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The Hidden Costs of Feeling Seen: Emotion Recognition Technology and Fundamental Rights

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Contents

1 Introduction

The exponential development of artificial intelligence has further accelerated the digitalisation of our quotidian. One area that has particularly benefited from these technological advancements is *affective computing*[1], especially in relation to so-called Emotion Recognition Technologies (ERT).

The integration of ERT across entertainment platforms and social media networks is not yet widespread. However, the patent granted to Spotify in 2021 serves as a cautionary indication of the trajectory these platforms may pursue. The patent, titled "Identification of Taste Attributes from an Audio Signal"[2], outlines a system designed to analyse users' acoustic environments to infer emotional states, gender, and age. These inferences, when combined with prior user interaction data, are intended to enhance content personalisation. While such fine-tuning is often framed as a benefit to user experience, the deployment of ERT introduces an unprecedented level of sensitive data processing. Not only are these systems inherently invasive, but they also depend on the interpretation of highly subjective and contextual emotional cues, which raises significant concerns.

This development calls for a critical examination of the protection of fundamental rights in digital environments. The European Union has expressed concern over such technologies, albeit not always in the specific context of entertainment platforms, through legislative instruments such as the Artificial Intelligence Act (AI Act), the Digital Services Act (DSA), and the General Data Protection Regulation (GDPR).

[1] An interdisciplinary field aimed at equipping systems with the ability to recognise, interpret, and respond to emotional states.
[2] Spotify AB, *Identification of Taste Attributes from an Audio Signal* (US Patent 9,934,785 B1, 14 March 2018).

2 What is ERT?

Emotion recognition technologies are artificial intelligence-based systems designed to identify and interpret individuals' emotional states by analysing expressive and behavioural signals such as facial expressions, voice, text, body movements and neurological indicators.

These systems have potential applications across a range of fields, including healthcare, education, marketing and security. However, this study focuses specifically on their use within digital platforms, where they are employed to personalise content, adjust recommendation algorithms, and assess users' emotional engagement.

Despite their increasing development, ERTs have been the subject of criticism, particularly with regard to the theoretical models on which they are based. Most of these systems rely on the so-called "Universal Hypothesis", proposed by Paul Ekman, which posits that there are six basic emotions — happiness, sadness, fear, anger, surprise and disgust — that are universally recognisable and expressed through specific, biologically determined facial expressions. This approach leads to the creation of fixed patterns (for instance, a smile signifies happiness; a frown indicates anger), which are used to guide algorithmic interpretation.

However, the scientific validity of the universal hypothesis has been increasingly challenged. One of the main criticisms lies in the fact that emotional expression is not universal or biologically standardised, but rather shaped by cultural, social, contextual and individual factors. The way an emotion is expressed — or whether it is expressed at all — can vary considerably between cultures, and even among individuals within the same social context.

As such, the idea that there exists a direct, stable and reliable correspondence between a facial expression and an internal emotional state lacks consistent empirical support. In this regard, the uncritical adoption of this model by ERTs raises serious concerns about the reliability of the inferences produced by such systems, particularly when these are used to inform decisions with real-world consequences for individuals.

3 Fundamental Rights at Risk

Despite the potential benefits this technology may offer to users, particularly through more precise personalisation of content, its use, especially within digital platforms, raises significant challenges concerning the protection of fundamental rights.

The following analysis will examine how and which fundamental rights may be jeopardised by the deployment of Emotion Recognition Technologies.

3.1 Protection of personal data

The right to the protection of personal data[3] is enshrined in Article 8 of the Charter of Fundamental Rights of the European Union and ensures that data is processed for specified purposes and on the basis of a valid legal ground. This right also encompasses access to the data collected, as well as the right to rectification.

We live in an era in which data has acquired increasing economic and strategic value, within a context marked by the constant monitoring of individuals' behaviours and activities—a phenomenon widely referred to as surveillance capitalism.

