



Medical imaging beyond healthcare: ethical concerns with lie detection and employee screening

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Advances in medical imaging in the last several years have paved the way for new applications outside healthcare, such as in fields such as lie detection and people screening. However, these applications outside of therapeutic settings raise ethical concerns regarding privacy, permission, and potential abuse. The current limitations of medical imaging in various contexts are examined in this paper, which highlights the need for robust research protocols, regulatory frameworks, and informed consent processes.¹ Neuro-ethical concerns are tackled to ensure the development and use of new neuro-technologies in a way that respects people's autonomy and is ethical.

Lie Detection and Ethical Concerns:

False positive detection using functional magnetic resonance imaging (fMRI) and positron emission tomography (PET) during interrogations pertaining to national security and criminal investigations has attracted a lot of interest.² In their view, these methods could improve security and help solve crimes by tracking brain activity patterns linked with telling the truth or lying.³ However, owing to factors such as small sample sizes, controlled laboratory settings, and individual heterogeneity in brain activity patterns, the scientific validity of imaging-based lie detection is still in dispute.

Further, major ethical concerns arise when people are subjected to intrusive brain scans without their knowledge or agreement. Involuntary subjecting of detainees or suspects to such testing raises concerns about potential violations of informed consent and civil liberties, as well as the disproportionate impact on marginalized communities and the widening of existing justice system gaps. Because the technology is still in its early stages, there is a great

chance of misunderstandings and false allegations.

Pre-employment Screening and Ethical Concerns:

The use of medical imaging for the purpose of screening potential employees is another non-clinical application. Scans, according to proponents, could reveal personality attributes—like the ability to manage one's impulses or emotions—that are important for a certain job. Most studies depend on small samples and group averages instead of individual forecasts, hence the scientific evidence supporting this assertion is weak.⁴

In addition, the human aspect is lost when people are reduced to biological statistics, which ignores the intricacies of human behavior. Members of already-vulnerable populations may feel further pressure to submit to sexually explicit brain scans for hiring reasons, even when they have not given their informed consent. Due to the present constraints, the predictive efficacy and ethical acceptability of screening with medical imaging are seriously doubted.

Informed Consent and Privacy Concerns:

In non-clinical uses of medical imaging, getting really informed permission is a major concern.⁵ Subjects under coercion may feel forced to submit to scans during interrogations or when their participation is crucial to a hiring decision. It is possible that even in study settings, participants do not completely understand the consequences of their agreement, especially when it comes to the prospect of their brain data being accessed and examined in the future due to technological advancements.⁶

Strong privacy protections are required because sensitive medical information, if obtained, could be misused or disclosed without authorization. Neuroimaging data must be protected

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against possible misuse and abuse by implementing stringent governance and oversight structures.⁷

Although there are interesting possibilities for medical imaging outside of healthcare, rushing into adoption could severely compromise people's freedoms and independence. What is scientifically valid today can be proven wrong tomorrow because the technology is continually evolving.⁸ Current methodological constraints in neuroscience must be addressed through stringent research standards incorporating large representative samples before non-clinical or commercial utilization.⁹

Robust governance mechanisms should be put in place to prevent misuse, and consent processes should be tightened to make sure people are making really informed decisions. Responsible development and application of developing neuro-technologies requires open, interdisciplinary dialogue between neuro-ethicists, legal specialists, legislators, and society at large. We must seriously address the ethical obligations that accompany the ever-increasing capabilities of medical imaging. Particularly for uses outside of direct treatment, safeguarding individual privacy and consent ought to take precedence. Respecting human autonomy and societal well-being is essential for responsibly developing and applying medical imaging technologies. Only then can we fully utilize their promise.

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CONFLICT OF INTEREST

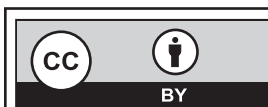
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