

NEUROLAW AND SOCIAL MEDIA GOVERNANCE: NEURORIGHTS, PLATFORM DESIGN, AND THE EU REGULATORY RESPONSE: A COMPREHENSIVE SCIENTIFIC LITERATURE REVIEW

NEURODIREITO E GOVERNANÇA DAS REDES SOCIAIS: NEURODIREITOS, PROJETO DE PLATAFORMAS E A RESPOSTA REGULATÓRIA DA UE: UMA REVISÃO EXAUSTIVA DA LITERATURA CIENTÍFICA

Article received on: 1/30/2026

Article accepted on: 4/30/2026

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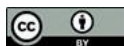
The authors declare that there is no conflict of interest

Abstract

The current study was concerned with the emerging intersection of neurolaw, neurorights, and social media governance within the context of evolving European Union regulatory frameworks. The convergence of neurotechnology, artificial intelligence, and digital platforms has created exceptional challenges for protecting mental autonomy, cognitive liberty, and mental privacy. Therefore, it is of utmost importance to analyze how neurotechnologies and algorithmic systems deployed on social media platforms threaten fundamental cognitive freedoms, and evaluate the adequacy of current EU regulatory responses, including the Digital Services Act (DSA), Digital Markets Act (DMA), AI Act, and General Data Protection Regulation (GDPR). Key findings from the literature reveal that while neurorights

Resumo

O presente estudo abordou a interseção emergente entre neurodireito, neurorights e governança das redes sociais no contexto da evolução dos marcos regulatórios da União Europeia. A convergência entre neurotecnologia, inteligência artificial e plataformas digitais criou desafios excepcionais para a proteção da autonomia mental, da liberdade cognitiva e da privacidade mental. Portanto, é de extrema importância analisar como as neurotecnologias e os sistemas algorítmicos implantados em plataformas de mídia social ameaçam as liberdades cognitivas fundamentais e avaliar a adequação das respostas regulatórias atuais da UE, incluindo a Lei de Serviços Digitais (DSA), a Lei de Mercados Digitais (DMA), a Lei de IA e o Regulamento Geral de Proteção de Dados



discourse has gained significant political concern, substantial academic debate persists regarding whether novel rights are necessary or whether existing human rights frameworks can be adapted. Accordingly, the recognition of significant gaps within current EU regulations regarding concealed manipulation, computational persuasion, and the safeguarding of mental integrity in digital environments is a matter of considerable importance. Accumulating evidence demonstrates that social media platforms employ persuasive technologies and dark patterns that exploit cognitive vulnerabilities, thus raising challenging questions about the scope and enforcement of neurorights protections. Therefore, the current study focused on the implication that a comprehensive strategic approach combining regulatory intervention, technical safeguards, user education, and international harmonization is essential to safeguard mental autonomy in the digital age.

Keywords: Neurolaw. Neurorights. Social Media Governance. Mental Autonomy. European Union Digital Regulation.

(RGPD). Principais conclusões da literatura revelam que, embora o discurso sobre os neurorights tenha ganhado considerável atenção política, persiste um debate acadêmico substancial sobre se novos direitos são necessários ou se os marcos de direitos humanos existentes podem ser adaptados. Assim, o reconhecimento de lacunas significativas nas regulamentações atuais da UE em relação à manipulação oculta, à persuasão computacional e à salvaguarda da integridade mental em ambientes digitais é uma questão de considerável importância. Evidências crescentes demonstram que as plataformas de mídia social empregam tecnologias persuasivas e padrões obscuros que exploram vulnerabilidades cognitivas, levantando assim questões desafiadoras sobre o escopo e a aplicação das proteções dos neurorights. Portanto, o presente estudo se concentrou na implicação de que uma abordagem estratégica abrangente, combinando intervenção regulatória, salvaguardas técnicas, educação do usuário e harmonização internacional, é essencial para salvaguardar a autonomia mental na era digital.

Palavras-chave: Neurodireito. Direitos Neurológicos. Governança das Redes Sociais. Autonomia Mental. Regulamentação Digital da União Europeia.

1 INTRODUCTION

The rapid evolution of neurotechnology and artificial intelligence (AI) has prompted fundamental changes in the concept of human rights in the digital age. Neurolaw is considered an emerging interdisciplinary field at the intersection of neuroscience, psychology, and law. The main concern of Neurolaw is to examine how brain science and digital technologies challenge established legal and ethical frameworks (Neuwirth, 2022). The convergence of neuroscience and digital technologies are salient determinant of social media governance, where algorithmic systems increasingly possess the capacity to access, monitor, infer, and potentially manipulate mental states at unprecedented scale (Brown, 2024; Ienca, 2023).

