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AI-DRIVEN PUBLIC SERVICES AND DECISION MAKING IN PUBLIC IDEAS

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ABSTRACT

Public services such as hospitals, schools and government offices depend on decisions every day. People expect these decisions to be quick, fair and reliable. Artificial intelligence (AI) can help by studying public data and turning it into useful evidence. This paper looks at how AI can support decision-making in healthcare, education and general public administration. In healthcare, AI can help find diseases early and plan hospital resources. In education, it can support personalised learning and spot students who may be struggling. The paper also explains a simple way to build such a system using Python. The pandas and NumPy libraries prepare the data, TensorFlow is used for classification and prediction, and natural language processing is used to understand feedback from citizens. The study is based on secondary sources and does not claim new test results. It finds that AI can save time and make decisions more consistent, as long as it is used as a helper and not as a replacement for people. Good data, regular fairness checks, clear explanations and human oversight are needed to keep decisions fair and trustworthy.

Keywords: Artificial Intelligence, Decision Making, Public Services, Machine Learning, Fairness, Natural Language Processing

1. INTRODUCTION

Every public service runs on decisions. A hospital must decide which patient to check first. A school must decide which student needs extra help. A government office must decide which complaint to handle urgently. When these decisions are slow or unfair, people suffer delays and lose trust in the system.

Artificial Intelligence (AI) can help with this problem. A machine learning model learns from past records and then makes a good guess about what is likely to happen next. Natural language

processing (NLP) lets a computer read written comments and sort them, which would take humans a very long time (Russell & Norvig, 2021). In healthcare, this can mean finding disease earlier and planning beds and staff better. In education, it can mean giving each student the right support. In administration, it can mean handling applications and complaints faster.

However, a fast decision is not always a good decision. If an AI system learns from poor or one-sided data, it can repeat unfair patterns very quickly. So this paper asks two questions: how can AI help public decision-making, and what makes its decisions fair and reliable enough to trust?

2. REVIEW OF LITERATURE

Wirtz et al. studied how AI is used in the public sector, such as giving information, supporting decisions and automating routine work. They found that the biggest problems were not only technical. Poor data, legal limits, ethical worries and weak rules were just as important.

In medicine, Rajkomar explained how machine learning can learn from large amounts of patient data to help doctors diagnose and predict outcomes. Topol argued that the best results come when doctors and AI work together. Obermeyer gave an important warning. A popular health algorithm used past medical spending to guess how sick a patient was, and because of this it underestimated the needs of Black patients. This shows that what we ask the model to predict can itself cause unfairness.

In education, Zawacki-Richter reviewed many studies and found that AI was mostly used for predicting student performance, marking, adaptive learning and tutoring. They also noticed that few studies discussed the ethical risks. Baker and Hawn (2022) showed that educational predictions can be biased and said models should be tested on different groups of students.

Other researchers looked at responsible AI in general. Mehrabi listed the many ways bias can enter a machine learning system. Doshi-Velez said that people should be able to understand why a model gave a result. Jobin compared many AI ethics guidelines and found that most agree on transparency, fairness, responsibility and privacy. In India, NITI Aayog (2021) has published principles for responsible AI, and the Digital Personal Data Protection Act, 2023 controls how personal data can be used.

3. RESEARCH GAP

Most studies look at only one sector, or talk about AI ethics in a general way. Few of them explain how the steps of building a decision system, such as preparing data, building models

and reading citizen feedback, affect whether the final decision is fair and reliable. This paper tries to fill that gap by giving one simple view that works for healthcare, education and administration.

4. OBJECTIVES OF THE STUDY

- To understand how AI can make decisions in public services faster, fairer and more reliable.
- To study how AI helps decision-making in healthcare, education and public administration.
- To explain a simple decision system built with Python, pandas, NumPy, TensorFlow and NLP.
- To identify the safeguards that keep AI-supported decisions fair, reliable and accountable.

5. RESEARCH METHODOLOGY

Research Design: Descriptive and conceptual research.

Nature of Data: Secondary data.

Sources of Data: Journal articles, conference papers, books, government and institutional reports

The collected material was read and grouped by theme. Uses of AI were sorted by sector, and then the steps of building a decision system were described in simple terms to see where fairness and reliability can be improved. No new data was collected and no accuracy figures are claimed. The system in Section 7.4 is a reference design, and any real use would need testing on local data first.

6. CONCEPTUAL BACKGROUND

Decision support: A system that gives evidence or predictions to a person, who still makes the final decision.

Machine learning and classification: Machine learning means a computer learns patterns from past data. Classification means putting a case into a group, such as "high risk" or "low risk".

Natural language processing: Methods that let a computer understand human language, for example sorting complaints by topic or checking whether feedback is positive or negative.

Fair and reliable decision: A decision is reliable when it is consistent and based on correct data. It is fair when similar cases are treated the same way and no group is treated worse.

