AI in the Public Sector

- **Course:** English Seminar in Information Systems
- **Students:** Bayat Abay, Masaei Alamo, Yael Yeni
- **Instructor:** Mr. Ronald Setty
- **Date:** June 2025

Research Overview

Article Title: Opportunities, Challenges, and Benefits of AI Innovation in Government Services: A Review

Authors: Ruonan Wu, Prasanta Bhattacharya, Charalampos Z. Patrikakis

Journal: Discover Artificial Intelligence (Springer Nature)

Publication Year: 2023

Description of the article: The article reviews the use of AI in government services, focusing on its potential to improve efficiency, decision-making, and service delivery. It also discusses key challenges like ethics, language barriers, delays, and the unclear definition of AI. The authors propose a strategic framework for effective and responsible AI implementation

Link: https://link.springer.com/article/10.1007/s44162-023-00080-4

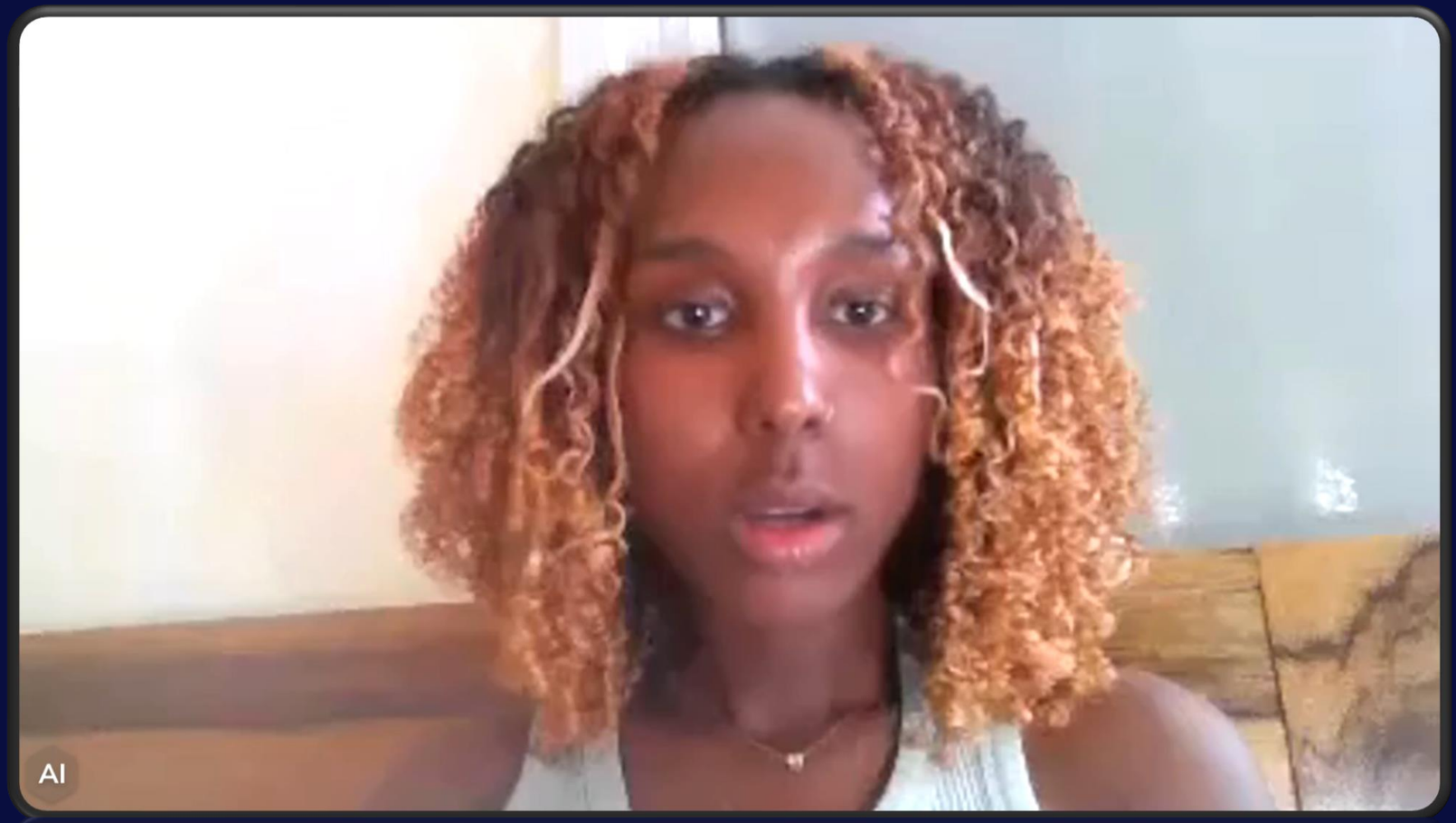
Description for KREA Image

This generative image, created using KREA.ai, visualizes a futuristic city hall powered by artificial intelligence.

It features holographic user interfaces, AI-operated public service desks, and digital citizens interacting with government bots, illustrating the potential integration of AI in modern public sector services.