Within this framework, the use of emotion recognition technologies (ERT) is of particular relevance, as it involves the large-scale processing of personal data. It is estimated that by 2026, the global ERT market will be worth 37 billion USD.[4] In light of this growing interest—especially of an economic nature—it is essential to ensure strict compliance with the right to personal data protection.

ERT operates through the analysis of elements such as facial expressions, body movements, voice, text and neurological signals in order to identify emotional states. Through this analysis, it is possible to reveal personal data that may disclose a user's racial or ethnic origin, political

[3] Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the protection of natural persons with regard to the processing of personal data and on the free movement of such data (General Data Protection Regulation) [2016] OJ L119/1, art 4(1).

[4] Amelia Katirai, 'Ethical Considerations in Emotion Recognition Technologies: A Review of the Literature' (2024) AI and Ethics 4(4) 927–948 https://doi.org/10.1007/s43681-023-00307-3 accessed 17 May, 2025.

opinions, religious or philosophical beliefs, or trade union membership. These constitute sensitive data[5], relating to deeply private aspects of the individual.

In this context, there are significant risks associated with a lack of transparency in the use of such technology. The absence of clear information regarding the existence and functioning of these systems may result in users being unaware that their emotional data are being collected and analysed. This lack of awareness prevents users from effectively exercising their data protection rights—such as the rights to information, objection, or informed consent—thus undermining their individual control over personal data.

Today, the use of digital platforms is widespread and constant, allowing them to access large quantities of personal data on a near-continuous basis. In the case of emotion recognition technologies, this access becomes particularly problematic, as data are often collected automatically, resulting in the capture of unintentional and potentially excessive information in relation to the declared purposes. This raises concerns regarding both proportionality and data minimisation.

A further challenge lies in ensuring that data processing is limited to the individual who has provided consent. Once again, due to the near-constant use of digital platforms, it is common for them to be used in social contexts, in which the technology may also capture and process emotional data from third parties present in the same physical or virtual space. This significantly heightens the risk of excessive and unauthorised data collection, compromising the rights of individuals who have not consented to such processing.[6]

Finally, another serious risk concerns the potential sharing or sale of emotional data collected by digital platforms to third parties—a practice already common with other categories of personal data. The particularly sensitive nature of the information extracted by emotion recognition technologies—potentially revealing psychological states, behavioural patterns or personality traits—makes this prospect especially concerning. The commercialisation of such data, often without the user's knowledge or control, not only deepens the asymmetry between platforms and individuals, but also enables highly intrusive forms of emotional exploitation, with potentially far-reaching consequences.

[5] GDPR, art 9(1).
[6] GDPR art 9(2)(a).

For the purposes of the analysis that follows, it will be assumed that full compliance with personal data protection is ensured, thereby allowing the discussion to focus on the impact of emotion recognition technologies on other fundamental rights.

3.2 Respect for private life

The right to respect for private life, enshrined in Article 7 of the Charter of Fundamental Rights of the European Union, protects individuals' intimacy, personal identity and emotional life. It extends beyond the physical sphere to encompass subjective dimensions such as thoughts, feelings and emotional expressions, even when these are not linked to identifiable data.

The use of emotion recognition technologies on digital platforms raises significant challenges to the right to private life, particularly due to their capacity to access intimate dimensions of human experience.

First and foremost, concerns arise regarding the intrusion into the emotional sphere. Emotion recognition technologies rely on the analysis of non-verbal cues such as facial expressions, microexpressions, tone of voice, or body posture—signals that are often unconscious and spontaneous, and thus deeply embedded in the private experience of the individual. The automatic interpretation of such expressions may constitute unauthorised access to a person's emotional state, even in the absence of identification or permanent data storage. This amounts to a direct interference with private life, as it targets aspects that, by their nature, should remain beyond the reach of surveillance and external scrutiny.

In addition, the use of these technologies raises concerns about the erosion of emotional freedom. The awareness that one's emotional expressions are being monitored may lead users to engage in self-restraint or behavioural adjustment, adopting more neutral forms of expression or suppressing certain emotions for fear of misinterpretation or unwanted consequences. Emotional surveillance of this kind undermines spontaneity and authenticity in interpersonal communication, thereby restricting the freedom to feel and to express oneself.

