European Union fosters ethical AI in the Public Administration

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Abstract. This article addresses Artificial Intelligence (AI) in Public Administration, framing ethical aspects of the use of these technologies by public entities. The public sector, due to size, breadth of areas, and number of public entities it aggregates, is seen as an area of opportunities, for the present and the future, some of which still unknown. The European Union has been a real driver of the implementation and use of AI in Public Administration, disclosing that in numerous documents, highlighting both the role of Public Administration and the relevance of ethical aspects in the development and use of AI in the public sector. Notwithstanding, the aforementioned documents signal public administrations in general have not yet achieved considerable improvements on the use of AI technologies. Because of opaque algorithms, AI lacks proper explanations of its decisions, so that the duty to justify its acts and the avoidance of discretionary power are not trampled on. Public Administration's importance is paramount, for the amount of data it holds, and it contributes to system design with a different perspective than that of the private sector, privileging collective good over profit. Due to its overall purchasing power, it can be a vehicle for the dissemination of ethical AI in the private sector, through public procurement documents' specifications. This article aims to contribute to interest in ethical AI research in Public Administration, an area whose studies have been scarce.

Keywords: Ethical AI, Public Administration, European Union.

1   Introduction

AI is considered an important tool in the development of administrative procedures in the Public Administration, highlighting the efficiency in the process of formulating public policies, as well as in the provision of services to the administered, providing greater effectiveness plus higher levels of satisfaction and trust in the public service. (Misuraca, Noordt 2020; Mehr 2017; Council of Europe 2021; Olsen et al. 2019). Opportunities for the present and the future abound, some not even foreseen, allowing for

better analysis and monitoring of processes in real time, and for obtaining faster responses.

Research on AI in Public Administration is hampered by the limited production of articles in the field. Most of the literature refers to its use in the private sector. According to (Sousa et al. 2019) only a small number of articles published between 2000 and 2019 addressed the issue in the public sector. Specifically concerning the framing of the ethics of AI in Public Administration, the literature found is much smaller, with very little production. (Kolkman 2020) also mentions that empirical studies on the use of algorithms in public policy formulation processes have been rare, thus limiting too the academic production in this area.

The Public Administration can also add value to the design of AI systems in sectors which the private sector considers unattractive since they are not foremostly aimed at profit, namely in the pursuit of the assignations of public entities in the areas of Education, Health, and Safety. Amongst others, we can mention the modelling and prediction of road accidents in the district of Setúbal, Portugal. Other examples can be mentioned, such as the AI systems in Portugal in the health field (Infante, Manuel 2022), or the support of AI in the telephone service system of "Serviço de Saúde 24" (24-hour Public Health Service), Portugal, with the goal of reducing the time delay of service, both of which developed by the University of Évora (University of Évora 2020).

At the European Union (EU) level, Member States have shown a greater concern with AI regulatory issues, including ethical issues, but neglecting the importance that the acquisition of AI systems by community Public Administrations can represent to the increased development and use of these technologies (Misuraca, Noordt 2020).

Regarding the implementation and use of AI systems in Public Administration, some aspects of these technologies are still of concern. Among those various aspects, in this article we will specifically refer to the issues of discrimination and explicability, highlighting the difficulties that arise in public sectors, and presenting proposals to overcome them.

2 The EU driving force on ethical AI in Public Administration

The European Union has released numerous initiatives and documents, which thus are not possible to enumerate in full in this article.

The European Commission addressed the Digital Single Market Strategy for Europe (Commission 2015) where ethical aspects were not yet considered, though its mid-term review already included AI and Robotics (Commission 2017). Subsequently, as we shall see in detail below, it has maintained a favourable position in the defence of humanism in AI, seeking to frame ethical aspects within the awarding of fundamental rights. The European Parliament issued, on 16 February 2017, a Resolution with recommendations to the European Commission regarding civil law provisions on robotics, assuming the following postulates (European Parliament 2017):

(i)   Impossibility of attribution, to a concrete human being, of autonomous decisions taken by a robot or AI system: thus, the present legal principles and

  rules in force in the European Union are inadequate for the resolution of disputes over such decisions.