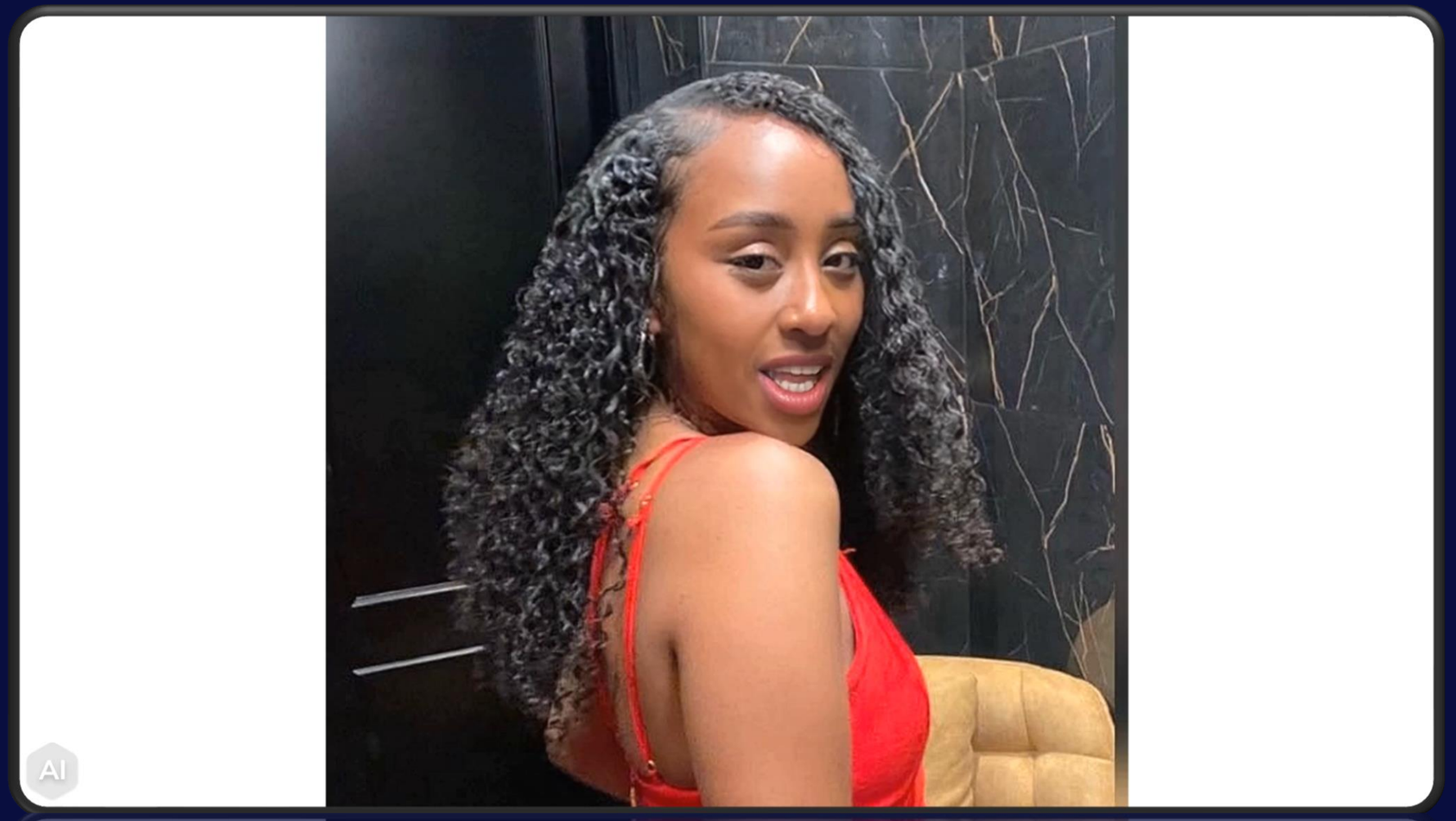
D-ID Introductions

Masaei Alamo



D-ID Introductions

Bayat Abay



D-ID Introductions

Yael Yeni

Background & Definitions

AI Governance

- Frameworks used to guide safe, fair, and effective use of AI in public services.
- Balances benefits with risks like bias, privacy, and accountability.
- Challenges: lack of expertise, public distrust, and changing policies.

AI in the Public Sector

- AI: systems that learn and solve problems without human input.
- Governments use AI to improve services, reduce delays, and increase efficiency.
- AI helps modernize decision-making and public operations.

Background & Definitions

Algorithmic / Automated / Artificial Discretion

- AI can support or replace decisions made by public officials, especially in frontline services.
- As AI becomes part of public administration, it may reshape human judgment.
- This raises concerns about fairness, accountability, and public trust.
- It's important to understand how managers use AI to ensure quality and fairness in services.

Algorithmic Bias and Fairness

- Algorithmic bias: unfair results caused by errors in AI systems.
- Often comes from biased training data or flawed design.
- Examples: misidentifying people of color, unfair health diagnoses.
- Fairness is critical in public services — AI must not reinforce inequality.

Current AI Applications

Predictive Analytics in Public Health and Crisis Response

AI Type: Predictive Machine Learning (Supervised Learning)

Use in Article: The article mentions the use of AI to predict public health trends and manage crisis responses (e.g., during the COVID-19 pandemic), using real-time and historical data.

Benefits:

- Early detection of health risks
- More efficient crisis management
- Data-driven policy making

Training Data Required:

- Epidemiological and mobility data
- Real-time hospital or public health data
- Past crisis event outcomes

AI in Decision-Making for Social Welfare Eligibility

AI Type: Automated Decision-Making System (Rule-based + Machine Learning)