Another concerning aspect is the invisible and discrete nature of this technology. Users may be unaware that their emotional expressions are being analysed while they interact with the platform, which prevents them from recognising the presence of any form of surveillance. The

absence of visible indicators or clear information from the platform exacerbates the violation of privacy, rendering it deeper and more difficult to detect.

Finally, there is also the risk of intrusion into the private life of third parties who are not directly using the digital platform. In social contexts—such as group calls or shared environments—emotion recognition technologies may capture and process facial expressions, voice or other emotional signals from individuals who have neither been informed nor given consent. This situation raises serious concerns, as it constitutes a particularly severe and undetectable interference, given that these individuals have no way of knowing that they are being observed or analysed. Their privacy is silently violated, with no possibility of awareness, control or objection.

3.3 Non-discrimination

Emotion recognition systems are frequently underpinned by machine learning models trained on historically biased datasets[7]. As a result, these systems often fail to accurately interpret facial features associated with individuals from marginalised racial and ethnic groups. This leads to serious real-world consequences, including the unjust attribution of aggressive or hostile emotional states and, within the context of online platforms, the potential targeting of such individuals with harmful content[8]. These practices contribute to what scholars have termed "automated inequality", whereby artificial intelligence technologies reproduce already existing social hierarchies under the guise of objectivity[9]. In this way, emotion recognition systems risk entrenching structural racism within digital environments, infringing Article 21 of the Charter of Fundamental Rights of the European Union.

Additionally, significant risks of indirect discrimination against persons with disabilities arise in this context. Empirical studies have shown that neurodivergent individuals, particularly those on the autism spectrum, are frequently subject to the misclassification of emotional cues

[7]Sonja Utz, 'Gender and Algorithmic Discrimination' (2024) 18 *International Journal of Communication* 573.
[8]Joy Buolamwini and Timnit Gebru, 'Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification' (2018) 81 *Proceedings of Machine Learning Research* 1.
[9]Virginia Eubanks, *Automating Inequality: How High-Tech Tools Profile, Police, and Punish the Poor* (St Martin's Press 2018).

by these AI-based systems[10]. Crucially, this disparity does not stem from a lack of emotional capacity, but from differences in expressive behaviour that diverge from the normative data used to train these models. This challenges the assumption that emotion recognition is uniformly impaired in autism, and instead highlights the operation of ostensibly neutral systems that disproportionately disadvantage disabled individuals due to their design architecture. Furthermore, the same study observed that many existing investigations disproportionately focus on high-functioning, highly educated autistic individuals from developed countries. Therefore, to ensure the safe and equitable deployment of emotion recognition technologies on online platforms, it is essential that such structural epistemic injustice is addressed and mitigated.

Similarly, individuals with motor impairments or genetic physical traits that diverge from normative baselines may also face discrimination on the same grounds.

Without robust measures to accommodate such variation, the implementation of emotion recognition technologies risks reinforcing existing inequalities and excluding individuals from full and fair participation in digital environments.

3.4 Cultural, religious and linguistic diversity

Emotion recognition technologies risk infringing Article 22 of the Charter of Fundamental Rights of the European Union. Emotional expression and perception are inherently shaped by cultural and linguistic contexts, yet many algorithmic models fail to reflect this diversity. In particular, the emotion taxonomies commonly employed in AI development are often based on Anglophone psychological paradigms, which are not universally applicable. Furthermore, when processing audio data, ERT systems frequently rely on paralinguistic cues, such as intonation, pitch, and rhythm, that differ across dialects, languages, and cultural norms. Monolingual or monocultural models, when deployed without adequate adaptation, may consequently misattribute emotions such as anger, sarcasm, or insincerity to individuals whose speech patterns deviate from the dominant linguistic standard.

