

Artificial Intelligence Application and Ethical Risk Governance in Public Decision Making

Xiaorui Ding*

University of Birmingham, Birmingham B15 2TT, United Kingdom

**Author to whom correspondence should be addressed.*

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Abstract: The marriage of Artificial Intelligence with public administration has completely reshaped how decisions are made in the government sector, opening the door to levels of efficiency and predictive accuracy people have never seen before while enabling policies to be crafted based on solid data. That said, this tech revolution is not all sunshine and rainbows—it throws some serious ethical curveballs that could undermine the very bedrock of public governance. This paper takes a deep dive into how AI is being put to work in public decision-making processes, examining everything from policy modeling and resource distribution to reading the public’s mood and automating compliance checks. At the same time, people are putting the microscope on the sticky ethical questions that come with the territory, including built-in biases in algorithms, the mystery of black-box systems, confusion about who is really responsible when things go wrong, privacy concerns, and the risk of losing sight of the human values when people are too focused on cold logic. To tackle these head-on, people are proposing a robust ethical governance blueprint that calls for thorough vetting processes before implementation, complete transparency in operations, clear guidelines on when humans should remain in the loop, ironclad data privacy measures, and systems that bring input from all parties to the table. By walking the tightrope between tech innovation and ethical responsibility, government officials can tap into AI’s potential to boost public good without compromising fairness, accountability, or the public’s best interests.

Keywords: Artificial intelligence; Public decision-making; Algorithmic governance; Ethical risks; Procedural justice; Algorithmic transparency

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1. Introduction

Today’s digital landscape has propelled artificial intelligence far beyond its origins as a simple computational tool, cementing its position as a cornerstone infrastructure in modern government operations. Time-honored approaches to public administration, which have long been hampered by human cognitive limits, information constraints, and red tape, are now being supplemented or completely overtaken by advanced algorithmic frameworks. Nations across the globe are harnessing the power of machine learning, natural language

processing, and predictive analytics to tackle intricate socioeconomic puzzles, from city development and healthcare oversight to emergency management. Yet, handing over public decision-making power to algorithms is not merely a technical matter—it is fundamentally political and ethical. The shift from human-driven governance to algorithmic oversight creates a delicate balancing act between streamlined efficiency and democratic responsibility. As these systems start to influence resource allocation, forecast citizen behavior, and automate official decisions, they inevitably carry forward existing biases, mask their operational logic, and dilute accountability mechanisms. Therefore, grasping how AI functions within public policy circles and actively addressing the ethical pitfalls has emerged as a critical priority for today's government leaders. This paper delves into real-world applications, rigorously examines the ethical challenges that surface, and puts forward a comprehensive governance framework designed to guarantee that AI advances public interests while upholding moral principles.

2. Application scenarios of artificial intelligence in public decision-making

2.1. Policy prediction and simulation decision-making

Artificial intelligence has completely revolutionized how government agencies approach policy development, particularly through its predictive modeling capabilities. Conventional methods of crafting legislation often depend on backward-looking information and small-scale trials, which not only eat up valuable time but also frequently result in unforeseen complications when scaled up. Advanced computational models, especially those employing deep learning and sophisticated adaptive systems, empower officials to create dynamic representations of socio-economic landscapes and project the ripple effects of different policy approaches before they hit the books. By crunching enormous volumes of information—from population shifts and economic metrics to historical policy results—AI can uncover hidden correlations that might slip past human experts. What's more, emerging cross-disciplinary AI platforms with built-in trust metrics are helping anticipate potential hazards across various sectors, including public health and financial services, enabling decision-makers to shore up weak spots before they become full-blown crises ^[1]. This foresight is especially vital when dealing with emergencies, disease outbreaks, and economic instability, where quick, accurate predictions can dramatically reduce damage and ensure that intervention resources are used to maximum effect.

2.2. Resource allocation and public service optimization

Making the most of limited public funds has always been a tightrope walk for government officials, but artificial intelligence is opening doors to revolutionary approaches that can really stretch every dollar. In metropolitan management, smart city networks powered by AI flexibly distribute electricity, keep traffic moving smoothly in the moment, and fine-tune public transit schedules on the fly as needs shift. When it comes to social services, automated tools are being used to determine who qualifies for aid, rank housing requests by urgency, and assign medical care using smart prioritization systems. These technological solutions aim to cut down on human mistakes and bureaucratic red tape, getting resources to the right people as quickly as possible. Moreover, AI is proving invaluable in reshaping how governments make decisions about long-term sustainability, helping them strike a delicate balance between protecting the planet and fostering economic progress ^[2]. Thanks to sophisticated optimization methods, public administration is evolving from a wait-and-see approach to a forward-thinking, evidence-based strategy that makes taxpayer money work harder than ever before.

