficiently keep up with the shifting and rapid growing development of BCI's thus increasing neuroprivacy protection for all citizens. Similar agreements could be made either between a few countries or through the UN worldwide.

Raising awareness upon BCIs

BCI's are a technology that is constantly evolving and developing. Thus, educating the public on BCI's is not something that can take place instantly, but it is something essential and should therefore be attempted. One way to do that, would be through creating online learning platforms targeting schools and universities. This would expose young adults and children to the uses of BCIs as well as their risks and benefits but also how we can use them ethically and safely. Thus, allowing new generations to be

[38] "European Charter for the Responsible Development of Neurotechnologies." *European Brain Council (EBC)*, 24 Oct. 2025, www.braincouncil.eu/european-charter-for-the-responsible-development-of-neurotechnologies/ Accessed 30 Dec. 2025.

more familiar and aware with this shifting technology and protecting their neuroprivacy and rights. To target older people the government can offer workplace workshops helping raise awareness about BCI's also they can provide those workshops to and care homes to teach them too. Finally targeting medical professionals through training sessions with experts in the field could be an additional crucial step to improve their ability to inform patients and help them understand the risks and benefits of integrating BCI's into their lives and care. This would lead to better understanding, thus making informed consent more possible and realistic for all people.

Establishment of legal documents concerning the legal use of BCIs

Where the system lacks are brain computer interface related mechanisms and frameworks that can protect neuroprivacy directly from the misuse of BCI's. To do that governments need to consolidate experts in the field of BCI's and work alongside with regulators and government departments in charge of civil protection to create new laws that cover effectively and holistically the legal mishaps that could occur through the use of BCI's. This would insure complete protection and safety for neuroprivacy as if one uses them unethically there will be legal repercussions.

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