(ii) The law in force only assigns liability, for damages caused by an AI system or robot, to a specific natural person if it is a manufacturing defect (manufacturer's responsibility) and in cases of misuse (liability of the user).

(iii) The rules referring to non-contractual liability are inadequate in terms of proving the causal link between these decision errors and the damage caused.

(iv) Council Directive 85/374 of 25 July 1985 (liability resulting from defective products) is insufficient.

(v) There is an unpredictability of future behaviours resulting from machine learning over time by robots and AI systems.

The report (European Parliament 2017) considered necessary:

(i) Creation of the European Agency in the areas of Robotics and Artificial Intelligence.
(ii) Creation of an Intelligent Robots Registry.
(iii) Design of a Robotics Charter.
(iv) Code of Ethical Conduct for Robotics Engineers.
(v) Code for Research Ethics Committees.
(vi) License for Creators.
(vii) License for Users.

In the proposal to create the European Agency in the areas of Robotics and Artificial Intelligence, the concerns with ethics in the development and implementation of AI in public services are evident.

On 10 April 2018, twenty-four Member States made a commitment to seek a common approach to boost investments in AI development projects, signing the Declaration of Cooperation in AI, and signing the commitment to establish a Coordinated Plan for AI. The Coordinated Plan for Artificial Intelligence was released on 7 December 2018 (European Commission 2018 b), with an expected duration till 2027, and review by 21 April 2021. It provides for 70 actions to be carried out with the aim of promoting AI, as well as supporting research and innovation, with emphasis on the areas of health, transport, general services, and finance, emphasis on the ability of AI to transform public services (European Commission 2018 b).

The European AI Strategy of 25 April 2018 paved the way for the world's first international AI strategy. The document outlines a coordinated approach to maximizing the benefits and addressing the challenges brought by AI. The Communication on AI was formalized nine months later with the presentation of a coordinated plan for AI (European Commission 2018 b). The plan details seven objectives, including: funding start-ups; €1.5 billion investment in several research centres; support for masters and doctorates in AI; and creation of common European data spaces. It also aims to:

(i)   Reinforce, within the industrial and technological domains, the implementation of AI, whether in the public or private sectors, increasing their respective investments. And not to neglect public policies within the scope of wider data availability.

(ii)   Improve the preparation of inclusive measures capable of improving digital skills and stimulating lifelong learning.

(iii)   Prepare a framework in terms of ethics and law in accordance with the European principles and values enshrined in the Charter of Fundamental Rights of the European Union, so as to create confidence in the design and development of AI systems and their use (European Commission 2018 b).

Following this, the Commission appointed an independent group of high-level experts to develop ethical guidelines for AI. Ethical concerns are already evident in the European Strategy for AI, namely in its connection with legal issues such as liability and in the taking advantage of the work of the European Group on Ethics in Science and New Technologies (an independent entity that advises the President of the European Commission, created in 1991).

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In 2019, the High-Level Expert Group on Artificial Intelligence (AI HLEG), appointed by the European Commission (High-Level Expert Group on Artificial Intelligence 2019), released the Ethical Guidelines for a Trusted AI, which is the first institutional document at planetary scale, emphasizing the importance of ethics in the development and implementation of AI. In this document, Public Administration was also considered a beneficiary of improvements that AI systems present to the efficiency of public services, in their provision of public goods and services to society.

In the diagnosis made by the "White Paper on AI - A European approach towards excellence and trust," published 19 February 2020 (European Commission 2020 a), the use of AI in the public sector, the innovation capabilities and greater efficiency of services are also highlighted, with express reference to hospitals, transport services, public utility in general, financial supervisors, and other areas of public interest (European Commission 2020 a).

