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ALGORITHMIC CONTRACTING, DISCRIMINATION, AND HUMAN DIGNITY IN TRANSPORT

Amelia V. GHEOCULESCU[1]

Abstract: *The rapid integration of Artificial Intelligence (AI) and predictive analytics into the transport sector has ushered in an era of "algorithmic contracting," where automated systems increasingly govern pricing, route optimization, service allocation, and even access to essential mobility services. While promising efficiency, this digital transformation presents a significant challenge to human dignity, inclusion, and non-discrimination. This article examines how these algorithmic practices can inadvertently embed or amplify existing societal biases, leading to new forms of discrimination based on factors such as location, socio-economic status, or perceived risk, thereby undermining individuals' fundamental right to fair and equitable access to transport. Drawing on principles from international human rights law and focusing on the evolving EU legal landscape (including the AI and GDPR Regulation, and anti-discrimination directives), this paper analyses the specific mechanisms through which algorithmic contracting can lead to discriminatory outcomes in transport. It argues that the opaque nature of these automated decisions, coupled with the often-unseen contractual terms they dictate, can erode personal autonomy, restrict participation in society, and diminish human dignity. The abstract highlights the urgent need for robust legal and regulatory interventions, proposing pathways for enhanced transparency, accountability, and effective judicial protection to ensure that the digital evolution of transport fosters, rather than undermines, justice, inclusion, and non-discrimination for all.*

Key words: *Algorithmic Discrimination, Human Dignity, Transport Law, EU AI Regulation, Automated Contracting*

1. Introduction

The integration of digital technologies in the transport sector has marked a rapid evolution over the past two decades, radically transforming the way people and goods move. Initially, digitalization focused on operational optimization: advanced GPS systems, real-time fleet tracking and automation of planning tasks. However, the turning point was the emergence of on-demand mobility platforms (ride-sharing), on-demand

[1] Ph.D. Senior Lecturer, National University of Science and Technology POLITEHNICA Bucharest, Pitesti University Centre, amelia.gheoculescu@upb.ro

logistics services and intelligent traffic management. These systems not only collect massive data (Big Data), but also use complex algorithms to make autonomous and instantaneous decisions.

AI applications now cover essential functions related to route optimization (dynamic calculation of the most efficient routes, taking into account congestion, weather conditions and demand), smart logistics (automatic resource allocation - vehicles, drivers – and supply chain planning, managing inventories and establishing delivery times, having a direct impact on the schedule and income of drivers) and dynamic pricing (adjusting transportation rates in real time, depending on demand, supply and user profile).

This rapid integration has profound implications for access and equity of services.

1.1. The concept of algorithmic contracting – automated decision-making

The term algorithmic contracting describes that stage of digitalization in which AI systems are not limited to providing suggestions or processing data, but become decision-making agents themselves in the formation, execution and management of contractual relationships in the field of transport.

Unlike traditional contracting, where terms are established a priori or negotiated between the parties, in platform-based transport, AI decides and dictates: price (the algorithm establishes the final fare charged to the user for a given trip, based on a multitude of variables beyond distance, e.g. probability of accepting a higher price, usage history); access (the system decides which users receive a service, by allocating or refusing a driver, and under what conditions, e.g. waiting time); execution terms (The algorithm dictates to the partner drivers the optimal route, the required time and, implicitly, the related remuneration. In this context, contractual terms – especially price, duration and availability – are algorithmically generated and presented to the user as facts to accept or refuse, minimizing the contractual autonomy of the human party and transforming transactions into automatic decisions with binding effect).

1.2. Algorithmic discrimination and harm to dignity

The fundamental promise of AI in transport is efficiency – reducing costs, time and emissions. However, beyond the operational benefits, the uncontrolled implementation of algorithmic contracting introduces major risks of algorithmic discrimination, profoundly affecting equitable access to mobility and, implicitly, the human dignity and social inclusion of individuals.

This problem stems from two interconnected characteristics of AI:

1. Opacity (black box): The mechanisms by which algorithms make decisions (e.g. a higher price or a refusal of a service) are often unknown and unintelligible to users, but also to regulators, making it difficult to identify and combat harm.

