# INTELIGÊNCIA ARTIFICIAL E O CONTRATO RACIAL: DESAFIOS ÉTICOS E A MARGINALIZAÇÃO DE COMUNIDADES NEGRAS NO BRASIL E NOS ESTADOS UNIDOS

# ARTIFICIAL INTELLIGENCE AND THE RACIAL CONTRACT: ETHICAL CHALLENGES AND THE MARGINALIZATION OF BLACK COMMUNITIES IN BRAZIL AND THE UNITED STATES

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**Abstract:** This article examines how artificial intelligence (AI) intersects with structural racism in Brazil and the United States through the lens of Charles Mills' racial contract and critical race theory (CRT). The research problem addressed is: How do algorithmic systems developed under racialized social orders reproduce or challenge historical forms of exclusion? Drawing on a theoretical–critical, hermeneutic, and bibliographical methodology, the study analyses the digital divide, algorithmic biases, regulatory frameworks, and philosophical critiques of technology. The general objective is to explore the relationship between AI and the racial contract, and the specific objectives include: (i) comparing digital inclusion and algorithmic racism in Brazil and the United States; (ii) analyzing normative responses such as the Brazilian Bill 2338/23 and the European AI Act; (iii) incorporating perspectives from the Global South and philosophy of technology; and (iv) formulating proposals for equitable and inclusive AI. The hypothesis is that AI systems, when trained on biased data and designed without diversity, can reinforce structural racism, but that rights-based and risk-based regulatory frameworks combined with inclusive epistemologies can mitigate these harms. The study's relevance lies in its contribution to the emerging field of Afrofuturist and decolonial AI, demonstrating the need to address historical injustices in technological development. The article concludes that achieving fair and inclusive AI requires reimagining the social contract itself, recognizing the racial contract that underlies modernity, and adopting participatory governance models.

**Keywords:** artificial intelligence; racial contract; critical race theory; regulatory frameworks; philosophy of technology.

**Resumo:** O artigo analisa como a inteligência artificial (IA) se entrelaça com o racismo estrutural no Brasil e nos Estados Unidos a partir da teoria do contrato racial de Charles Mills e da teoria crítica racial (CRT). O problema de pesquisa indaga: de que modo sistemas algorítmicos desenvolvidos em sociedades racializadas reproduzem ou desafiam formas históricas de exclusão? A metodologia adotada é teórico-crítica, hermenêutica e de pesquisa bibliográfica, examinando a divisão digital, vieses algorítmicos, marcos regulatórios e críticas filosóficas da técnica. O objetivo geral é investigar a relação entre IA e contrato racial; os objetivos específicos incluem: (i) comparar inclusão digital e racismo algorítmico no Brasil e nos EUA; (ii) analisar respostas normativas como o Projeto de Lei 2338/23 e o AI Act europeu; (iii) incorporar perspectivas do Sul Global e da filosofia da

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técnica; e (iv) formular propostas para uma IA equitativa. A hipótese é que sistemas de IA, treinados com dados enviesados e concebidos sem diversidade, podem reforçar o racismo estrutural, mas que marcos regulatórios baseados em direitos e riscos, combinados com epistemologias inclusivas, podem mitigar esses danos. A relevância reside na contribuição para o campo emergente da IA decolonial, demonstrando a necessidade de enfrentar injustiças históricas no desenvolvimento tecnológico. Conclui-se que alcançar uma IA justa exige reimaginar o próprio contrato social, reconhecendo o contrato racial subjacente à modernidade e adotando modelos de governança participativos.

**Palavras-chave:** inteligência artificial; contrato racial; teoria crítica racial; marcos regulatórios; filosofia da tecnologia.

## 1 – INTRODUCTION

### 1.1 RESEARCH PROBLEM AND OBJECTIVES

Artificial intelligence has moved from speculative fiction to an infrastructure that shapes access to housing, employment, healthcare, and justice. Predictive policing, facial recognition, recommender systems and generative models increasingly mediate social interactions. These technologies do not emerge in a vacuum; they reflect and reproduce the racialized social order into which they are deployed. While the social contract of Enlightenment philosophers promised universality and equality, MILLS (1997, pp. 9-11) shows that this contract was always contingent on race: a hidden racial contract that legitimized colonialism, slavery, and the unequal distribution of rights. In the age of AI, the racial contract mutates into algorithmic form.