Data were also the subject of a European strategy, released February 2020 (European Commission 2020 b). About this document (Carvalho, Emre 2021) highlight the emphasis given to the importance of data for economy, society, and the competitiveness of the European Union, given the increase in data production because of ongoing technology. They highlight too the regulation of the free flow of non-personal data and the goal of creating a single European data space, open to data from around the world

The Proposal for a Regulation of the European Parliament and of the Council of 21 April 2021, which establishes harmonized rules on Artificial Intelligence, known as the

Artificial Intelligence Act (AIA) (European Commission 2021), constitutes the first institutional proposal that aims to regulate AI, openly challenging those who believe that the law should not regulate emerging technology, a very common stance in Silicon Valley (MacCarthy, Propp 2021). This Proposal for a Community Regulation highlights a change in the Commission's narrative: whereas in the White Paper one could identify the reversal of EU priorities, previously assuming a global competition neglecting fundamental rights, the Proposal for a Regulation advocates to ban AI practices which, via high-risk AI systems, may violate the European Union values and fundamental rights enshrined in the Charter of Fundamental Rights of the European Union, while proposing softer provisions for lower- and medium-risk AI systems.

This proposed regulation foresees the future rules to regulate AI to be supervised and monitored by national authorities. This may be an opportunity for member states not yet having created an entity with competences in the field of ethics in AI to create a "National Ethics Commission for AI," as proposed in (Pereira, Lopes 2020), to oversee the regulatory structures foreseen by Brussels with a higher-up competence in the field of ethics.

3   National Strategies for the Implementation of AI

The European Union has encouraged the design of National Strategies in the field of AI (European Commission 2020 a, 2020 b, 2021). These documents denote concerns about the ethical aspects of AI, and they express the intention to develop an ethical framework to guide the implementation of AI in the public sector which will foster trust among people in public functions and citizens, while also guaranteeing quality and compliance with the ethical values of AI endorsed by the Public Administration. Some countries have reported difficulties in exchanging data between public entities and the private sector, and therefore intend to create "regulatory frameworks" to facilitate this exchange. A significant number of reforms will be sector-specific, with emphasis on Health. Some documents ascribe priority to the creation of general laws for AI that, among other things, aim to clarify the issues of responsibility and transparency related to the use of AI in public services (Misuraca, Noordt 2020).

As of June 2021, 20 Member States and Norway had adopted national AI strategies, and it is estimated that a further 7 Member States could publish their strategies in coming months, according to (Roy et al. 2021). In some national strategies it has been considered that the public sector can lead in promoting the development and use of AI, plus enhancing the potential of AI at the decision-making level (for example, in the areas of public safety, public health or public policy evaluation). There have been also frequent mentions of access to more and better data as a key element to improve the quality of public services, different approaches to data governance, and to open data regimes and transversal exchange of data, including data of the private sector. Moreover, concerns about reliability, accountability, transparency, and human oversight (Misuraca, Noordt 2020; Roy et al. 2021).

These are some examples of the intense work of the European Union in the field of AI, considering not just the ethical aspects of the implementation of these technologies, but also encouraging Member States to adopt in their Public Administrations a human-centred AI, one with ethical concerns. Thus, one can consider that the European Union has been the driving force of an ethical AI in their respective Public Administrations, contributing furthermore to its dissemination in private activity, given the repercussions that public options entail on public outside contracts. However, the practical results still do not show clear benefits already resulting from the use of AI in European Public Administrations.

Math-powered apps have underpinned the data economy. They have been based on choices made by human beings. Many of these models have encoded human prejudices, misunderstandings and injustices in the software systems that manage human life, labelled "Weapons of Math Destruction" by (O'Neil 2016). These systems tend to punish the poor and oppressed while enriching the rich, in part because they are designed for large numbers of people. The propensity for generalization stemming from the low cost of their production (O'Neil 2016).

4 Discrimination

Prejudices, injustices, discrimination and racism, or issues related to gender equality, are part of any human activity. Decision-making is not free from errors and biases. However, the same bias in the realm of AI, especially in Public Administration, can have a much greater effect.

The origin of discrimination and inequality evidenced in AI systems can be in the programming itself, in the data used in machine learning, or also in the under-representation or over-representation of some sets. The judicious use of data in AI training can contribute to maintaining and even accentuating discrimination and inequalities already present in society (Leslie 2019). Awareness of prejudice and discrimination must be present in service providers in any area, ensuring the representativeness and diversity of the population according to the Committee on Standards in Public Life (Committee 2020; Leslie 2019).