2. Inertia of bias: Algorithms are trained on historical data sets that can reflect and often amplify pre-existing socio-economic or geographical biases (e.g., low-income areas that have been historically underserved). Consequently, automated decisions can lead

to discriminatory outcomes (e.g., differential pricing based on location or income, reduced availability of services in marginalized neighborhoods). Restricting access to mobility (Martens, 2012, pp. 1035–1053), an essential factor for participation in professional, medical, and social life, amounts to a violation of the right to equal treatment and undermines human dignity by limiting autonomy and opportunities.

This paper aims to analyze these mechanisms and propose appropriate legal solutions in the context of emerging European regulations.

2. Theoretical Framework: AI, Discrimination and Human Dignity

2.1. Defining Algorithmic Discrimination (AD)

Algorithmic Discrimination (AD) is an emerging phenomenon whereby Artificial Intelligence (AI) systems generate unfair or disadvantageous outcomes for certain groups of individuals, based on prohibited or protected criteria, even in the absence of an explicit discriminatory intent on the part of the programmers. In the transport sector, AD manifests itself by processing historical data that, by their nature, reflects and incorporates existing structural inequalities and socio-economic biases.

Automated contracting algorithms do nothing more than reproduce and amplify these inequalities through their operational decisions.

• Geographic and socio-economic bias: If training data shows that certain disadvantaged neighborhoods have historically generated fewer orders or presented a higher perceived risk (e.g. higher cancellation rates or longer wait times), algorithms can translate this into higher dynamic prices or reduced service availability. The system thus treats the areas as less profitable or riskier, indirectly discriminating against their residents (Barocas and Selbst, 2016).

• unfair decisions: AD in transportation results in the refusal or low prioritization of rides in certain areas (creating “mobility deserts”) or in the differential allocation of resources, limiting equitable access to an essential service.

To understand AD, it is crucial to understand the established legal distinction between the two main forms of discrimination:

1. Direct discrimination which occurs when one person is treated less favourably than another, in a comparable situation, on the basis of a prohibited ground (race, sex, nationality, etc.). This implies a clear intention to differentiate on the basis of the protected criterion.

2. Indirect discrimination which is the predominant form in algorithmic contracting. It occurs when an apparently neutral provision, criterion or practice (for example, an algorithm that only optimises profit) particularly disadvantages people belonging to a particular protected group. The algorithm may use neutral variables (such as the type of smartphone used or the postal code) but which have a strong correlation with a protected criterion (such as income or ethnic origin), thus producing an unintended discriminatory impact but with real effects (Cosma, 2020).

In the context of AI, the focus of case law and regulation (such as the EU AI Regulation) must fall on indirect discrimination, as the opacity of algorithms makes it difficult, if not impossible, to prove direct discriminatory intent.

2.2. Human dignity as a fundamental Right in the context of access to Services

Algorithmic discrimination in transport is not only a problem of economic inequality, but touches the very essence of fundamental rights, in particular human dignity. Human Dignity is a fundamental principle of the European legal order, serving as the basis for all other rights. It involves, among other things, ensuring the necessary conditions for a person to be able to fully develop and actively participate in social life (Drăghici, 2025, pp. 277-288).

In modern society, mobility is no longer a luxury, but an essential precondition for the exercise of other fundamental rights, such as access to work (Nenu, 2014, pp. 112-117) and education (Ionescu, 2018, pp. 594-599), access to health (hospitals, clinics), participation in civic and social life.

Restricting access to essential transport services for arbitrary, automated or discriminatory reasons amounts to a restriction on the individual's ability to function as a full citizen. This forced limitation of opportunities, dictated by an opaque system, directly harms personal autonomy and, implicitly, the dignity of the individual, by transforming him or her from an autonomous subject into a passive variable in the algorithmic equation (Mladenović, 2016, pp. 245–246). By undermining the ability to make informed choices and to have control over the essential conditions of access to vital services, AD in transport undermines the foundation of a society based on respect for human dignity and the principle of equal treatment.