2.3. Public sentiment analysis and public opinion polling

In democracies, keeping their finger on the pulse of public sentiment is absolutely fundamental for maintaining the public's trust in government. Artificial intelligence, especially with breakthroughs in Natural Language Processing (NLP) and sentiment analysis, has completely transformed the game when it comes to how administrations read and react to what people are thinking. Back in the day, getting a read on public opinion meant shelling out big bucks for surveys and focus groups that were often hit-or-miss with their sampling and always playing catch-up with reality. Now, AI systems are constantly sifting through mountains of unstructured data from social media, online forums, and digital news sources. These clever algorithms can pin down public conversations with precision, spot brewing social discontent before it boils over, and gauge how people are really feeling about policy announcements as they happen. By giving policymakers a microscopic view of the shifting priorities and worries of the public, AI allows for much sharper opinion tracking. This means crafting policies that truly reflect what constituents want, dealing with PR firestorms before they spread, and building a more dynamic, two-way street between those in power and the people they serve.

2.4. Automated approval and compliance review

The shift towards automating mundane admin jobs has been a game-changer for bureaucratic efficiency, completely changing the way public agencies operate. These days, AI is handling everything from issuing licenses and permits to conducting tax assessments and compliance checks. Thanks to OCR, machine learning, and those nifty rule-based systems, AI can process documents in a flash, cross-check information, and either approve them or flag any red flags for human oversight. This has been a godsend, cutting down on bureaucratic bottlenecks, slicing operational expenses, and nipping corruption and favoritism in the bud. But it is more than just a tech upgrade—it is a total rehaul of how public agencies are structured. It is reshaping the day-to-day duties and roles of front-line bureaucrats^[3]. By offloading the drudgery, automated systems let public workers focus on the nitty-gritty of case management, connecting with citizens on a human level, and strategizing at the highest level.

3. Ethical risk analysis of artificial intelligence in public decision-making

3.1. Algorithmic bias and the risk of inequitable decision-making

AI is commonly seen as a purely objective, logical decision-maker, but it is actually pretty easy to pick up on the human biases baked into it. These biases can sneak into the algorithms and make decisions that are unfair or unjust. Think of AI as being trained by people, often using data that reflects societal inequalities, racism, sexism, and other forms of bias. When these AI systems are used in critical areas like criminal justice or social welfare, these old-fashioned biases get embedded into their code. This means that people from marginalized groups might end up facing more surveillance, getting wrongfully denied services, or facing biased legal decisions. The idea that AI is neutral is just a myth—it hides these discriminatory practices, making it harder to fight against than straightforward human bias. Plus, since AI is designed to favor the majority, the unique needs of minority groups can get lost in the shuffle, breaking the constitutional promise of equal protection and social justice that public officials are supposed to protect.

3.2. Lack of transparency and the algorithmic black box problem

The incorporation of sophisticated artificial intelligence systems, especially deep neural networks, has thrown public administration into a quandary regarding transparency, a predicament widely known as the “black box” dilemma. Traditional governmental procedures, complete with discernible reasoning and documented justifications, stand in stark contrast to these cutting-edge AI technologies, which function through countless untranslatable mathematical parameters and covert computational layers. Surprisingly, even the architects of these AI solutions frequently find themselves at a loss when trying to articulate precisely how a given input produces a specific output. This lack of clarity fundamentally chips away at the accessibility of governmental actions, depriving individuals of their ability to grasp the thinking behind determinations that significantly shape their daily existence ^[4]. Within the realm of public policy, transparency transcends being merely a technical nicety; it represents an essential democratic prerequisite underpinning public confidence, oversight mechanisms, and responsibility frameworks. When an individual is refused social assistance or a commercial license by an unfathomable algorithm, and the governing body fails to furnish a clear account of the decision-making process, it chips away at the state’s credibility and contravenes core principles of fair procedure.