Neurorights represent a proposed category of fundamental rights concerned with the protection of the cerebral and mental domain of individuals against intrusions caused by neurotechnology and the impact of social media algorithms (Cornejo, 2024; Trabucco, 2023). The provided rights encompass several aspects, including mental privacy, cognitive liberty, mental integrity, psychological continuity, and personal identity. The principle of neurorights extends beyond traditional human rights protections into the realm of cognitive processes and neural data (Farinella & Gulyaeva, 2024). The emergence of neurorights discourse is the result of the increasing recognition of the shortcomings of the current legal instruments, including the Universal Declaration of Human Rights (UDHR), the International Covenant on Civil and Political Rights (ICCPR), and the European Convention on Human Rights (ECHR) in addressing direct manipulation or decoding of mental states (Filho & Firmo, 2023).

The digital environments engage sophisticated persuasive technologies, such as dark patterns, hypernudging, and computational manipulation, that exploit cognitive vulnerabilities and undermine mental autonomy (Carlessi *et al.*, 2023). The major threat of the digital environment involves users' behavioral prediction and modification, thus creating what is now known as "information bubbles." As a result, there is an increasing vulnerability of violation of the freedom of thoughts and cognitive liberty (Pedrosa, 2024). Additionally, the implementation of AI applications, including brain-computer interfaces (BCIs), emotion recognition AI systems, and AI phenotyping technologies, negatively impacted the boundaries between traditional data collection and direct neural surveillance (Muñoz *et al.*, 2023; William, 2025).

Given together, the European Union has emerged as a global leader in digital regulation, implementing a comprehensive framework including the General Data Protection Regulation (GDPR), the Digital Services Act (DSA), the Digital Markets Act (DMA), and the proposed Artificial Intelligence Act (AI Act). The emerging regulatory instruments address various aspects of platform governance, data protection, and algorithmic accountability (Neuwirth, 2022). However, a debate has persisted concerning the adequacy of the current instrumental frameworks in protecting neurorights versus the requirement of a new legal instrument framework (Borbón & Ramírez-Gómez, 2024; C. Bublitz, 2015).

2 THE CORE NEURORIGHTS

2.1 Mental privacy

The concept of mental privacy is the principle of the neurorights. The individual has the right to keep the confidentiality of their thoughts, emotions, beliefs, and mental processes from unauthorized access or inference (Brown, 2024; Farinella & Gulyaeva, 2024). The individual's right, therefore, extends beyond the traditional privacy protection of bodily integrity and personal data to involve the cognitive domain of the individual (Magee *et al.*, 2024).

Brown (2024) concluded that to protect people's minds, safeguards must extend beyond devices that transform brain activity to digital information- read minds. Protection of mind privacy should include all types of technologies that can "read minds," mainly the digital systems that combine information from the individual's behavior, body signals, and surroundings to obtain digital information about the individual's thoughts, behaviors, and perspectives (Brown, 2024).

As the technology progresses, the concept of mental privacy evolves. Earlier concepts focused on direct neural interfaces and brain-imaging technologies (Trabucco, 2023). Contemporary scholarship highlighted the impact of sophisticated AI systems on inferring cognitive and emotional states through social media behavior, keystroke dynamics, and facial expressions (Anibal *et al.*, 2024; Weiner *et al.*, 2025). Therefore, the recognition of "mind reading" multi-modal process allowed for the evolution of conceptualizing mental privacy.

Cornejo (2024) emphasized that mental privacy must be understood within the frame of the expanded interpretation of the Universal Declaration of Human Rights, as essential to protecting mental autonomy against neurotechnology abuse. Moreover, the improper information handling and lack of legal security guarantees are critical challenges to mental privacy, in medical and commercial contexts where neural data may be collected without adequate consent or safeguards (Cornejo, 2024). Similarly, Farinella *et al.* (2024) analyzed international protection mechanisms, including Russian and European legislation, raising the question about the adequacy of the current privacy rights

in the AI age versus the need for new and genuine mental privacy rights (Farinella & Gulyaeva, 2024).