Use in Article: The article describes how public agencies are increasingly using AI systems to automate decisions regarding access to public services, including welfare eligibility.

Benefits:

- Faster and more consistent decisions
- Reduction in bureaucratic workload
- Streamlined service delivery

Training Data Required:

- Past eligibility decisions
- Citizen demographic and financial data
- Legal and policy rules from public programs

Current AI Applications & Additional AI Type

AI in Fraud Detection for Government Services

AI Type: Machine Learning-Based Fraud Detection

Use in Article: AI helps detect fraud in government services, like France's AI vision system for identifying undeclared buildings, boosting revenue. Similar systems flag tax evasion, welfare fraud, and financial anomalies.

Benefits:

- Preventing Revenue Loss – AI efficiently identifies tax fraud and false claims, recovering lost funds.
- Streamlining Government Processes – Automates fraud detection, reducing the need for lengthy manual investigations.
- Strengthening Public Trust – Ensures fair enforcement and transparency, enhancing confidence in government institutions.

Training Data Required:

- Tax records and transaction histories
- Government welfare and benefits claims
- Historical fraud cases and investigation reports

Automated Chatbots and Virtual Assistants for Public Services

AI Type: Natural Language Processing (NLP)-based Conversational AI

Use in Article: The paper refers to the increasing use of chatbots to interact with citizens on government websites, providing information and assisting with services like taxes, licensing, and appointments.

Benefits:

- Lower human resource costs
- 24/7 availability of basic services
- Improved citizen satisfaction and accessibility

Training Data Required:

- Government website FAQs and documentation
- Public service terminology and workflows
- Historical citizen queries

AGENT

Agent Name: Welfare Eligibility Checker

Goal: To assess whether a citizen is eligible for a welfare benefit based on personal and financial information.