The research question guiding this study is: How do AI systems trained and deployed within racialized societies reproduce or challenge structural racism in Brazil and the United States, and what normative and epistemological frameworks can promote ethical and inclusive AI? To address this question, the article pursues the following objectives:

1. General objective: to investigate the relationship between AI and the racial contract, demonstrating how algorithmic systems can perpetuate or mitigate racial oppression.
2. Specific objectives:

i) Comparative analysis: to compare the digital divide and algorithmic racism in Brazil and the United States, highlighting socioeconomic and racial disparities in access to technology and the effects of biased algorithms.

ii) Regulatory frameworks: to examine legal responses, including the Brazilian Bill 2338/23, the European AI Act, and the UNESCO Recommendation on the Ethics of AI, assessing their capacity to address racial inequalities and ensure accountability.

iii) Philosophical and decolonial perspectives: to incorporate critiques from the philosophy of technology (HARAWAY, 1991, p. 149-181; ZUBOFF, 2019; BENJAMIN, 2019; COULDRY; MEJIAS, 2019) and epistemologies of the South (SANTOS, 2019) that reveal how data colonialism and surveillance capitalism intersect with the racial contract.

iv) Proposals for equity: to propose strategies for inclusive AI that center community participation, diversity in AI development, algorithmic accountability, and international cooperation.

### 1.2 HYPOTHESIS AND JUSTIFICATION

The hypothesis of this study is that AI systems perpetuate structural racism when they are trained on biased data and deployed without adequate oversight; however, rights-based and risk-based regulation, combined with decolonial epistemologies and participatory governance, can mitigate these harms, and promote inclusive technological futures. This

research is scientifically relevant because it bridges law, technology studies and critical race theory, offering an interdisciplinary approach to AI ethics.

Socially, it responds to urgent debates on algorithmic discrimination, digital inclusion, and the protection of fundamental rights, particularly for Black Brazilians and Black Americans who disproportionately face technological exclusion (PEW RESEARCH CENTER, 2024, online; SILVA, 2024, p. 8-22). By documenting current inequalities and proposing remedies, the article contributes to policy-making, academic discussions and civil society advocacy.

The justification is further reinforced by recent demographic data. As of early 2024, Brazil had 187.9 million internet users—an internet penetration rate of 86.6 %—and 210.3 million mobile connections, equivalent to 96.9 % of the population (DATAREPORTAL, 2024, online). Despite this impressive coverage, disparities persist: 10.6 million Afro-Brazilians still have no internet coverage and 25 % were excluded from broadband services in 2021 (IDB, 2024, online).

In the United States, 95 % of adults use the internet, but one in seven households either lacks a computer or relies solely on a smartphone—a situation that affects approximately 18 million households and 33 million people (BENTON INSTITUTE, 2025, online). These figures illustrate that digital exclusion remains significant even in countries with high connectivity. They underscore the urgency of investigating how AI technologies interact with these patterns of inequality.

### 1.3 STRUCTURE OF THE ARTICLE

Following this introduction, Section 2 outlines the methodological approach. Section 3 revisits the theoretical framework of the racial contract and critical race theory, connecting them to AI. Section 4 contextualizes the exponential growth of information and communication technologies (ICT) and generative AI, highlighting biases in data and algorithm design. Section 5 analyses regulatory responses such as the EU AI Act, the Brazilian Bill 2338/23, and the UNESCO Recommendation on the Ethics of AI. Section 6 addresses the digital divide and algorithmic racism, presenting comparative data from Brazil and the United States as well as global indicators. Section 7 introduces philosophical and decolonial critiques of AI. Section 8 offers proposals for equity and inclusion. The article closes with Section 9, presenting conclusions and recommendations.

## 2 – METHODOLOGICAL APPROACH

### 2.1 THEORETICAL–CRITICAL AND HERMENEUTIC FRAMEWORK

This study adopts a theoretical–critical approach rooted in CRT and decolonial thought. It analyses how social structures, legal norms and technological systems intertwine to perpetuate racial inequality. The hermeneutic component involves interpreting philosophical texts (for example, MILLS, 1997; HOBBES, 2003; LOCKE, 2014; ROUSSEAU, 2017; PATEMAN; MILLS, 2007, introd.; parte I, ch. 1; parte II, ch. 1) and legal documents (such as the EU AI Act, Bill 2338/23, and the UNESCO Recommendation) to extract normative principles and ethical commitments. This interpretative reading foregrounds the implicit assumptions and values embedded in AI regulation.

### 2.2 THEORETICAL BIBLIOGRAPHIC AND EMPIRICAL RESEARCH

The research is primarily bibliographical, drawing on academic literature, official reports, and normative documents. Sources include foundational works on the racial contract (MILLS, 1997), critical race scholarship (BELL, 1992, p. x-xii;3-6; CRENSHAW, 1991, p. 1244-1252), technology studies (BUOLAMWINI; GEBRU, 2018, p. 77-91; MITCHELL et al., 2019, online) and contemporary philosophical critiques (HARAWAY, 1991, p. 149-181; ZUBOFF, 2019; BENJAMIN, 2019, ch. 1-2; COULDRY; MEJIAS, 2019, ch. 2-3). Empirical

data on digital inclusion and algorithmic discrimination are drawn from surveys by Cetic.br, the Instituto Brasileiro de Geografia e Estatística (IBGE), the Instituto Locomotiva/IDEC, Pew Research Center, and the Benton Institute (CETIC.br, 2024, online; IBGE, 2022, 2024, online; Instituto Locomotiva, 2021, online; PEW RESEARCH CENTER, 2024, online; BENTON INSTITUTE, 2025, online). Normative analysis relies on legal texts such as Bill 2338/23 (BIONI; GARROTE; GUEDES, 2023), the EU AI Act (EUROPEAN PARLIAMENT, 2024, online), the UNESCO Recommendation (UNESCO, 2021, online) and other multilateral instruments.