3. Specific Algorithmic Discrimination Mechanisms in Transport

Artificial Intelligence (AI) systems in transport, despite the stated objective of optimizing efficiency, actually generate discriminatory results, affecting equity and access to services.

3.1. Dynamic Pricing (Price Discrimination)

Dynamic pricing is a technique for optimizing revenues by automatically adjusting, in real time, the cost of a service. Although the primary factor is the offer-demand report, advanced pricing algorithms use a complex user profile (developed through predictive analytics) to determine the maximum willingness to pay of each individual customer.

The variables included in the analysis can go beyond simple geographic location and time of day, including payment history and price acceptance, the type of device used (premium vs. low-cost smartphone) or battery level (signaling urgency), correlating the departure/destination postal code with socio-economic indicators (median income, density, lack of public transport alternatives).

This practice evolves from simple optimization to price discrimination, based on market segments or individualized price, without the user being aware of the factors that led to the displayed fare.

The impact becomes indirectly discriminatory when profile variables overlap with protected criteria, accentuating socio-economic inequality (van Dijk, 2020, pp. 244–248) by overcharging vulnerable groups and creating a hidden cost of poverty.

3.2. Route optimization and Service allocation

Service allocation and route optimization algorithms are designed to maximize overall network efficiency (profit) and driver safety. To achieve these goals, they can systematically exclude or deprioritize certain geographic areas from the service network.

Deprioritization criteria may be neutral at first sight, but have a discriminatory effect:

- Low Profitability: Areas with low order density or high probability of generating high waiting time (costly for the platform).
- Perceived Risk: Areas with unfavorable historical data on cancellation rate or incidents, which can be correlated with socio-economic indicators.
- Creation of "Digital Mobility Deserts": By deprioritizing or excluding marginalized neighborhoods, digital transportation platforms limit residents' access to a form of mobility that is often faster and more flexible than public transportation.
- Limiting Access to Opportunities: Residents in these areas are disproportionately affected, having increased difficulties in reaching job interviews, educational institutions or medical centers located outside the central areas. This automatic restriction of mobility reinforces spatial segregation and undermines social inclusion, transforming a logistical optimization decision into a social barrier.

3.3. Risk assessment and access to platforms (Ratings and Exclusion)

Many transportation platforms use automated rating and risk analysis systems to manage relationships with both service providers (drivers) and users. These AI systems analyze interactions, behavior (cancellations, delays, complaints) and other contextual data to assign a trust/risk score.

Based on these scores, the system makes critical automated decisions: on the one hand, for drivers, the decision to suspend, permanently deactivate, or preferentially allocate rides; on the other hand, for customers, the decision to limit access to certain services, require advance payment, or associate with drivers with similar ratings.

The mechanism raises serious issues of procedural fairness and leads to inequitable outcomes that concentrate benefits and externalize costs to specific groups (Tiwari, 2025). The exact criteria on the basis of which a driver or customer is penalized (or excluded) often remain vague and unpublished. A low rating may be the result of factors beyond the driver's control (e.g., traffic problems, unreasonable customer expectations) or may be influenced by subtle customer biases (e.g., implicit discrimination based on name, physical appearance, or language). An automated decision to deactivate an account, made based on an opaque algorithm, represents a direct restriction on livelihoods and the right to work. Without a real, humane and transparent possibility of appeal, the principle of *audi alteram partem* (the right to be heard) is violated. Because the decision is perceived as being made by a machine, there is no responsible "person" that the user can hold accountable, eroding trust and undermining the fundamental right to an effective remedy.

4. Legal Framework and Need for Intervention

The analysis of algorithmic discrimination mechanisms highlights a critical discrepancy between the rapid pace of technological innovation in the transport sector and the slow evolution of the regulatory framework. Legislative intervention is urgently needed to ensure the alignment of algorithmic contracting with fundamental principles of law, in particular non-discrimination and respect for human dignity.