3.3. Unclear subject of responsibility and difficulty in attribution

The blending of self-governing and semi-governing algorithms in public sector management has muddled the waters of the usual rules for being answerable. In the old school of bureaucratic thinking, if a decision goes south, you can usually pinpoint the exact civil servant, agency head, or elected official who is to blame. But when an AI gets involved in making public decisions, pinpointing the guilty party becomes a real “hot potato” situation. Say an AI screws up and misuses public money or denies healthcare unfairly; it is like trying to find a needle in a haystack to figure out if the fault lies with the government that bought the system, the tech company that made it, the data scientists who fed it info, or the algorithm itself acting like a rogue agent. This spread-out responsibility creates a giant accountability black hole. People hurt by AI blunders are left spinning in a bureaucratic maze, struggling to get any real justice, while public officials can easily point the finger at the machine as a convenient punching bag to dodge their political hot potato.

3.4. Privacy breaches and data security challenges

The efficacy of AI in public decision-making is inextricably linked to the continuous ingestion of massive, highly granular datasets. This insatiable demand for data inherently generates severe privacy and data security challenges. To optimize public services, governments increasingly collect comprehensive digital footprints of their citizens, encompassing financial records, biometrics, geolocation data, health histories, and social network interactions. While this data aggregation enables hyper-personalized governance, it also creates unprecedented vulnerabilities. The centralization of such sensitive information turns public databases into high-value targets for cyberattacks, foreign espionage, and malicious data breaches. Furthermore, even in the absence of external breaches, the state’s capacity to cross-reference databases using AI risks sliding into a form of pervasive societal surveillance, eroding the fundamental right to privacy. The boundaries between necessary data collection for public utility and unwarranted state intrusion become dangerously blurred, raising profound ethical questions regarding citizen consent and digital sovereignty.

The effectiveness of artificial intelligence in shaping public policy stands or falls with its ability to continuously consume vast amounts of highly detailed information. This bottomless appetite for data naturally spawns significant privacy and cybersecurity dilemmas. To fine-tune public services, governments

are amassing increasingly complete digital dossiers on their citizens, capturing everything from financial transactions to biometric markers, location tracking, medical records, and online social behavior. While this information hoisting enables hyper-targeted governance, it simultaneously opens the floodgates to extraordinary security risks. Concentrating such sensitive information in one place transforms public databases into prime targets for cybercriminals, foreign intelligence operations, and devastating data leaks. Moreover, even without external attacks, the government's power to connect the dots between different information stores using AI technology threatens to morph into pervasive monitoring of society, chipping away at the basic human right to privacy. The line between gathering data for the greater good and overreaching state surveillance becomes distressingly thin, sparking deep ethical concerns about individual consent and digital autonomy.

3.5. Loss of humanized decision-making and excessive instrumental rationality

At the heart of the ethical quandaries surrounding artificial intelligence in governance lies arguably its most philosophical consequence: the erosion of human-centered judgment and the unchecked reign of hyper-rational thinking. Public administration is not merely a matter of streamlined operations—it is an inherently moral enterprise demanding empathy, fairness, compassion, and the wise application of human insight when navigating intricate, unprecedented situations. The emerging phenomenon academics call “Alcratism”—where bureaucratic bodies eagerly surrender their discretionary authority to algorithms in the name of efficiency—risks turning the public sector into a soulless machine^[5]. These algorithmic systems function on inflexible mathematical frameworks, maximizing measurable outcomes while remaining utterly oblivious to human anguish, ethical subtleties, or the fundamental worth of each person. When human officials become mere cogs in an algorithmic wheel, the government metamorphoses into an impersonal, unfeeling apparatus. Such diminished public character effectively reduces citizens from rights-holding persons to mere variables in a computational equation, creating a profound disconnect between the populace and the very institutions meant to represent and serve them.

4. Ethical governance strategies for artificial intelligence in public decision-making

4.1. Establishing pre-assessment mechanisms and value embedding

To head off potential ethical landmines from AI, it is crucial for governments to shift from being mere damage-control firefighters to being preemptive policymakers. They need to enforce a rulebook by demanding thorough ethical evaluations of AI algorithms before they are rolled out to the public. Just as people do with environmental impact studies, these ethical audits should dissect proposals for any hidden biases, breaches of privacy, and harm to underrepresented communities. Moreover, ethical governance means weaving democratic values into the very fabric of AI's DNA—what people call “values by design.” Addressing the unavoidable value tugs-of-war in the design of public AI systems necessitates a robust justice system that prioritizes inclusivity, not just tech industry whims. By numerically codifying fairness, equality, and anti-discrimination, public entities can build AI tools that are inherently compliant with the ethical tenets of public service^[6].