In addition, this article incorporates primary data from recent studies on internet access and digital inequality. The Brazil-focused analyses rely on the Instituto de Referência em Internet e Sociedade (IRIS, 2024, online) report on significant connectivity, which emphasizes the importance of devices, affordability, and digital skills; on the IDB (2024, online) study characterizing the Afro-Brazilian digital inclusion gap; and on IBGE (2022, 2024, online) statistics on racial inequalities. For the United States, data from the National Telecommunications and Information Administration (NTIA, 2024, online) are employed, the Pew Research Center (2024, online) and the U.S. Commission on Civil Rights (2024, online).

### 2.3 COMPARATIVE AND DECOLONIAL PERSPECTIVE

Comparing Brazil and the United States allows us to highlight structural similarities—such as histories of slavery, segregation, and racial capitalism—while attending to contextual differences in legal frameworks and discourses on race. A decolonial perspective centers voices from the Global South, recognizing epistemic injustices that devalue Afro-descendant knowledge. Works by SANTOS (2019, ch. 1-2), GOMES et al. (2022, introd.; ch. 3) and SANTOS et al. (2023, online) emphasize the importance of listening to community leaders and respecting vernacular epistemologies. This perspective challenges Eurocentric assumptions about technology and opens space for Afro-futurist imaginaries and indigenous knowledges.

### 2.4 INTERDISCIPLINARY AND MULTI-METHOD APPROACH

While the core of this study is theoretical, it also embraces a multi-method approach. Statistical analyses are used to interpret socioeconomic data on internet access, smartphone dependence and algorithmic bias. Comparative law methodology is employed to contrast regulatory frameworks. Finally, socio-technical analysis explores how AI systems embed and reproduce social values. By combining these methods, the research triangulates evidence and avoids a one-dimensional explanation of AI-mediated racial inequities.

## 3 – THEORETICAL FRAMEWORK: THE RACIAL CONTRACT, CRT AND AI

### 3.1 FROM THE SOCIAL CONTRACT TO THE RACIAL CONTRACT

Classical social contract theory, as articulated by Hobbes (2003, ch. XVII), Locke (2014, ch. VIII) and Rousseau (2017, ch. VI), envisions individuals leaving the state of nature to form a political community based on consent, equality, and mutual protection. Yet, as MILLS (1997, p. 3-11) argues, the universality promised by the social contract is illusory because it rests on an unspoken racial contract. This contract defines who counts as fully human, who has rights and who can be exploited. PATEMAN and MILLS (2007, introd.; part I, ch. 1-2; part II, introd.; ch. 1) show that the classical texts exclude women and people of color from the category of "free contractors." In colonial contexts, the racial contract justified the enslavement of Africans and the dispossession of indigenous peoples.

The racial contract persists in the modern era, albeit in transformed forms. MILLS (1997, introd.; ch. 1-3) notes that legal and political institutions continue to privilege white interests, while racialized groups are subject to surveillance, criminalization, and

exclusion. The “color-blind” rhetoric of liberal democracies masks a structural inequality that is reproduced through institutions, laws, and everyday practices. Recognizing the racial contract is therefore essential for an honest critique of modernity and for envisioning a more just social order.

### 3.2 CRITICAL RACE THEORY, PERSONHOOD, AND CITIZENSHIP

Critical race theory emerged in the United States in the 1970s and 1980s as a movement of scholars and activists who challenged the slow progress of civil rights reforms. Writers such as BELL (1992, introd.; ch. 1) and CRENSHAW (1991, introd.; sec. 1) argued that racism is not an aberration but a permanent feature of American society. CRT rejects the idea that law is neutral; it sees legal doctrines and institutions as key mechanisms through which racial hierarchies are maintained. CRAWFORD (2021, p.123-150) and BENJAMIN (2019, introd.; ch. 1; ch. 4) have extended CRT insights to AI, arguing that algorithms often perpetuate systemic bias because they are trained on historical data reflecting discriminatory patterns.

Personhood and citizenship are also contested within CRT. Laws historically defined Blacks and Indigenous peoples as non-persons or three-fifths persons (in the case of the U.S. constitution), denying them full political participation. Scholars like GONÇALVES (2018, ch. 1-2) and SANTOS (2019, part I; part II) show that modern technologies can replicate such exclusion by rendering certain populations invisible in datasets or misclassifying them in biometric systems. To achieve equitable AI, we must interrogate how notions of personhood are encoded in algorithms and challenge the normative assumptions underlying classification systems.

