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The Algorithmic Gaze: AI, Autism, and the Global Power Shift in Diagnosis

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Abstract. Artificial intelligence (AI) has rapidly emerged as a promising tool for improving autism spectrum disorder (ASD) screening, particularly in regions where access to trained specialists remains limited. Recent advances in machine learning have demonstrated encouraging diagnostic performance through the analysis of facial expressions, speech, eye gaze, and other behavioral markers, offering the potential to expand early diagnosis and reduce disparities in healthcare access. However, existing research has focused predominantly on algorithm development and diagnostic accuracy, while comparatively little attention has been paid to the broader ethical, cultural, and geopolitical implications of AI-assisted autism diagnosis. Drawing upon perspectives from philosophy of medicine and science and technology studies, this paper examines how AI redistributes power through three interconnected shifts: the transfer of diagnostic authority from clinicians to algorithms, the globalization of culturally specific definitions of "normal" behavior through Western-trained datasets, and the emergence of technological dependency on foreign-controlled AI infrastructure. Rather than rejecting AI-assisted diagnosis, this paper argues that equitable implementation requires culturally representative datasets, participatory model development, and greater local ownership of digital health technologies to ensure that AI promotes both diagnostic accessibility and global health equity.

Keywords: artificial intelligence, autism spectrum disorder, algorithmic bias, digital colonialism, global health, diagnosis

1. Introduction

Artificial intelligence (AI) is rapidly transforming healthcare by improving diagnostic accuracy, increasing efficiency, and expanding access to medical services. Across many medical fields, machine-learning technologies are increasingly supporting clinical decision-making and reshaping traditional approaches to diagnosis and treatment [1]. As AI becomes more integrated into healthcare, its broader social and ethical implications have attracted growing attention.

One area where AI has shown considerable promise is the diagnosis of autism spectrum disorder (ASD). Affecting approximately one in 127 children worldwide, ASD is often diagnosed late because of shortages of trained specialists and unequal access to healthcare resources [2]. To address these challenges, researchers have developed machine-learning models that analyze behavioral indicators such as facial expressions, speech patterns, eye gaze, and social interactions to support

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earlier and more accessible autism screening [2]. Recent studies show that multimodal AI systems integrating speech, facial, eye-tracking, and textual data have achieved increasingly promising diagnostic performance [3]. Systematic reviews further suggest that AI-assisted diagnostic tools may improve access to autism screening, particularly in regions with limited specialist resources [4, 5]. However, existing research has largely focused on diagnostic accuracy, efficiency, and clinical implementation [2, 3], while paying less attention to the broader ethical, cultural, and geopolitical implications of AI-assisted diagnosis.

As Foucault [6] argued, diagnosis is not merely a medical process but also a social practice that distinguishes the "normal" from the "abnormal" [7]. As AI increasingly mediates clinical judgment, diagnostic authority is gradually shifting from clinicians toward algorithmic systems, raising important questions about power and governance in healthcare [1].

This paper argues that while AI has significant potential to democratize autism diagnosis, it also redistributes structural power by shifting diagnostic authority from clinicians to algorithms, exporting culturally specific definitions of "normal" behavior through predominantly Western-trained datasets, and reinforcing technological inequalities through dependence on foreign-controlled AI infrastructure [8]. By examining these dimensions, this paper extends current discussions beyond diagnostic performance to explore the ethical and geopolitical implications of AI-assisted autism diagnosis.

2. The promise and the epistemic shift

AI technologies offer practical solutions to persistent gaps in global healthcare systems. Mental health workforce shortages remain especially severe across the Global South. Most African countries have fewer than one psychiatrist per 100,000 people, compared with more than ten per 100,000 in many high-income nations. Pediatric specialists are even scarcer, with rural communities often waiting months for clinical assessments. AI screening tools require only a smartphone and stable internet access, making them well suited to resource-limited settings. As a result, AI-assisted diagnostic systems are increasingly viewed as a practical way to expand autism screening in underserved regions [1, 4].

Recent meta-analyses report AI-powered autism screening tools achieving approximately 86% sensitivity and 85% specificity. By standardizing assessments, these systems can reduce subjective errors among overburdened clinicians. In resource-limited settings, the algorithmic gaze is therefore less a technological luxury than a practical lifeline for underserved children [2]. Yet this efficiency comes at an epistemological cost. AI systems reduce complex human behavior to machine-readable signals—such as gaze duration, vocal pitch, and response latency—which are matched against patterns in training data. Many contemporary models combine facial expression, voice, text, and behavioral features into multimodal diagnostic systems, enabling standardized assessments across diverse clinical settings [3].

Philosophers Thomas Grote and Philipp Berens describe a related danger as automation bias: the tendency for clinicians to defer to algorithmic recommendations even when their own judgment suggests otherwise. When an algorithm reports an 87% probability of autism, clinicians working under time pressure and with limited specialist support have little reason to question its recommendation. The algorithm's output acquires an aura of objectivity, while diagnostic authority gradually shifts from local physicians to software developed thousands of miles away. AI thus becomes more than a decision-support tool; it increasingly functions as a source of epistemic authority, shaping what counts as valid diagnostic knowledge [1]. Through Foucault's concept of the

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clinical gaze, algorithmic systems influence not only medical decisions but also the institutional power to define neurodevelopmental difference [7].