The relationship between mental privacy and data protection frameworks, particularly the GDPR, remains contested. While some scholars argue that GDPR's protections for special category data and provisions against automated decision-making provide adequate safeguards (Bublitz, 2022). On the other hand, it is believed that neural data and inferred mental states require specific protections due to their intimate connection to personal identity and autonomy (Filho & Firmo, 2023). Therefore, the existing controversy has significant implications for regulatory design. Settlement of disagreements would pave the way for a legal instrument, either a distinct stand-alone one or an integrated one into the existing frameworks, to handle the neurorights and mental privacy.

2.2 Cognitive liberty

Cognitive liberty is the right to determine the individual's own thoughts, cognition, and mental processes without being subjected to interference or coercion (Ienca, 2023; William, 2025). Cognitive liberty constitutes both negative and positive freedom. Negative freedom implies freedom from manipulation, coercion, or unwanted cognitive interference. On the other hand, positive freedom presents the individual's capacity to access cognitive enhancement technologies and govern, shaping the individual's own mental development (Ernø & Birk, 2024). Therefore, cognitive liberty is conceptually grounded in the principles of autonomy, dignity, and freedom of thought enshrined in international human rights instruments.

Ienca (2023) provided a comprehensive account of digital manipulation that violates cognitive liberty, defining it as influence exerted via digital technology that intentionally bypasses reason to achieve asymmetric outcomes (Ienca, 2023). Digital manipulation emphasizes four key components, including intentionality (the manipulation is deliberate and not accidental), asymmetry of outcome (the manipulator benefits at the target's expense), non-transparency (the influence operates below conscious awareness), and autonomy violation (the manipulation undermines rational decision-making) (Carroll *et al.*, 2023; Ienca, 2023).

Furthermore, the concept of cognitive liberty encompasses mental self-determination as a fundamental right that encounters the AI-driven manipulation technologies (Faraoni, 2023). In other words, mental self-determination is the sovereignty of the individual over their own minds with the absolute control over neuroenhancement (Bublitz, 2013). The mental self-determination right aims to protect individuals' capacity to govern their decision-making processes against computational manipulation, such as hypernudging and second-generation dark patterns that operate through personalized, adaptive, and often subliminal influence (Nine, 2022; Vladimirovna, 2022). Based on the recognized concept of mental self-determination as a distinct right of cognitive liberty, the current acting rights (such as autonomy, privacy, and informational self-determination) are not powerful enough to cover the specific harm imposed on the individual by the AI systems that intentionally target the cognitive process (Braun, 2025; Shalaby, 2024).

In line with the concept of mental self-determination, William (2025) advanced the concept of "Cyborg Disconnection" as both a normative right and a clinical tool in digital psychiatry. It was argued that individuals should have the right to disconnect from human-machine cognitive extensions to maintain cognitive liberty and mental integrity (William, 2025). Accordingly, the concept of "Cyborg Disconnection" highlights the harm imposed by cognitive dependency due to the pervasive integration of digital technologies. Moreover, "disconnection dynamics" is proposed as a diagnostic metric for assessing digital dependency and a therapeutic approach (Peng, 2025).

2.3 Mental integrity

The concept of mental integrity, another dimension of neurorights, applies the principle of bodily integrity to include the mental domain as well. Therefore, neurorights should be tailored to protect the individual mentality against harmful manipulations that alter mental states, processes, or capacities (Farinella & Gulyaeva, 2024; William, 2025). Mental integrity is considered an individual's right to take full advantage of controlling their mental life and brain states. It is known to be a protective right against unauthorized interference with their brains, such as unauthorized manipulation, stimulation, or technological intrusion (Hildt, 2022). The notion of mental integrity extends to include

the individual's sovereignty over their mental state and brain-related data, so unauthorized individuals are not allowed to read, share, or alter this information without prior permission or misuse it to influence or condition the individual. Therefore, the core principle of mental integrity presents a state of being mentally whole and unimpaired (Lavazza & Giorgi, 2023).

2.4 Personal identity and psychological continuity

Personal identity and psychological continuity are two important concepts that should be included under the umbrella of neurorights. Personal identity refers to the set of characteristics that make the individual unique and distinct from others. Internal features, such as psychological traits, memories, and cognitive capacities, and external features, including social role, cultural background, and relationships, constitute the individual identity, who he/she is, and differentiate them from others (Marinero, 2025). Psychological continuity is grounded on the concept of personal identity serving as the framework through which the individual's mental life remains coherently and integrally connected over time, including memories, intentions, beliefs, values, traits, and other psychological features that unify earlier and later stages of the individual's life (Lighthart, 2024). Therefore, personal identity and psychological continuity should be integrated into neurorights principles to safeguard against interference and technological manipulation (Astobiza & Beriain, 2024). That is because the aspects of personal identity and continuity are an ongoing process that can be vulnerable to harmful technologies that alter memories, beliefs, or personal traits (Filho & Firmo, 2023).