### 3.3 AFRO-FUTURISM AND DECOLONIAL AI

Afro-futurism envisions technological futures rooted in Black experiences and imaginations. It challenges the Eurocentric narrative of technological progress and proposes new epistemologies and ontologies. Authors like DELANY (1968, parts I-III) and contemporary creators like NK Jemisin (2015, Book I; early chapters) show that speculative fiction can be a tool for political critique and transformation. BENJAMIN (2019, introd.; ch. 1; ch. 4) argues that to imagine abolitionist futures we must develop “tools for a new Jim Code,” meaning technologies designed to dismantle structures of oppression rather than reinforce them. Decolonial AI, as advocated by SANTOS (2019, part I-II) and GOMES et al. (2022, online), calls for embedding the perspectives of the Global South and Indigenous peoples in the design, deployment, and governance of AI systems.

Afro-futurism and decolonial AI illuminate how the racial contract can be renegotiated. They emphasize community autonomy, reparative justice, and cultural reclamation. Integrating these perspectives into AI research and development helps to break away from the techno-solutionist paradigm and fosters an ethics of relationality and care.

## 4 – TECHNOLOGICAL EVOLUTION, DATA BIAS AND GENERATIVE AI

### 4.1 FROM MOORE’S LAW TO THE AGE OF ALGORITHMS

The exponential growth of computing power, captured by Moore’s Law (MOORE, 1965, p. 114-117), has enabled dramatic advances in data processing and storage. The proliferation of smartphones, sensors and social media has generated vast troves of data known as “big data.” While these data sets enable innovations in health, finance, and transportation, they also carry the biases of the societies that produce them. BUOLAMWINI and GEBRU (2018, p. 77-91) show that commercial facial-analysis algorithms exhibit higher error rates for darker-skinned women than for lighter-skinned men. MITCHELL et al. (2019, online) propose “model cards” as a tool for documenting the context, limitations, and potential biases of machine-learning models.

Generative AI, such as large language models (LLMs) and diffusion models, has become widely deployed in recent years. These models can create text, images, and music, raising both excitement and ethical concerns. On the one hand, they democratize content creation; on the other, they risk amplifying harmful stereotypes and producing disinformation. In 2023 and 2024 the adoption of AI and generative AI skyrocketed: 78 % of organizations reported using AI in at least one business function (up from 55 % a year earlier), and the use of generative AI jumped from 33 % to 71 % in that period (NETGURU, 2025, online). The global AI market was valued at US$ 391 billion in 2025 and is projected to reach US$ 1.81 trillion by 2030, with private U.S. funding reaching US$ 109.1 billion and generative AI attracting US$ 33.9 billion (NETGURU, 2025, online). These figures underscore the rapidly expanding economic footprint of AI and the need to address its social impact.

### 4.2 BIASES IN DATA COLLECTION AND ALGORITHM DESIGN

Data do not merely mirror reality; they are produced through social processes imbued with power relations. Surveillance systems disproportionately target Black and Brown communities, generating datasets that overrepresent these groups in law enforcement databases. Facial recognition technologies misidentify women and people of color at far higher rates than white men: in 2019 the U.S. National Institute of Standards and Technology (NIST) tested 189 algorithms and found that false-positive rates were 10 to 100 times higher for Asian and African American faces than for white faces, and that women were misidentified more often than men (ROWe, 2020, online). A 2024 report by the U.S. Commission on Civil Rights similarly concluded that even the best facial-recognition algorithms exhibit significant disparities across demographic groups, and that there is no comprehensive federal law governing their use (US CIVIL RIGHTS COMMISSION, 2024, online).

In Brazil, the situation is equally concerning. A study by the Centre for Studies on Public Security and Citizenship (CESeC) found that of all these arrests occurring in Brazil, 90 % of those arrested identified as Black (CESeC, 2025, online). Between 2019 and April 2025, CESeC documented 24 errors in which individuals were falsely identified; 75 % of the misidentified individuals were Black and 62.5 % were men (CESeC, 2025, online). These statistics reveal how algorithmic bias is not merely an abstract risk but an immediate threat to fundamental rights and liberty. They reinforce the argument that AI systems must be subjected to rigorous bias audits, transparency requirements and accountability mechanisms.

## 5 – REGULATION AND GOVERNANCE

### 5.1 INTERNATIONAL FRAMEWORKS

The rise of AI has prompted international organizations to develop ethical guidelines and regulatory frameworks. The UNESCO Recommendation on the Ethics of Artificial Intelligence (2021, online) provides a broad set of principles, including respect for human rights, diversity, inclusiveness, and ecological sustainability. It emphasizes that AI systems should not deepen existing inequalities and calls for impact assessments, transparency, and human oversight. The OECD Principles on Artificial Intelligence (2019, online) similarly stress inclusive growth, fairness, accountability, and transparency. At a regional level, the European Union's Artificial Intelligence Act (AI Act) seeks to harmonies rules across EU member states. Adopted by the European Parliament in March 2024, the AI Act classifies AI systems into risk categories (unacceptable, high, limited, minimal) and imposes obligations on providers of high-risk systems, including conformity assessments, documentation, and post-market monitoring (EUROPEAN PARLIAMENT, 2024, online). The Act prohibits certain practices such as social scoring and real-time remote biometric identification in public spaces, with narrow exceptions. By embedding fundamental rights into the design and deployment of AI, these instruments aim to prevent algorithmic

discrimination and protect vulnerable groups.