[10]Christopher T Keating, Eiko Ichijo and Jennifer L Cook, 'Autistic adults exhibit highly precise representations of others' emotions but a reduced influence of emotion representations on emotion recognition accuracy' (2023) *Scientific Reports* 13, 11875 https://doi.org/10.1038/s41598-023-39070-0 accessed 17 May, 2025.

Failing to accommodate plurality constitutes not only a technical shortcoming, but also a breach of linguistic dignity and cultural recognition[11].

3.5 Consumer protection

The right to consumer protection is enshrined in Article 38 of the Charter of Fundamental Rights of the European Union, which states that Union policies shall ensure a high level of consumer protection. This right seeks to guarantee that consumers are treated fairly, have access to clear information, and are not unduly influenced or exploited in their decision-making processes, particularly in contexts of vulnerability or power asymmetry, as frequently occurs on digital platforms.

Within this framework, the use of emotion recognition technologies on digital platforms raises concerns regarding the potential for behavioural manipulation. By identifying a user's emotional state in real time, the platform may adjust its content in order to influence the user's behaviour.

One such strategy may involve prolonging the user's time spent on the platform by exploiting emotionally vulnerable moments to increase engagement. This retention logic, already present in many platforms through mechanisms known as dark patterns, that is design strategies intended to prompt unreflective behaviour, takes on a new dimension when it is driven by involuntary emotional responses.

Beyond user retention, emotional data may also be leveraged for commercial purposes, particularly in the personalisation of advertising. Real-time analysis of emotions allows platforms to tailor adverts to the user's psychological state, thereby increasing the likelihood of a reaction. This approach is especially problematic when applied to individuals in emotionally fragile situations, who may be more susceptible not only to impulsive purchases, but also to marketing strategies that exploit insecurities, fears, or feelings of isolation, potentially leading to irrational or harmful decisions.

[11]Safiya Umoja Noble, *Algorithms of Oppression: How Search Engines Reinforce Racism* (NYU Press 2018). 1-14.

Furthermore, the use of emotional data serves specific economic interests of digital platforms. By enabling potentially more persuasive advertising based on users' emotional states, these platforms become more attractive to advertisers, who are often their primary source of revenue. This dynamic creates a strong incentive for continuous emotional surveillance, driven by the commercial exploitation of user attention and vulnerability, rather than the safeguarding of consumer rights.

Manipulation based on emotional states undermines consumer autonomy and weakens the trust that should characterise the relationship between user and platform. It runs counter to the principles of transparency and the obligation to protect consumers, particularly in contexts of heightened vulnerability.

3.6 The rights of the child

Article 24 of the Charter establishes that children have the right to be protected and taken care of, to safeguard their well-being. Children represent a demographic uniquely vulnerable to emotional recognition technologies. Not only are they cognitively and emotionally developing, but they also often lack the capacity to provide meaningful consent.

ERT systems can shape emotional development itself by tailoring recommendations, incentivising certain expressions and penalising others, which constitutes a risk of manipulation and addiction.

Furthermore, these technologies may misinterpret developmentally appropriate expressions of frustration, sadness, or anger as indicators of interest in aggressive and controversial content. This, risks creating algorithmic feedback loops that nudge children, particularly young boys, toward toxic digital environments that propagate misogyny, gender essentialism, and glorify domination as a model of masculinity[12]. The potential consequences of such algorithmic misdirection are not merely ideological. Studies have documented how online radicalisation into digital subcultures correlates with real-world acts of gender-based violence and hate crimes[13].

[12]Debbie Ging and Eugenia Siapera, 'Special Issue on Online Misogyny' (2019) 20 *Feminist Media Studies* 515.
[13]Sarah Deem, 'Rage, Fear and Loss: The Emotional Currency of Misogyny in the Digital Economy' (2019) 10 *Social Media + Society* 1.

4 Legal Framework

4.1 Artificial Intelligence Act

Emotion recognition systems, as defined in Article 3(39) of the European Union's Artificial Intelligence Act, aim to identify or infer emotions or intentions of individuals based on their biometric data.