Current neurorights frameworks lack consensus on defining and operationalizing personal identity and psychological continuity. Astobiza *et al.* (2024) argued that existing neurorights frameworks require reassessment and reformulation to house personal autonomy in utilizing neuroscientific capabilities while preserving essential aspects of identity and continuity (Astobiza & Beriain, 2024). Diego Borbón *et al.* (2025) documented a serious dilemma in identifying “identity,” conflating it with “personal autonomy” and “free will,” with no clear-cut distinctions (Borbón, 2025). M. Ienca *et al.* (2021) and S. Lighthart *et al.* (2023) concurred that current neurorights lack recognized philosophical-legal foundations and semantic clarity (Ienca, 2021; Lighthart, 2024). Karen

Herrera-Ferrá *et al.* (2022) concluded that contextual and cultural considerations should be considered for appropriate definitions of identity and continuity, reflecting the fact that jurisdiction-specific approaches remain underdeveloped (Herrera-Ferrá *et al.*, 2023).

3 NEUROTECHNOLOGY AND DIGITAL PLATFORMS

3.1 Brain-computer interfaces and neural data analytics

Brain-computer interfaces (BCIs) are emerging systems that create a direct connection between the neural brain activity and an external device, such as a computer or robot. These BCIs allow the individual to use thoughts only to control external objects such as cursors, wheelchairs, or operate a prosthetic (Trabucco, 2023). BCIs are developed for medical purposes such as restoring motor function in paralyzed patients. However, commercialization expanded BCIs' applications to include gaming, workplace productivity, and consumer neurotechnology products (Neuwirth, 2022). Therefore, the rapid progress of BCI applications raises critical inquiry about neural data governance, privacy protection, and the potential for cognitive surveillance.

Moreover, the concept of neural data implies the information (data) extracted from the individual's brain activity, reflecting intentions, emotions, memories, or cognitive states. The collection of these mental personal data raises the issue of mental autonomy as neural (mental) data expose intimate aspects of the individual's mental life (Okechukwu, 2024). The collected neural data can exploit an individual's thoughts and decisions. Collecting neurotechnologies or manipulating neural data without adequate safeguards increases the risk of intruding on an individual's ability to control their own mental processes, make independent choices, and maintain a stable sense of self (Di Salvo, 2025).

The dilemma of setting regulations for BCIs is finding the red line between the benefits and harm. While BCIs provide a cutting edge technology for individuals with neurological medical conditions, mental autonomy is vulnerable to violation and harmful manipulation. Applications that monitor the workplace enable employers to assess employees' attention levels, fatigue, or emotional states, thus creating cognitive surveillance that violate individual's autonomy (Muhl, 2024). Cornejo (2024) identifies

improper information handling as a critical problem in neurotechnology contexts, advocating for clear ethical principles and legal safeguards to protect mental autonomy (Cornejo, 2024).

3.2 AI-driven emotion recognition and digital phenotyping

The progress and development of AI-driven emotion recognition and digital phenotyping are not without harm. The new technology analyzes facial expressions, speech, online behavior, and smartphone activity, thus raising awareness about personal autonomy, bias, and manipulation. Muñoz *et al.* (2024) highlight ethical issues around privacy and algorithmic bias in digital phenotyping, which collects extensive cognitive and behavioral data via smartphones (Muñoz *et al.*, 2023). Therefore, the expanded use of personal data for profiling and advertising challenges meaningful consent and questions existing privacy safeguards. Therefore, Brown (2024) expanded the neurorights discourse to include all advanced technology systems that infer mental states from diverse data sources, arguing that privacy protections should apply regardless of how mental data is accessed (Brown, 2024).