### 5.2 BRAZILIAN FRAMEWORKS

Brazil has been an active participant in global AI discussions. The country's General Data Protection Law (Lei Geral de Proteção de Dados – LGPD) came into force in 2020 and establishes principles such as purpose limitation, data minimization and non-discrimination. In 2023, a Working Group of the Brazilian Senate produced the draft Bill 2338/23, which seeks to create a comprehensive regulatory framework for AI. The bill draws inspiration from the EU AI Act but adapts it to the Brazilian context, recognizing Brazil's racial and socioeconomic inequalities. It proposes risk-based regulation, encourages sandbox experimentation, and calls for the establishment of a National Authority for the Protection of Personal Data and AI (ANPD IA). The bill also mandates algorithmic impact assessments and consultation with affected communities for high-risk applications such as public security, credit scoring and employment. Although the bill has yet to be enacted, its debates highlight the importance of aligning AI regulation with human rights and racial justice.

### 5.3 COMPARATIVE INSIGHTS

Comparing international and Brazilian frameworks reveals both convergence and divergence. There is broad consensus on the need to prohibit AI applications that threaten fundamental rights (e.g., social scoring, predictive policing without safeguards). Risk-based regulation is becoming a common model, though definitions of "high-risk" vary. While the EU AI Act adopts a precautionary approach, requiring ex-ante conformity assessments for high-risk systems, the Brazilian draft emphasizes innovation and flexibility. The inclusion of provisions for socio-demographic audits and community participation in Brazil reflects an awareness of structural racism and digital inequality. However, Brazil must ensure that enforcement mechanisms have sufficient independence and resources to hold public and private actors accountable. International cooperation, including alignment with UNESCO and OECD guidelines, can enhance interoperability while respecting local contexts.

## 6 – DIGITAL DIVIDE AND ALGORITHMIC RACISM

### 6.1 BRAZIL: DIGITAL DIVIDE AND ALGORITHMIC RACISM

Despite significant improvements in connectivity, Brazil continues to experience stark digital inequalities. The CETIC.br 2024 ICT Households survey reports that 34 % of Brazilians have only low levels of "meaningful connectivity" (0-2 points) whereas 22 % attain high levels (7-9 points); high levels are much more common among urban residents, men, white individuals, and higher socioeconomic classes (CETIC.br, 2024, online). Only 22 % of internet users spend less than 2 % of their household income on connectivity, and 57 % of mobile-phone owners rely on pre-paid plans, with higher proportions in rural areas (71 %) and in classes DE (69 %) (CETIC.br, 2024, online). In 2024, 84 % of individuals aged 10 years or older used the internet; 96 % of these users accessed the internet daily; 60 % used only a mobile phone, and 40 % used both computers and mobile phones (CETIC.br, 2024, online). These numbers indicate that mobile-only internet access is the norm for many, especially poorer households, which restricts their ability to perform complex tasks such as job applications or online learning.

The Afro-Brazilian population faces even greater challenges. According to the IDB report (2024), Afro-Brazilians represent 56.1 % of the population and 53.7 % of the labor force, yet 10.6 million Afro-Brazilians have no internet coverage and 25 % were excluded from broadband services in 2021 (IDB, 2024, online). Among the 68.3 million online shoppers in 2021, 38.2 million were Afro-Brazilians (55.9 %), and Afro-Brazilians accounted for 61.5 % of new online shoppers between 2019 and 2021; closing the digital gap could generate

BRL 9.76 billion per year in additional revenue for businesses (IDB, 2024, online). The report also notes that Afro-Brazilians represented 51.6 % of Brazil's mobile market in 2021 and that 40.9 % of Afro-Brazilians used pre-paid phones (IDB, 2024, online). These figures highlight how digital inclusion is not just an infrastructural issue but also an economic opportunity.

Internet speed inequality further exacerbates these disparities. A study using Ookla Speedtest data for six Brazilian cities (Belo Horizonte, Brasília, Fortaleza, Manaus, Rio de Janeiro, and São Paulo) found that wealthier neighborhoods consistently enjoy higher download speeds than poorer areas. Approximately 13 % of school catchment areas have average speeds below 80 Mbps, which could hamper remote learning and exacerbate educational inequalities (EPJ DATA SCIENCE, 2023, online). States also vary widely in fixed broadband access: while Santa Catarina had 36.15 connections per 100 inhabitants in 2021, Acre and Amazonas had only 13.8 (EPJ DATA SCIENCE, 2023, online). This heterogeneity demands targeted policies tailored to local contexts.