AI itself, in its conceptions of virtual assistants with female names and personalities and associated with sexist / stereotypical "female reactions", as well as some physical robots with male forms (e.g., rescue robots) reflects the sexism and stereotypes present in society. (Leslie 2019). On the other hand, investigations in the field of AI by women are substantially lower compared to those carried out by men (Berryhill et al. 2019).

Re-offending risk assessment systems in the US, for example the Level of Service Inventory–Revised (LSI–R) or COMPAS, are considered racist algorithms. Prisoners eligible for parole are subject to the evaluation of these systems, which showed results that penalize black individuals (Watkins 2011; O'Neil 2016). It was understood that these systems would have better accuracy for the danger of recidivism. than the most random assumption of a judge, as mentioned (Andrews, Bonta 2018), also ensuring

impartiality in the judicial decision, and the economy of financial resources in the opinion of (O'Neil 2016). The capacity of these systems the nature of the human being, with its unpredictability, irrationality, and impulsivity, is immediately questioned. Refers (O'Neil 2016) that the complexity of these models of recidivism makes them intelligible only to a small elite, preventing the presentation of appeals from These systems highlight the disadvantage of black individuals in the American judicial system, due to their higher prison sentences (Rehavi, Starr 2012); less bail sessions (Arnold, Dobbie, Yang 2017); higher probability of being sentenced to death; and execution of that sentence while already on death row (Benforado 2015).

Also looking for an outside view of public entities, the report (Microsoft 2020) studied the implementation of AI in the areas of Public Administration, Health, and Transport in twelve countries, with the participation of more than 200 public entities. In this study, it was highlighted that the implementation and use of AI in public services and bodies has occurred with little speed and with few results. New partnerships are needed to overcome the public sector's difficulty in developing innovative solutions. In terms of ethics, the need to mitigate biases, transparency of decisions and the involvement of civil society, especially in the health sector, as well as data privacy, was identified. The relationship between the machine and the human is considered key to achieving trust in decisions, defending the Human in the Loop (HITL), ensuring the elaboration by employees of the final decisions, and promoting the quality of the suggestions generated by the AI (Microsoft 2020). They go in the same direction (Olsen et al. 2019).

5   Framing the ethics of the use of AI in the Public Sector

"Machine Ethics" (Anderson, Anderson 2006) refers to the study and practice of the interaction of machines – robots or software – with humans and other machines. Its goal is to design machines that comply with ethical principles that guide their decisions, considering possible repercussions of the actions they take, with particular attention to autonomous machines, but also to those that are controlled by individuals. It is necessary to give them the ability to refuse unethical concrete actions. That is why it is important that programmers design machines that will never harm a human, that is, that they be prepared to refuse to perform malevolent actions (Pereira, Lopes 2020).

Given the increasing autonomy of machines, it is important to ensure that they can live with us on our terms and with our rules. We are facing a new moral paradigm that understands that morality to be also computational, that is, an ability to program morality is required. Therefore, humans will have to better understand their own human ethics to program morals into machines (Pereira, Lopes 2020).

According to (Silva 2021) the ethics of AI in the public sector presents three challenges. The first is related to the question of responsibility in relation to automated administrative decisions, safeguarding the effects on those administered; the second involves the question of studying and analysing the ethical principles of AI systems; and the third requires a reflection on the interaction between man and AI, with particular emphasis on replacing human tasks with AI, for example in decision-making in Public Administration by AI systems that replace people in public functions.

Trust in the implementation and use of AI, both in Public Administration and the private sector, needs to incorporate non-racist and non-sexist algorithms in their systems, to avoid discriminatory solutions. Care with the quality of the data must be manifested right from the design phase, from conception to implementation of AI systems.

Regarding inequality, situations should be attended to about lack of resources and/or technical skills by digitally excluded citizens in the use of technologies that allow a connection with public services. In their use of digital resources, Public Administration cannot discriminate against citizens with digital illiteracy (Otero 2013).