4.2. Establishing norms for algorithmic transparency and process traceability

Navigating the labyrinthine nature of algorithms calls for the implementation of stringent transparency protocols and the tracking of the decision-making process within the realms of public governance. It is crucial for governments to make it a requirement to employ Explainable AI (XAI) methodologies, particularly in sectors where the outcomes are pivotal to public rights and well-being. XAI affords the ability

for human auditors to comprehend the rationale behind the machine's logic, as well as ensuring the public can decipher these processes. Moreover, these transparency standards must stipulate that public bodies keep detailed and unchangeable records of their algorithmic choices. This encompasses the need for mandatory disclosures on the algorithm's intended purpose, the origin of its training data, the factors it evaluates, and how often it is updated. By mandating such transparency measures, governments can combat the opacity inherent in algorithmic decisions, thereby reinstating the bedrock of democracy that demands state actions to be accountable, visible, and open to public examination.

4.3. Clarifying the boundaries of administrative power and responsibility in human-machine collaboration

To keep the wolves from the door and stop the dangerous slide toward unregulated "AIcracy", the legal system needs to draw a bright line on where administrative authority ends in human-AI partnerships^[5]. The rule of thumb should be requiring a firm "Human-in-the-Loop" or "Human-on-the-Loop" approach, making it crystal clear that when it comes to decisions affecting fundamental rights or public assets, algorithms can only offer guidance—not have the final say. The bottom line is that human officials must bear the legal and political buck for every call, putting the kibosh on any attempts to hide behind algorithms when things go south. As AI shakes up the bureaucratic landscape and redefines civil servants' roles, officials need to upskill the government workforce to size up algorithmic suggestions with a critical eye, exercise moral judgment, and have the final say when machine recommendations do not pass the sniff test of justice, fairness, or plain old common sense.

4.4. Strengthening institutional control over data security and privacy protection

Protecting people's digital rights calls for strict, law-bound rules on keeping data safe and private. Governments should stick to the idea of only gathering what is essential, using algorithms to gather, manage, and hold only the least amount of personal information necessary to serve a valid purpose. The General Data Protection Regulation (GDPR) type rules should be enforced strictly in the public sector, focusing on getting consent, the right to be forgotten, and putting a stop to data sharing between agencies without clear reasons. Plus, public offices should dive into top-notch privacy-boosting tech, like federated learning, differential privacy, and homomorphic encryption. These tools let AI systems learn from scattered data without bearing individuals' private details, cutting down on the risk of big data leaks and keeping an all-seeing eye government in check.

4.5. Constructing an error-correction and feedback system formed by administrative oversight and multi-party participation

Nada is perfect, so any strong ethical framework in governance needs to have sturdy, user-friendly methods for fixing mistakes and getting feedback. If someone gets the short end of the stick due to algorithm choices, they need straightforward routes to challenge these, ask for a second look by a real person, and pursue compensation. But do not just stop there. The oversight of public AI needs to move to a team approach, bringing in players like community groups, ethics experts from academia, third-party algorithm reviewers, and the very people impacted. Officials should set up independent panels that have the muscle to inspect government algorithms and stop any unfair systems from being rolled out. By creating a circle of constant feedback, public eye, and quick error fixes, authorities can keep AI flexible and responsive to the community's needs, all while keeping it on a tight leash with democratic oversight.

5. Conclusion

The dawn of artificial intelligence in public policy marks a turning point in how governments operate worldwide. Leveraging predictive analytics, streamlined automation, and cutting-edge resource allocation presents a golden opportunity to supercharge government performance, making agencies more agile and analytically sharp. Yet this technological revolution comes with a hefty price tag—serious ethical quandaries lurk beneath the surface. From prejudiced algorithms and inscrutable AI logic to murky legal responsibilities, privacy concerns, and an overemphasis on cold calculation, these dangers could chip away at the very foundation of democratic governance and its people-centered values.

That is why the success of modern government hinges not just on embracing new tech, but on implementing rock-solid ethical guardrails. Through thorough pre-implementation reviews, demanding algorithmic openness, maintaining human oversight, safeguarding personal data, and ensuring diverse stakeholder participation, officials can get ahead of these systemic challenges. At the end of the day, AI should be viewed not as a replacement for human wisdom but as a force multiplier that enhances decision-making abilities. The aim of incorporating these systems is not to create a perfect, machine-run bureaucracy, but to harness innovation to build a government that's fairer, more open, and truly dedicated to serving the common good.

Disclosure statement

The author declares no conflict of interest.

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