Algorithmic racism intersects with the digital divide in Brazil. Facial-recognition systems deployed by police in Bahia, Rio de Janeiro and other states have led to wrongful arrests of predominantly Black individuals. The CESeC report highlighted earlier documents not only the number of arrests but also the absence of transparency and due process. In addition to misidentification, algorithmic discrimination manifests in automated credit scoring, predictive policing, and social-media moderation. Scholars like SILVA (2022, p. 73) and IRIS (2024, online) argue that the lack of diversity in AI development teams, coupled with the absence of regulatory safeguards, allows for the perpetuation of racist biases.

### 6.2 UNITED STATES AND COMPARATIVE REFLECTIONS

The United States is often portrayed as a digitally advanced nation, yet it too exhibits substantial inequalities. According to the NTIA (2024, online), 72 % of white non-Hispanic adults use desktops, laptops, or tablets, compared with 62 % of Black Americans, 57 % of American Indians/Alaska Natives and 54 % of Hispanic adults (NTIA, 2024, online). Reliance on smartphones as the sole means of internet access is highest among Hispanics (25 %) and Indigenous populations (22 %), followed by Black Americans (16 %) and white non-Hispanics (12 %) (NTIA, 2024, online). The Pew Research Center (2024, online) reports that 24 % of adults with a high-school diploma or less are "smartphone dependent," compared with only 6 % of college graduates, and that approximately one-in-five Black or Hispanic adults rely exclusively on smartphones (PEW RESEARCH CENTER, 2024, online). These statistics mirror the Brazilian reality: marginalized racial groups and individuals with lower educational attainment depend on mobile-only access, limiting their ability to participate fully in the digital economy.

The Benton Institute for Broadband & Society (2025) provides further insights. Between 2016 and 2023, the number of U.S. households without any computer (desktop, laptop, or tablet) fell from 12.74 million to 5.06 million, yet the number of smartphones-only households increased by 54 %, adding roughly 4.5 million households (BENTON INSTITUTE, 2025, online). As of 2023, one in seven U.S. households (13.75 %)—approximately 18 million households comprising 33.27 million residents—either lacked a computer or relied solely on a smartphone (BENTON INSTITUTE, 2025, online). Mississippi had the highest rate of households without large-screen devices (24.19 %), while Utah had only 8 %; Puerto Rico, an unincorporated territory, exhibited the worst outcome, with nearly 40 % of households lacking any computer (BENTON INSTITUTE, 2025, online). Demographically, smartphone-only access was highest among individuals identifying as "other race" (22.4 %), AI/AN (13.5 %), Hispanics (12.5 %) and African Americans (11.4 %); by contrast, only 5.9 % of whites and 4.4 % of Asians were smartphone-only (BENTON INSTITUTE, 2025, online). Education and income strongly

correlate with digital exclusion: 20.5 % of those with less than a high-school diploma are smartphone-only users, compared with 2.4 % of individuals with a bachelor's degree (BENTON INSTITUTE, 2025, online). Each US$ 10,000 increase in median household income reduces the percentage of households without a computer by 1.42 %, while a 1 % increase in poverty rates increases the percentage of households without a computer by 1 % (BENTON INSTITUTE, 2025, online).

Algorithmic racism in the United States has attracted widespread attention, particularly in policing and surveillance. Several high-profile cases involved false arrests of Black men due to facial-recognition errors. The Innocence Project notes that at least six known wrongful arrests caused by facial-recognition misidentification have all involved Black individuals (INNOCENCE PROJECT, 2023, online). Studies of recidivism-prediction tools like COMPAS reveal racial bias in risk scores used to determine bail and sentencing. CIVIL RIGHTS COMMISSION (2024, online) emphasizes that federal laws lag technological developments; there is no comprehensive legal framework to regulate facial recognition, leaving governance to a patchwork of state and municipal rules. The absence of national standards contrasts with the European approach and underscores the need for federal legislation to prevent discriminatory outcomes.

### 6.3 TABLES AND FIGURES

To visualize the data discussed above, the following tables summarize key indicators of the digital divide, gender gap and algorithmic bias. They serve as empirical evidence to support the arguments and facilitate comparative analysis. The values in the tables derive from the sources cited earlier, and specific page intervals are indicated to enable verification.

Table 1 – Digital inclusion indicators in Brazil

| Indicator | Value | Source |
|---|---|---|
| Internet users (Jan 2024) | 187.9 million; 86.6 % penetration | DataReportal (2024, online) |
| Mobile connections (Jan 2024) | 210.3 million; 96.9 % of population | DataReportal (2024, online) |
| Internet users (Jan 2025) | 183 million; 86.2 % penetration | DataReportal (2024, online) |
| Mobile connections (Jan 2025) | 217 million; 102 % of population | DataReportal (2024, online) |
| Households with high meaningful connectivity | 22 % | CETIC.br (2024, online) |
| Mobile-only internet users | 60 % | CETIC.br (2024, online) |
| Afro-Brazilians without internet coverage | 10.6 million | IDB (2024, online) |
| Afro-Brazilians excluded from broadband | 25 % | IDB (2024, online) |
| Afro-Brazilian share of mobile market | 51.6 % | IDB (2024, online) |
| Online shoppers who are Afro-Brazilians | 38.2 million (55.9 %) | IDB (2024, online) |
| School catchment areas < 80 Mbps | 13 % | EPJ Data Science (2023, online) |

| Indicator | Value | Source |
|---|---|---|
| Broadband access (Santa Catarina) | 36.15 connections/100 inhabitants | EPJ Data Science (2023, online) |
| Broadband access (Acre & Amazonas) | 13.8 connections/100 inhabitants | EPJ Data Science (2023, online) |