According to Article 6(2), AI systems listed in Annex III, among which emotion recognition technologies (ERT) are included, are to be classified as high-risk systems. Consequently, they are subject to heightened regulatory requirements to ensure their safe deployment. Article 6(3) further clarifies that no system falling under Annex III that poses a significant risk to fundamental rights may be exempted from this high-risk classification.

Article 5 of the Act expressly prohibits the use of ERTs in educational settings and the workplace. However, should an ERT deployed on online platforms be demonstrated to exert subliminal manipulation, it could potentially fall under the prohibition set out in Article 5(1)(a).

In cases where ERTs are deployed as high-risk systems that are not expressly prohibited, Article 27 mandates the performance of a fundamental rights impact assessment. Furthermore, Article 77 stipulates that national public authorities and other bodies tasked with supervising and enforcing the protection of fundamental rights, specifically mentioning the right to non-discrimination, must be granted access to all relevant documentation concerning the use of such AI systems. Where such oversight proves inadequate, these bodies may also request that the market surveillance authority conduct technical testing of the system.

4.2 Digital Service Act

The Digital Services Act (DSA) does not explicitly mention emotion recognition technologies. However, its overarching regulatory framework for online platforms provides important safeguards that are relevant to the deployment of such.

In particular, the DSA addresses systemic risks associated with very large online platforms (VLOPs) and very large online search engines (VLOSEs), requiring them to assess and mitigate risks related to the manipulation of users through algorithmic systems, which may encompass subliminal or affective computing techniques, including emotion recognition. Under the scope

of Article 34 those systemic risks include the exercise of fundamental rights and the protection of personal data particularly when users are vulnerable, such as children. More broadly, the DSA reinforces the protection of fundamental rights in digital spaces, requiring platforms to respect the Charter of Fundamental Rights of the European Union.

Under Article 35, platforms are required to implement risk mitigation measures proportionate to the severity of the identified risks, which may include changes to their algorithms and content moderation practices.

Furthermore, under Article 37, the DSA establishes independent auditing obligations to ensure that systemic risk assessments and mitigation efforts are effective and transparent. This, in conjunction with the DSA's transparency obligations regarding automated decision-making and recommender systems (Article 27), strengthens users' ability to understand and challenge potentially harmful or discriminatory systems, such as those relying on affective computing techniques.

4.3 General Data Protection Regulation

Regulation (EU) 2016/679, known as the General Data Protection Regulation (GDPR), is the European Union's primary legal instrument for the protection of personal data.

Its application is particularly relevant in the context of emotion recognition technologies (ERT) used on digital platforms, as these systems involve the systematic processing of personal data during users' interactions with the platform.

As previously discussed, ERT operates by analysing elements such as facial expressions, body movements, voice, text, and neurological signals in order to identify emotional states. These indicators may reveal personal data that disclose a user's racial or ethnic origin, political opinions, religious or philosophical beliefs, or trade union membership. Given the sensitivity of such information, this type of data is classified as sensitive and is therefore subject to a more stringent protective regime.

To regulate and restrict the processing of personal data, Article 5 of the GDPR sets out a series of fundamental principles that must govern all data processing activities. These principles serve as the normative basis for assessing the compliance of data processing practices, including

those carried out by digital platforms employing ERT. Among the most relevant are lawfulness, fairness and transparency; purpose limitation; data minimisation; accuracy; storage limitation; and integrity and confidentiality.

To begin with, Article 5(1)(a) provides that "personal data shall be processed lawfully, fairly and in a transparent manner in relation to the data subject". In this regard, Article 6 lays out the legal bases that justify the lawfulness of processing. However, when it comes to special category data — as is often the case with emotional data inferred by ERT — stricter conditions apply. Article 9(2) of the GDPR sets out an exhaustive list of exceptions under which the processing of such sensitive data may be permitted.