Steps to Determine Welfare Eligibility

Podcast

Podcast

Summary: AI in the Public Sector – Real-World Applications

This conversation explores how artificial intelligence is actively being used by governments to improve public services:

- **In the UK**, the National Health Service (NHS) applies AI to detect diseases early, support doctors in clinical decisions, and monitor patients in real time — especially during the COVID-19 pandemic.
- **In France**, AI was used to scan aerial photos and identify thousands of undeclared swimming pools, leading to increased tax revenue and better enforcement of property regulations.
- These examples show how **AI enhances efficiency, accuracy, and resource management in the public sector**, while also raising important questions about ethics, privacy, and responsible use

Ethical Challenge - AI Decision Making

AI in Welfare Decisions

Scenario: An AI system is used by the government to decide who qualifies for welfare benefits. It uses data like income, past claims, and risk scoring to automatically approve or deny applications.

The ethical dilemma: Some truly needy citizens are wrongly denied help because their data doesn't meet the algorithm's standards. Appeals are difficult and slow. This raises serious ethical concerns about fairness, dignity, and accountability.

Key Question: Should life-impacting decisions be made by machines without human judgment?

Ethical Challenge - AI Decision Making

Applying Ethical Perspectives

1 **Utilitarianism:**

- Focuses on efficiency and helping the majority.
- Justifies AI use because it speeds up service for most.
- Problem: Harms a vulnerable minority.

2 **Kantian Ethics:**

- Focuses on human dignity and moral rules.
- Every person must be treated as an end, not a means.
- Problem: Automated rejections ignore personal context and humanity.

3 **Social Contract Theory:**

- Focuses on fairness, transparency, and public trust.
- Citizens deserve to understand and challenge decisions.
- Problem: Opaque AI undermines democratic accountability.

Ethical Challenge - AI Decision Making

Our Position:

- We support the **Social Contract** approach.
- AI can assist, but final decisions must be reviewable by humans.
- Public systems must prioritize transparency, fairness, and dignity.

Ethical Challenge: Bias, Fake, Privacy, Transparency

Example of Failure:

Facial recognition systems used by public agencies have shown bias, especially against people with darker skin tones, like Black women. These systems often misidentify individuals, leading to false accusations or denial of services in law enforcement and public programs.

Consequences of the Failure:

This bias affects marginalized communities the most — people may be wrongly flagged, denied services, or treated unfairly by authorities. These issues harm public trust and deepen social inequality.

How to Address the Problem:

To reduce bias, systems must be trained on diverse data, regularly tested for fairness, and operate transparently. It's also important to include human oversight in decisions to avoid over-relying on algorithms

Real-World Example of Algorithmic Bias – The COMPAS Case

Arguably the most notable example of AI bias is the COMPAS (Correctional Offender Management Profiling for Alternative Sanctions) algorithm used in US court systems to predict the likelihood that a defendant would become a recidivist.

Due to the data that was used, the model that was chosen, and the process of creating the algorithm overall, the model predicted twice as many false positives for recidivism for black offenders (45%) than white offenders (23%).

Link: https://towardsdatascience.com/real-life-examples-of-discriminating-artificial-intelligence-cae395a90070/

Impact on Jobs

Policy Analysts

Transformation Type: Redefining & Enhancing

Explanation: Rather than replacing policy analysts, AI tools enhance their work. Machine learning models can now process large datasets and identify trends faster than humans. This allows policy analysts to focus more on interpreting insights, forecasting societal impacts, and making value-based judgments. The role is being redefined to combine traditional analytical thinking with the ability to work alongside AI outputs and ensure ethical interpretations.

Administrative Clerks

Transformation Type: Eliminating & Redefining

Explanation: AI technologies such as automated data processing, document classification, and digital assistants are reducing the need for traditional clerical roles in government offices. Tasks like form validation, filing, and appointment scheduling are now being handled by intelligent systems. While some clerical positions are being eliminated, others are being redefined to involve supervision of AI tools, data validation, or customer-facing tasks that require human judgment.

Q&A

Thank you so much for listening! Please feel free to ask us any questions — we are happy to answer. And if there are no questions, we wish you a great rest of your day!