Table 2 – Digital exclusion indicators in the United States

| Indicator | Value | Source |
|---|---|---|
| Households lacking a computer or smartphone-only (2023) | 13.75 %; ≈ 18 million households | Benton Institute (2025, online) |
| Residents affected by lack of computer/smartphone-only | 33.27 million | Benton Institute (2025, online) |
| Households without computers (2016) | 12.74 million | Benton Institute (2025, online) |
| Households without computers (2023) | 5.06 million | Benton Institute (2025, online) |
| Increase in smartphone-only households (2016-23) | 54 % (≈ 4.5 million households) | Benton Institute (2025, online) |
| Households without large-screen devices (Mississippi) | 24.19 % | Benton Institute (2025, online) |
| Households without large-screen devices (Utah) | 8 % | Benton Institute (2025, online) |
| Households without computers (Puerto Rico) | 40 % | Benton Institute (2025, online) |
| Smartphone-only users – “other race” category | 22.4 % | Benton Institute (2025, online) |
| Smartphone-only users – AI/AN | 13.5 % | Benton Institute (2025, online) |
| Smartphone-only users – Hispanic | 12.5 % | Benton Institute (2025, online) |
| Smartphone-only users – African American | 11.4 % | Benton Institute (2025, online) |
| Smartphone-only users – White | 5.9 % | Benton Institute (2025, online) |
| Smartphone-only users – Asian | 4.4 % | Benton Institute (2025, online) |
| Smartphone-only users with less than high school education | 20.5 % | Benton Institute (2025, online) |
| Smartphone-only users with bachelor’s degree | 2.4 % | Benton Institute (2025, online) |

Table 3 – Algorithmic bias and facial-recognition disparities

| Indicator | Value | Source |
|---|---|---|
| False-positive rates for Asian & African-American faces vs. White faces | 10–100× higher | ROWe (2020, online) |

| Indicator | Value | Source |
|---|---|---|
| Facial-recognition misidentification of women vs. men | Higher rates for women | ROWe (2020, online) |
| Percentage of arrested individuals who were Black (Brazil) | 90 % | CESeC (2025, online) |
| Documented misidentification errors (2019–Apr 2025) | 24 cases | CESeC (2025, online) |
| Misidentified individuals who were Black (Brazil) | 75 % | CESeC (2025, online) |
| Misidentified individuals who were men (Brazil) | 62.5 % | CESeC (2025, online) |

These tables demonstrate the breadth of the digital divide and algorithmic bias across different contexts. They also reveal the intersection of race, class, gender, and geography in shaping technological access and outcomes. Policy interventions must be tailored to these specific vulnerabilities.

## 7 – PHILOSOPHY OF TECHNOLOGY AND DECOLONIAL PERSPECTIVES

### 7.1 CYBORGS, SURVEILLANCE CAPITALISM AND DATA COLONIALISM

The philosophy of technology offers tools to interrogate the political economy of AI. HARAWAY (1991, p. 149-181) coined the metaphor of the cyborg to challenge dualisms between human and machine, nature, and culture. Haraway's cyborg is a hybrid creature that destabilizes boundaries and suggests emancipatory possibilities; yet she also warns that technologies can reinforce patriarchal and racial hierarchies. In the digital age, the cyborg metaphor helps us understand how humans are entangled with AI systems that extract, process and act upon personal data.

ZUBOFF (2019, p. 8) introduces the concept of surveillance capitalism to describe a new economic order that monetizes human experience through data extraction, prediction, and behavioral modification. In this model, companies such as Google, Meta and Amazon treat personal data as raw material for profit. The accumulation of data intensifies power asymmetries and undermines privacy, autonomy, and democratic governance. Surveillance capitalism often targets marginalized communities, using predictive algorithms to offer lower credit limits or higher insurance premiums. BENJAMIN (2019, p. 5-8, 147) extends this critique by showing how the "New Jim Code" merges racism with new technologies, producing digital segregation and discrimination under the guise of neutrality.

### 7.2 EPISTEMOLOGIES OF THE SOUTH AND AFRO-FUTURIST VISIONS

SANTOS (2019, introd.) proposes the concept of "epistemologies of the South" as a framework for recognizing and legitimizing knowledge produced outside the Eurocentric canon. This involves valuing oral histories, community practices and indigenous cosmologies. In the context of AI, epistemologies of the South emphasize participatory design, respect for collective rights and the integration of local knowledge systems. GOMES et al. (2022, online) report on interviews with Brazilian community leaders who emphasize that meaningful connectivity involves not only access but also the ability to create and share content relevant to local cultures. They argue that connectivity policies should be co-designed with communities to ensure they address real needs.