7. ANALYSIS AND DISCUSSION

7.1 AI in Healthcare

Hospitals create patient records, test results and resource data every day. A prediction model can use this data to warn doctors about patients who may be developing a disease, so that screening starts earlier. It can also estimate how many patients will arrive, so beds, staff and equipment are ready . The main benefit is saving time, because a model can scan thousands of records in seconds. The main risk is the one shown by Obermeyer , if the model predicts the wrong thing, its results will mislead for some patients.

7.2 AI in Education

Schools and colleges keep attendance, marks and activity records. AI can use this data to give personalised learning and to spot students who may fall behind before they fail Institutions can also use it for planning, such as timetables and resources. Since a label like "at risk" can change how a student is treated, models should be checked to see whether they make more mistakes for some groups of students

7.3 AI in General Public Administration

Government offices handle many applications, complaints and service requests. NLP can read citizen feedback, group it by topic, find urgent cases and send it to the right department. This shows managers which problems keep coming back. Classification models can decide which cases to check first, while the final approval or rejection stays with an official. Table 1 sums up these uses.

Support of AI in decision making of public services

Domain	Decision supported	Typical data	Typical technique
Healthcare	Early screening; bed and staff planning	Patient records, test results, admission history	Classification and prediction models
Education	Personal support; spotting at-risk students	Attendance, marks, activity logs	Classification, risk scoring
Public administration	Sorting and prioritising applications and complaints	Application records, citizen feedback text	Text classification, NLP

7.4 A Simple Decision System

The approach in this paper works in steps,Python is a good choice because it has tools for every step. The pandas library helps clean and organise data tables and NumPy helps with fast number

calculations .Real records often have missing values, repeated entries and mixed formats, so this first step decides how good all the later steps can be.

For classification and prediction, TensorFlow is a tool for building and training neural network models . For citizen feedback, NLP methods, including language models like the one by Devlin , turn written comments into topics and positive or negative scores that can be counted. The results from both parts are combined into a recommendation. A human reviewer sees this recommendation together with the main reasons behind it.

Steps of the decision system and uses

Step	Tools	Purpose	usage
1. Data preparation	Python, pandas, NumPy	Clean and combine records	Check missing data and whether all groups are represented
2. Model building	TensorFlow	Classify cases and predict outcomes	Choose what to predict carefully; test on new data
3. Feedback analysis	NLP methods	Turn comments into topics and sentiment	Check a sample by hand for errors
4. Decision output	Reports, dashboards	Show a recommendation with reasons	Explain key factors; allow human review
5. Monitoring	Audit scripts	Track accuracy and fairness over time	Retrain and re-check when data changes

7.5 Making Decisions Fair and Reliable

Speed alone does not make a decision trustworthy. The research points to four needs. First, data must be correct and must represent the people being served, because bias can enter at any stage .

Second, model results should be checked for each group and not only as an overall average, since a model can look accurate overall and still fail a smaller group.

Third, results should be explained clearly so officials and citizens understand why a recommendation was made .

Fourth, a named person or office must stay responsible, and people should be able to ask for a human review. These points match international guidance and the principles for India by NITI Aayog

7.6 Privacy and Data Protection

Public-service AI uses sensitive personal records, so protecting data is part of making good decisions. Institutions should collect only the data they really need, limit who can see it, and follow the Digital Personal Data Protection Act, 2023. Where possible, personal details should

be removed before analysis, and citizens should be told when automated tools help make a decision about them.

8. MAJOR FINDINGS

- AI can save time and make decisions more consistent in healthcare, education and administration by turning existing records into evidence.
- Good data preparation strongly affects the quality of the final decision.
- Choosing the wrong thing to predict can cause unfairness, even if the technology works well.
- NLP lets organisations read large amounts of citizen feedback and use it to improve services.
- Clear explanations and human review are needed to build public trust.
- Fairness and reliability need regular monitoring and not just one check.

9. SUGGESTIONS / RECOMMENDATIONS

- Use AI as a helper, and let responsible officials make final decisions in sensitive cases.
- Spend time on cleaning data and using standard formats before building models.
- Check models before launch and at regular times afterwards.
- Explain AI-assisted decisions in plain language and give people a way to appeal.
- Train public employees and teachers to understand and question AI results.

10. CONCLUSION

AI gives public institutions a practical way to make decisions faster and with better evidence, from finding diseases early and supporting students to understanding citizen feedback. A system built with Python, pandas, NumPy, TensorFlow and NLP can do these tasks, but technology alone does not make decisions fair. Trustworthy public AI needs good data, careful choice of what to predict, regular bias checks, clear explanations and human oversight. With these safeguards, AI can be a trusted aid to public decision-making and not a source of new unfairness. Future studies can test this system on real data and measure how it improves services.