3. Exporting "normality"

This shift becomes more troubling when considering whose behavior these systems are trained to recognize. Autism AI datasets are overwhelmingly drawn from Western, English-speaking, urban, and predominantly male populations. A 2025 systematic review found that training samples remain largely male and are drawn almost entirely from high-income countries, with only limited representation from low- and middle-income settings. As a result, AI systems learn to recognize autism as it appears within a narrow demographic and export that definition to populations with very different cultural contexts [2-4].

When these models' cross borders, they may mistake cultural difference for pathology. Eye contact illustrates this problem clearly. In many Western diagnostic frameworks, avoiding eye contact is considered a key indicator of autism. In many East Asian cultures, however, averting one's gaze when speaking to an elder or authority figure is a learned sign of respect rather than social withdrawal. Existing reviews therefore question whether models trained primarily in high-income countries can generalize across cultures [2, 5]. An AI trained on Western behavioral norms may interpret culturally appropriate deference as autistic behavior, exporting one culture's definition of "normal" through seemingly objective technology. Rather than eliminating bias, these systems risk reproducing and scaling existing cultural assumptions across global healthcare [7].

4. API vassalage and digital dependency

The inequalities embedded in AI software are reinforced by the infrastructure required to operate it. AI diagnostic platforms, particularly those processing video, audio, or biometric data, depend on substantial computing power and reliable cloud services—resources that many developing countries still lack. The World Bank reports that although 88% of the global population has access to 4G networks, coverage in sub-Saharan Africa remains around 50%. High-speed internet, stable electricity, and data storage infrastructure remain unevenly distributed, limiting access precisely where diagnostic tools are most needed. Rather than reducing inequality, AI often reinforces existing digital divides. Without local computational infrastructure, hospitals in the Global South become dependent on application programming interfaces (APIs) controlled by foreign technology companies. Patient data are processed through systems that local healthcare providers cannot fully inspect, verify, or modify. Control over diagnostic standards and algorithm updates therefore shifts outside local healthcare systems.

Michael Kwet describes this pattern as digital colonialism: domination through control of digital infrastructure rather than physical territory. In healthcare, the consequences are especially significant. A country unable to modify or culturally recalibrate its diagnostic systems effectively surrenders control over how its population is classified. Diagnostic standards thus become a form of digital sovereignty increasingly shaped by global technology companies rather than local medical institutions [7]. AI-assisted diagnosis is therefore not only a medical innovation but also a geopolitical infrastructure that redistributes authority over knowledge production and public health governance.

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5. Reclaiming the gaze

The algorithmic gaze need not be abandoned. Projects such as India's open source START initiative demonstrate that culturally adaptive AI is possible. Neurodivergent-led advocacy groups likewise promote participatory design, emphasizing the principle of "nothing about us without us." This approach aligns with the Design Justice framework, which argues that communities most affected by technology should participate directly in designing and governing it [8]. However, these initiatives remain at a disadvantage compared with the funding, computing resources, and data monopolies of large technology firms. Expanding them will require funding agencies, medical journals, and policymakers to support participatory dataset design, ensuring that local clinicians, families, and autistic individuals have meaningful influence over the criteria embedded in diagnostic algorithms. Such collaboration would improve not only fairness but also the clinical validity of AI systems across diverse cultural settings [1].

6. Discussion

Many of the concerns discussed in this essay cannot be resolved in the near future. Developing culturally representative datasets, improving digital infrastructure, and creating more transparent AI systems all require sustained international collaboration, funding, and policy support. Nevertheless, acknowledging these challenges is essential if AI is to develop responsibly rather than simply expand existing inequalities.

Future progress should focus not only on improving algorithmic accuracy but also on improving who contributes to the development of these systems. Researchers should prioritize culturally diverse datasets, while clinicians, autistic individuals, families, and local communities should play a greater role in shaping how diagnostic models are designed and evaluated. At the same time, governments and international organizations should invest in local technological infrastructure so that healthcare systems are not entirely dependent on foreign AI platforms. Although these changes will take time, they represent important steps toward ensuring that AI serves diverse populations rather than imposing a single cultural standard of diagnosis.

7. Conclusion

The challenges outlined in this essay are unlikely to be resolved in the near future. AI technologies are advancing more rapidly than the ethical, cultural, and regulatory frameworks needed to govern them. Nevertheless, recognizing these limitations is essential for shaping the next generation of diagnostic systems. Future development should move beyond improving algorithmic accuracy alone by investing in culturally diverse datasets, greater transparency, and participatory design that gives local clinicians, autistic individuals, and their communities a meaningful role in defining diagnostic standards.

Ultimately, AI has the potential to make autism diagnosis more accessible, particularly in underserved regions, but greater access alone does not guarantee greater equity. As this essay has argued, AI can democratize screening only if it also democratizes the knowledge and authority embedded within it. True democratization therefore requires not only technological innovation but also cultural inclusivity, shared decision-making, and local ownership of diagnostic frameworks. Only then can AI become a tool that expands both access to healthcare and fairness in healthcare.

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