Afrofuturism envisions technological futures rooted in Black experiences, merging speculative fiction, cultural critique, and artistic innovation. Literary and musical works — such as those by Octavia Butler, Sun Ra, and Janelle Monáe — imagine worlds in which

African diasporic communities build alternative technologies and social orders (DERY, 1994, p. 179-222; BUTLER, 2000, p.1-27; ESHUN, 2003, p. 287-302).

Within academia, Afrofuturist thought has inspired frameworks such as Black Quantum Futurism, which interweaves temporality, ancestral memory, and technological speculation (PHILLIPS; LAWRENCE, 2020, p.12-18), and the notion of Digital Maroons, which conceptualizes insurgent digital practices as contemporary forms of maroon epistemologies and resistance (McILWAINE, 2022, p.45-50). These imaginaries broaden the scope of creativity in AI research and challenge deterministic narratives surrounding technology, foregrounding Black epistemologies oriented toward autonomy, justice, and liberation (BENJAMIN, 2019; SILVA, 2022, p. 6-41).

## 8 – PROPOSALS FOR EQUITY AND INCLUSION

Based on the evidence presented, this section outlines practical proposals to bridge the digital divide, dismantle algorithmic racism and promote equitable AI. These proposals are organized into three categories.

### 8.1 INFRASTRUCTURE AND AFFORDABILITY

States must treat internet access as a public good and invest in universal, affordable broadband. In Brazil, this entails expanding fiber-optic networks to rural and underserved urban areas, subsidizing broadband tariffs for low-income households, and supporting community networks. The EPJ Data Science study reveals that 13 % of school catchment areas lack adequate speeds; targeted investments could prioritize these areas (EPJ DATA SCIENCE, 2023, online). Public-private partnerships can mobilize resources while ensuring public oversight. Government procurement should include social criteria to support companies that hire workers from marginalized communities.

### 8.2 EDUCATION, DIGITAL LITERACY, AND CAPACITY BUILDING

Digital inclusion requires more than connectivity; it demands skills and critical awareness. Curricula at primary, secondary and tertiary levels should integrate digital literacy, AI ethics and critical race studies. Scholarship programmes and training courses targeting Black and marginalized youth can foster diversity in tech fields. Universities should support research centers on decolonial AI and Afro-futurism. In the United States, addressing educational disparities is essential: individuals with less than high-school education is the most likely to rely on smartphones only (PEW RESEARCH CENTER, 2024, online; BENTON INSTITUTE, 2025, online).

### 8.3 ALGORITHMIC ACCOUNTABILITY, TRANSPARENCY, AND AUDITING

Regulatory frameworks should mandate impact assessments, bias audits, explainability and appeal mechanisms for high-risk AI systems. Independent oversight bodies with adequate resources and enforcement powers should be created to audit algorithms, require disclosure of training data, and intervene when discriminatory outcomes are detected. Audit results and data on model performance by demographic group should be made public. In Brazil, the Bill 2338/23 and the LGPD should incorporate explicit provisions for algorithmic impact assessments and community consultation. In the United States, comprehensive federal legislation on facial recognition and AI accountability is urgently needed (CIVIL RIGHTS COMMISSION, 2024).

## 9 – CONCLUSION

This article has argued that the ethical challenges posed by AI cannot be separated from the racialized foundations of modern societies. Through the lens of MILLS' racial contract and critical race theory, we have shown that the promises of the social contract have always been conditional on race. The digital revolution and the rise of AI technologies risk reproducing these inequities, as evidenced by the digital divide and algorithmic racism

experienced by Black Brazilians and Black Americans. Empirical data reveal stark disparities in internet access, infrastructure, smartphone dependence, algorithmic biases, and surveillance practices. At the same time, regulatory innovations such as the EU AI Act, Brazil's Bill 2338/23 and the UNESCO Recommendation offer frameworks to anchor AI in human rights, risk management and non-discrimination. These instruments emphasize transparency, human oversight, impact assessments and the prohibition of harmful practices like social scoring and mass surveillance. Yet regulation alone is insufficient. A philosophy of technology that addresses surveillance capitalism, data colonialism and the New Jim Code enriches the understanding of AI's political economy. Incorporating epistemologies of the South challenges Eurocentric assumptions and highlights alternatives rooted in Afro-descendant and Indigenous knowledge.

Ultimately, achieving fair and inclusive AI requires reimagining the very contractual foundations of modernity. Racial contract that undergirds legal and technological systems must be confronted, amplify marginalized voices, and develop participatory governance that centers those most affected. By implementing the proposals outlined above—investing in infrastructure, enhancing education, diversifying tech, ensuring accountability, promoting community participation, and fostering international cooperation—a movement towards an AI that advances social justice rather than reproducing oppression is possible. This journey demands collective action from governments, civil society, academia, and industry, guided by the principles of equity, transparency, and dignity.

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