3.3 Algorithmic manipulation and mind reading

The technology of ‘mind-reading’ is a metaphoric term referring to neurotechnological systems that decipher patterns of brain or muscle activity to infer what the individual is trying to think of, say, or communicate without actual access to thought signals (Andorno & Lavazza, 2023). Thus, ‘mind-reading’ using BCIs accesses neural signals, thus violating autonomy and neurorights, leading to unauthorized access to mental states, threatening cognitive liberty, mental privacy, and personal identity

Ryan Chang *et al.* (2025) argue that neurodata collection threatens freedom of thought and cognitive liberty under constitutional frameworks (Chang, 2025). T. Istace *et al.* (2022) systematically examine how neurotechnologies impact mental privacy, autonomy, authenticity, and personal identity (Istace, 2022). (S. Goering *et al.*, 2021) emphasized that ‘mind-reading’ can change individual agency and separate those using neurotechnologies from their sense of self (Goering *et al.*, 2021). Other individual

autonomy violation mechanisms include unauthorized neural signal decoding compromising mental privacy (Botes, 2022); "brain-jacking" enabling third-party control over cognitive and emotional states (Pugh *et al.*, 2018).

4 SOCIAL MEDIA PLATFORM DESIGN AND PSYCHOLOGICAL MANIPULATION

4.1 Dark patterns

The term "dark pattern" was coined by London-based UX designer Harry Brignull (Roşca, 2024). Dark pattern is known as a user interface designed to deceive users to tweak their choices at the expense of the user (Carlessi *et al.*, 2023). Social media platforms are so designed that they trick users into taking unintended actions such as sharing sensitive information, purchasing, subscribing, or staying more on the platform (Singh *et al.*, 2023). Types of dark patterns include confirm-shaming (using guilt-inducing language), Roach Motel (easy to subscribe but difficult or ambiguous to cancel or deactivate), Privacy Zuckering (enforcing users to share information through complex privacy settings), and misdirection (e.g., highlighting accepting "All Cookies" and hiding "Manage settings"). These social media platform patterns exploit cognitive biases, social pressures, and information asymmetries to direct behavior toward unintended action, thus undermining autonomy and informed decision-making (Alghanameh & Aljazeera, 2024).

Moreover, dark patterns in social media threaten mental autonomy by leveraging non-conscious psychological mechanisms that restrict the independence of the individual to make a free well decision. Jamie B. Luguri *et al.* (2019) found that consumers exposed to dark patterns were twice as likely to sign up for unwanted services, while aggressive manipulation interfaces made them almost four times more likely to subscribe unintentionally (Luguri & Strahilevitz, 2019). Thus, the platform design, rather than the price or the need, drove the consumer to make the purchasing decisions.

Evidence from the literature has addressed the different dark patterns adopted by social media platforms. Birgitta Dresch-Langley *et al.* (2024) argue that dark patterns exploit deep psychobiological mechanisms that construct human behavior. Manipulation interface design elicits conditional obedience (users automatically comply with prompts),

de-individuation (individuals feel less personally accountable in a digital environment), and learned helplessness (repeated exposure to confusing or coercive designs reduces the sense of control) (Dresp-Langley, 2024). Therefore, the design of the platform overcomes the deliberate and rational choice of the individual. Stefano Faraoni *et al.* (2023) proposed that AI-driven “hypernudges” target System 1 processes (the fast, automatic, and unconscious neural mechanisms). Hypernudges operate at the subliminal level of consciousness. Thus, the individual (user) becomes unable to recognize or resist the impact of the manipulation (Faraoni, 2023). As a result, the decision-making capacity of the individual is undermined by the violation of mental self-determination.

4.2 The attention economy and cognitive exploitation

The development of digital environments makes a shift from the physical basis of value (e.g., land or real estate) to the digital basis. Human expectations and interactions have become the fundamental source of economic gain. Consequently, economic attention reflects how the digital environment treats users’ engagement, focus, and time as a primary raw material that is managed as valuable data (Giraldo-Luque & Fernández-Rovira, 2021). In line with the digital environment progress, social media platforms tend to monetize user attention through designing features such as variable rewards, social validation, and content algorithms that highlight emotional engagement (Bahytjanuly, 2025). A business model that places revenue over user well-being and autonomy creates a black hole for cognitive exploitation. Pedrosa (2024) highlights how Big Tech’s approach violates neurorights, especially through algorithm-driven information bubbles that limit exposure to varied perspectives and restrict freedom of thought. The lack of regulation contributes to continued violations of these cognitive rights (Pedrosa, 2024).