Against this backdrop, it becomes clear that, in order for a digital platform to implement ERT in compliance with the GDPR, the processing must fall within one of the exceptions provided for in Article 9(2). Furthermore, the platform must demonstrate full adherence to the additional requirements governing the processing of special category data.

In addition to lawfulness, the remaining principles laid out in Article 5 impose further limits on the use of ERT. The principle of purpose limitation requires that data be collected for specified, explicit and legitimate purposes, and not processed in a manner incompatible with those purposes. The principle of data minimisation mandates that only the data strictly necessary for the intended purpose be collected — a requirement that may be difficult to satisfy when the technology captures emotional signals continuously and automatically. The principle of accuracy is also particularly relevant, as emotional data are inferred and may not accurately reflect the user's actual emotional state. Finally, the principles of storage limitation and integrity and confidentiality demand that data be retained only for as long as necessary and be protected against unauthorised or unlawful access.

These principles reflect a clear intention on the part of the European legislator to impose strict limits on the processing of personal data, especially when it involves intrusive technologies such as ERT. They function as essential safeguards for protecting the rights and freedoms of data subjects, ensuring that these technologies are not deployed arbitrarily, disproportionately, or opaquely. Respect for these principles is therefore a fundamental condition for the lawfulness of processing and for maintaining users' trust in digital platforms.

Nonetheless, the implementation of these principles presents several challenges. Passive and opaque collection of emotional data can breach the principles of transparency, purpose limitation and data minimisation, by capturing sensitive information without adequately informing the user or ensuring its strict necessity. The inferred nature of emotional data further raises doubts about accuracy, as it may lead to distorted or misleading representations of the individual. Finally, the accountability principle requires data controllers to demonstrate compliance with all applicable obligations — a demand that is not always met in practice, given the complexity and opacity of how ERT functions.

The GDPR also guarantees a robust set of rights for data subjects, including the right to information, the right of access, the rights to rectification and erasure, and the right to object. However, the way ERT is implemented can undermine the effective exercise of these rights, particularly when users are unaware that their emotional data is being processed. Of particular importance is the right not to be subject to decisions based solely on automated processing (Article 22), which may become relevant where emotion analysis has tangible effects, such as determining the content shown to users, targeting of advertisements, or algorithmic moderation.

Finally, due to the level of risk involved, the use of ERT may trigger the obligation to conduct a Data Protection Impact Assessment (DPIA), as provided for in Article 35 of the GDPR. This obligation applies in cases where the processing is likely to result in a high risk to the rights and freedoms of individuals, particularly where innovative technologies, sensitive data, or systematic monitoring are involved.

5 Conclusion

Promoting technological innovation has always been crucial for our societal improvement. Therefore, we believe in a world where artificial intelligence should be embraced, rather than loaded. However, infringements of fundamental rights must never be regarded as mere externalities, in order to dismiss complex challenges that inevitably arise with such technological developments.

Emotional Recognition Technologies represent instruments of incalculable strategic value for platforms, allowing a deeper and more sophisticated level of profiling techniques based on user behaviour, which, in turn, prolongs time spent on the platform, thereby reinforcing their economic models. Nevertheless, for users such heightened personalisation of content does not render the previously analysed risks of infringing the protection of personal data, respect for private life, non-discrimination, cultural and linguistic diversity, consumer protection and rights of the child tolerable. At least, not in the absence of robust legal safeguards capable of ensuring transparent auditing of data usage and the prevention of opaque behavioural manipulation techniques.

This paper advocates for a revision of the European Artificial Intelligence Regulation (AI Act). Specifically, for the extension of the prohibition currently set out in Article 5(1)(f), which precludes the use of emotional recognition systems in workplace and educational contexts, to encompass digital platforms. Such extension would safeguard the values enshrined in the Charter of Fundamental Rights of the European Union, and reduce the likelihood of abuse in digital environments characterised by pronounced asymmetries of power.

Although the future of human–machine interaction may be inevitable, the conditions under which it unfolds must remain subject to collective determination. It is within this normative space that law, ethics, and public policy must intervene with coherence, clarity and determination.

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