4.1. International Law and non-discrimination standards

The foundation of any technological regulation must remain Human Rights. The Universal Declaration of Human Rights (UDHR), in particular Article 1 (all human beings are born free and equal in dignity and rights) and Article 7 (all are equal before the law and are entitled to equal protection), establishes a universal standard of non-discrimination.

Although the UDHR was conceived before the digital age, its principles are timeless: any system, whether human or technological, that governs access to essential services must respect equality and dignity. Technology, especially AI, is not a zone of moral or legal neutrality; on the contrary, it becomes a critical factor in the realization or obstruction of these rights. International law therefore imposes a positive obligation on states to regulate so that the development and use of AI do not erode fundamental rights.

4.2. Legal basis in the European Union

The European Union has taken a pioneering approach to technology regulation, providing the most relevant legal instruments to combat algorithmic discrimination in transport.

The GDPR, focusing on the processing of personal data (Duminică, and Tabacu, 2018, pp. 237–245), is the basis for algorithmic contracting. Article 22 of the Regulation prohibits, in principle, decisions that produce legal effects or significantly affect a person and that are based solely on automated processing (including profiling). This is a direct barrier against automated exclusion or discrimination (e.g. rejecting a ride request or deactivating a driver's account). Although not explicitly defined as an absolute right to explanation, the GDPR provides the data subject with the right to obtain human intervention, to express their point of view and to contest the decision. While the GDPR provides a framework, access to transport can be argued to be a service of such socio-economic importance as to justify a stricter interpretation of Article 22, considering that any refusal of service or significant price increase based on automated profiling significantly affects the citizen.

The Artificial Intelligence Regulation (AI Act) is the EU's preventive instrument and is essential for managing the systemic risks generated by AI.

• AI systems used in transport crucially fall into the high-risk category, in particular those that significantly impact fundamental rights and safety, including systems intended to be used for the management and operation of critical digital and transport infrastructure (safety risk), systems that impact access to public and essential services

such as transport (risk of discrimination and exclusion).

• Classification imposes strict obligations on AI providers, including risk management systems: assessment and mitigation of risks, including risks of discrimination; detailed obligations on data quality (to reduce bias), record keeping (logs) and technical documentation; the requirement to design the system in such a way as to allow for effective human supervision, which can intervene, interpret and overturn automated decisions, thus combating the erosion of autonomy (Veale, and Reuben, 2017).

Despite the robust EU framework, the effective enforcement of the law against algorithmic discrimination in transport faces major obstacles.

The main difficulty is the opacity of algorithms (black box problem). In discrimination disputes, the burden of proof often falls on the claimant, who must demonstrate that he was treated less favourably (direct discrimination) or that a neutral practice disproportionately disadvantaged him (indirect discrimination). Without access to the algorithm's source code or training datasets, it is virtually impossible for a user to demonstrate that there was a discriminatory intention or even to identify precisely the variable that led to the unfavourable decision (e.g. why the price was double).

The traditional legal solution involves shifting the burden of proof to the defendant (platform operator) once the claimant presents facts suggesting possible discrimination. However, operators can invoke trade secrets or technical complexity, blocking access to the decision-making logic. For end-users (customers or independent drivers), access to justice is often complex, expensive and inefficient. Many transportation platforms include mandatory arbitration clauses in user contracts, eliminating the possibility of resorting to civil or administrative courts. Internal appeal procedures (imposed by the GDPR or AI Regulation) are often overseen by the same company that implemented the algorithm, raising questions about impartiality. Algorithmic decisions are instantaneous, while judicial processes take years. This gap makes a late appeal not an effective remedy for a decision that immediately affects access to essential services or livelihoods.

5. Recommendations

To counter the risks of algorithmic discrimination and the erosion of human dignity in the transport sector, strategic and multilateral regulatory interventions are needed. These should aim to improve transparency, ensure the inherent fairness of the systems and facilitate effective judicial redress.

5.1. Solutions focused on Transparency

Transparency is not just about communicating the existence of an algorithm, but about the logical openness of the decision-making process (explainability), essential for holding the platform accountable.