The concept of cognitive exploitation reflects the novel mechanism of appropriation. Digital “mindowners” extract value from the users’ attention and information with no fair compensation in return to the original creator- digital rent is extracted from the users’ attention and information (Bahytjanuly, 2025). Therefore, it is a process of industrialization of publicly produced knowledge with the mapping of the conscious and unconscious individuals’ psyches to train AI models. As a result, the shared

human experiences are transformed into private industrial assets. Unethically, the individual contributors are left with no objective compensation (Kasper *et al.*, 2023).

5 EU REGULATORY RESPONSE

5.1 The EU Artificial Intelligence Act

The EU Artificial Intelligence Act establishes the world's first risk-based regulatory framework, categorizing AI applications by their potential for harm. This regulatory framework explicitly prohibits manipulative systems that use subliminal techniques or exploit vulnerabilities to distort behavior (EU Artificial Intelligence Act, 2024).

However, the Act contains significant gaps. The authors suggested that current exceptions to the ban on subconscious conditioning fail to fully protect individual identity, advocating instead for a total prohibition (Nieto, 2024). Additionally, defining the boundaries of prohibited manipulation and setting effective enforcement remains a critical challenge (Ienca, 2021).

The EU Artificial Intelligence Act raised a crucial debate on whether a new 'neurorights' was created or it was simply an adaptation of the current framework. Borbón *et al.* (2024) argue that the Act's approach of evolving current human rights through specific regulations may be more effective than codifying entirely new legal categories (Borbón, 2025).

5.2 Digital Services Act and Digital Markets Act

The Digital Services Act (DSA) and Digital Markets Act (DMA) form the EU's framework for platform governance, covering content moderation, algorithmic transparency, competition, and user rights with relevant provisions relevant to mental autonomy, cognitive liberty, and mental integrity (Ó Fathaigh *et al.*, 2025; Ozili, 2025).

The DSA (Article 34) states that major platforms are required to assess risk, including threats to mental health and democracy, and mandates yearly evaluations of their impact on fundamental rights. Moreover, it necessitates algorithmic transparency

and user control over recommender systems, thus supporting cognitive liberty (Grise, 2025). In addition, the DMA targets economic regulation by imposing obligations on "gatekeeper" platforms to foster competition. The DMA data portability and interoperability measures can enhance user autonomy and mental privacy, but their effectiveness depends on proper implementation (De Streel *et al.*, 2024).

5.3 GDPR implications for neurorights

The General Data Protection Regulation (GDPR) sets out the EU's personal data protection principles, related to mental privacy and cognitive liberty, with a special concern to neural data and automated decision-making (Miller *et al.*, 2025). Bublitz (2022) concurred that GDPR's provisions adequately addressed neurotechnology challenges, classifying neural data as personal, and often as "special category data," which receives added safeguards (Bublitz, 2022). Additionally, Article 22 protects against algorithmic manipulation (Sarabdeen & Mohamed Ishak, 2025).

The GDPR employs multiple protective mechanisms, including access control systems, data protection by design, cryptographic technologies, and oversight/sanctions frameworks.

The GDPR's sixth principle decrees "Integrity and Confidentiality" through access control policies (Bartolini *et al.*, 2019) as well as data protection by design and default (Asencio, 2019), advanced cryptographic technologies like end-to-end encryption, Secure Multi-Party Computation (Jarugula, 2025), and blockchain-based compliance verification systems (Davari & Bertino, 2019). To ensure compliance, the regulation established oversight mechanisms and sanctions (Hallinan, 2021). However, evidence from the literature concerning empirical effectiveness is lacking. Therefore, further investigation is required.

6 CONCLUSION

In conclusion, neurotechnologies and algorithms pose risks to mental autonomy, cognitive liberty, and integrity; concerns not always adequately addressed by current laws and regulations. Neurorights, including mental privacy and psychological continuity,

provide a basic framework for evaluating the exploitation of cognitive vulnerabilities that affect autonomy and mental health.

EU regulations such as GDPR, AI Act, DSA, and DMA offer protections; however, these regulations face challenges with definitions, enforcement, and coordination. Therefore, there is a growing interest in creating novel neurorights or updating and rectifying the current ones.

Priorities moving forward are clearer terms, stronger enforcement, global harmonization, and interdisciplinary research. Protecting neurorights requires regulatory action, technical safeguards, education, and international cooperation. As technology increasingly influences mental states, legal frameworks must adapt to secure cognitive liberty and dignity, shaping the future of human freedom in the digital age.

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