6   Explainability

The effective use of AI systems in Public Administration might not occur fast, due to aspects that need further study to dispel doubts and concerns. Among others, the issue of loss of human control over systems where responsibility for decisions taken deserve a reflection. In Public Administration, discretionary power grants a certain freedom of content of decisions, considering convenience and opportunity, without losing the linkage to other principles that shape administrative activity. Whenever an agent uses this faculty, he is obliged to provide reasons for the decision. Use of AI systems containing non-transparent "black boxes," there is fear that this justification will be lost due to impossibility of justifying some AI decisions. Fear is not dispelled in procedures where a human acts in conjunction with the AI system, even when the human is overseeing, since deference to machine creates a vague sense of responsibility for the decider. The second fear is the loss of human dignity, with the reduction of humans to mere "cogs in the machine." Taking away the ability to understand and communicate freely with another human being about decisions can easily lead to alienation and the loss of human dignity (Olsen et al. 2019; Cobbe 2019).

A mixed system is proposed by (Olsen et al. 2019) in having a machine learning algorithm in Public Administration used to produce draft decisions, allowing thereby to increase efficiency of public services without reducing quality, on the assumption that there is a prior machine learning entrainment with a considerable number of reasoned decisions. These authors also refer those previous decisions should also be used in trainees' learning.

The biggest explainability challenge for (Cobbe 2019; Regan et al. 2019) is perhaps that of automated decision making by systems involving opaque algorithmic processes of machine learning. Administrative decisions coming from automated decision systems, due to the "black box" effect of opacity of these systems, prevents understanding the reasoning behind the decision (Cobbe 2019), and such decisions can be the object of judicial challenge. It is therefore important to adjust such systems, when their opacity is intrinsic, to the need for explanation of lawful acts in the Public Administration, to allow a use of its services that is not threatened by reasons imperceptible to the recipients, and consequent judicial litigation.

The importance of explainability can be illustrated with an example that occurred in the USA, in Washington D.C. 2009, with the use of an algorithm for the evaluation of teachers, which had, among others, the goal of combating school failure. In the analysis

of the variants that condition the academic success of students, the algorithm proved to complicate the elucidation its results, in not providing their explanation. This algorithm comprises several conditions for the students' academic performance, from the outset the socio-economic conditions and the difficulties of each one, making it complex and with an impossible demonstration of calculations. In the results it presented, a negative rating was assigned to a teacher (named Sarah Wysocki) having an excellent performance according to the opinion of the school board and the parents themselves. As a result of this evaluation process, this teacher was fired along with other 205 colleagues who also obtained negative ratings. The interpellations of these teachers before the school's management were not granted, due to the impossibility of justifying the classifications attributed by the evaluation algorithm (O'Neil 2016).

7   Conclusions

The contribution of ethics to a fair, equitable AI that promotes balanced progress and with humanistic concerns is highlighted in several European Union documents, with emphasis on the Ethical Guidelines for a Trustworthy AI, the result of the work of an Independent Group of Experts High-Level Conference on Artificial Intelligence.

However, the efforts of the European Union have not been able to achieve results worthy of mention in the Public Administrations of Member States. The focus of these public policies has been predominantly on regulatory aspects, neglecting to some extent the acquisitions by tender of AI systems, in which Public Administrations may play the role of main buyer.

Also worthy of note is the proposal for a Regulation on the harmonization of rules in the field of AI, not only for its pioneering spirit but also for the opportunity for Member States to create regulatory structures with competence in the field of ethics, for those of them who do not yet have an entity of this type.

The European Union's production of documents, guidelines, guidelines, legislation, and other instruments has proved to be intense. However, studies indicate that Public Administrations have little benefited their services with the implementation and use of AI systems. They seem to justify more concrete actions can be had with the existence a direct stimulus to the introduction of AI in Public Administration.

AI still has characteristics that require a multidisciplinary study for its implementation in Public Administration. The possibility of discriminatory and/or inexplicable decisions towards recipients are aspects that deserve further study by all stakeholders.

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