Regulation should impose an obligation of explainability that goes beyond the general requirements of the GDPR. If an automated decision in transport produces a significant adverse effect (e.g. an exorbitant price, a refused route, an account deactivation), the user is entitled to a clear, concise and unambiguous explanation.

This explanation should not reveal trade secrets, but should provide a functional understanding of the logic: identifying the main contributing factors that led to that specific result (e.g., the price was increased by X% due to a demand rate Y times higher than average and the history of accepting increased prices); explainability should demonstrate that no protected criteria (race, gender, income, socio-economic location) were used, directly or indirectly, in setting the price or access.

To combat opacity (black box) at a systemic level, it is crucial to introduce the requirement for mandatory algorithmic auditing for AI systems in transport classified as high-risk (according to the AI Regulation). Audits should be carried out by accredited conformity assessment bodies independent of the service provider. The main task is to detect and quantify biases in the training datasets and to assess the disproportionate impact of algorithmic decisions on protected groups. This involves testing the system under simulated conditions to see whether people from certain areas or with certain profiles are indirectly discriminated against.

5.2. Equity-focused solutions

Regulation must shift the focus from simple compliance to ethical system design (Santoni de Sio, 2025, pp. 713–726).

The principle of meaningful human oversight is vital to reintroducing ethical judgment and context into the decision-making chain. Critical decisions, especially those leading to permanent exclusion (e.g. disabling a driver's account, which affects their livelihood) or to substantially restricting a customer's access, should not be purely automated. They should always be subject to competent human review before being implemented. The human supervisor must have the real power to overturn the algorithmic decision if it is considered unfair, discriminatory or factually incorrect, ensuring a degree of procedural fairness (AI HLEG, 2019).

Future regulation should impose a framework for fairness by design (Design for Inclusion/Fairness by Design). Platforms should not only pursue economic efficiency goals (maximizing profit), but should include non-discrimination and inclusion metrics as explicit optimization goals. For example, an algorithm should be penalized internally if it consistently assigns significantly higher prices to low-income neighborhoods. Providers should be required to use training datasets that are representative of the entire population they serve, eliminating sources of digital redlining (geographic bias).

5.3. Effective judicial remedy

The effectiveness of any right depends on the existence of an accessible and functional judicial remedy. To cope with the speed of algorithmic decisions and technical complexity, access to justice for citizens must be simplified (Tabacu, and Soare, 2013, pp. 65–86).

In the case of opaque algorithmic decisions, the law should facilitate the transfer of the burden of proof. Once a user presents facts suggesting a disproportionate impact of an automated decision, the burden of proving that the algorithm is not discriminatory

(that it was designed with principles of fairness) must fall on the platform operator. The creation of mediation or arbitration bodies specialized in technological disputes would be of real use. These should have the technical capacity (AI experts) to examine the algorithmic logic (under the protection of confidentiality) and to issue quick and enforceable decisions

6. Conclusions

This paper has analysed in depth the transition of the transport sector towards algorithmic contracting, demonstrating that while innovation based on Artificial Intelligence (AI) promises economic optimization, it simultaneously introduces systemic risks of indirect algorithmic discrimination. Mechanisms such as dynamic pricing and automated resource allocation are not neutral; they perpetuate and amplify socio-economic and geographical biases embedded in historical data. Automated decisions in transport are therefore not just simple commercial transactions, but acts with significant legal effect, which can obstruct fair access to mobility – an essential precondition for the full exercise of rights and, implicitly, for the respect of human dignity and personal autonomy.

In conclusion, the digital evolution of transport must be guided not only by the logic of profit and efficiency, but, first and foremost, by the imperative of public ethics and social justice (Ciurea, 2022, pp. 163–179). Legislators and platform operators have a legal and moral obligation to ensure that the digital architecture of mobility is designed according to the Design for Inclusion principle, guaranteeing that technological innovation does not undermine the fundamental right to equal treatment and the dignity of every citizen in the face of an increasingly automated contractual system (Zdravkova, 2019, pp. 112–117).

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