Advanced AI Assessment

Trustworthy AI Framework

Introduction

AI and AI-mediated technologies have experienced an extraordinary evolution in the healthcare sector.

Computer programs ⟩ Integration

Source: Gómez-González, E., & Gómez Gutiérrez, E. (2020). Artificial Intelligence in Medicine and Healthcare: applications, availability and societal impact.

Introduction

Benefits
- Personalized medicine and disruptive improvements in diagnosis, drug design, tailored treatment, evaluation and monitoring of diseases (precision medicine), prosthetics and companion robots to care for the disabled and the elderly, and the development of systems for prevention, early detection and outbreak assessment of pandemics and events of public health

Questionable
- Potential use for 'social engineering' and profiling, fully autonomous robotic physicians and surgeons, self-experimentation medicine, reading of brain signals and external control of neural processes, brain implants, human-animal embryos and the quest for artificial life and synthetic life forms

Negative
- Scamming and malicious use of health data, bioterrorism and evil biohacking (manipulation of the human genome and introduction of malicious changes in the genetic heritage)

Source: Gómez-González, E., & Gómez Gutiérrez, E. (2020). Artificial Intelligence in Medicine and Healthcare: applications, availability and societal impact.

Ethical and social aspects to consider for classification

First Group (G1)
- Topics currently under analysis, as raised by other areas of prior development of AI applications

Second Group (G2)
- Topics –some of which may also be under analysis in other areas– of particular relevance for Medicine and Healthcare
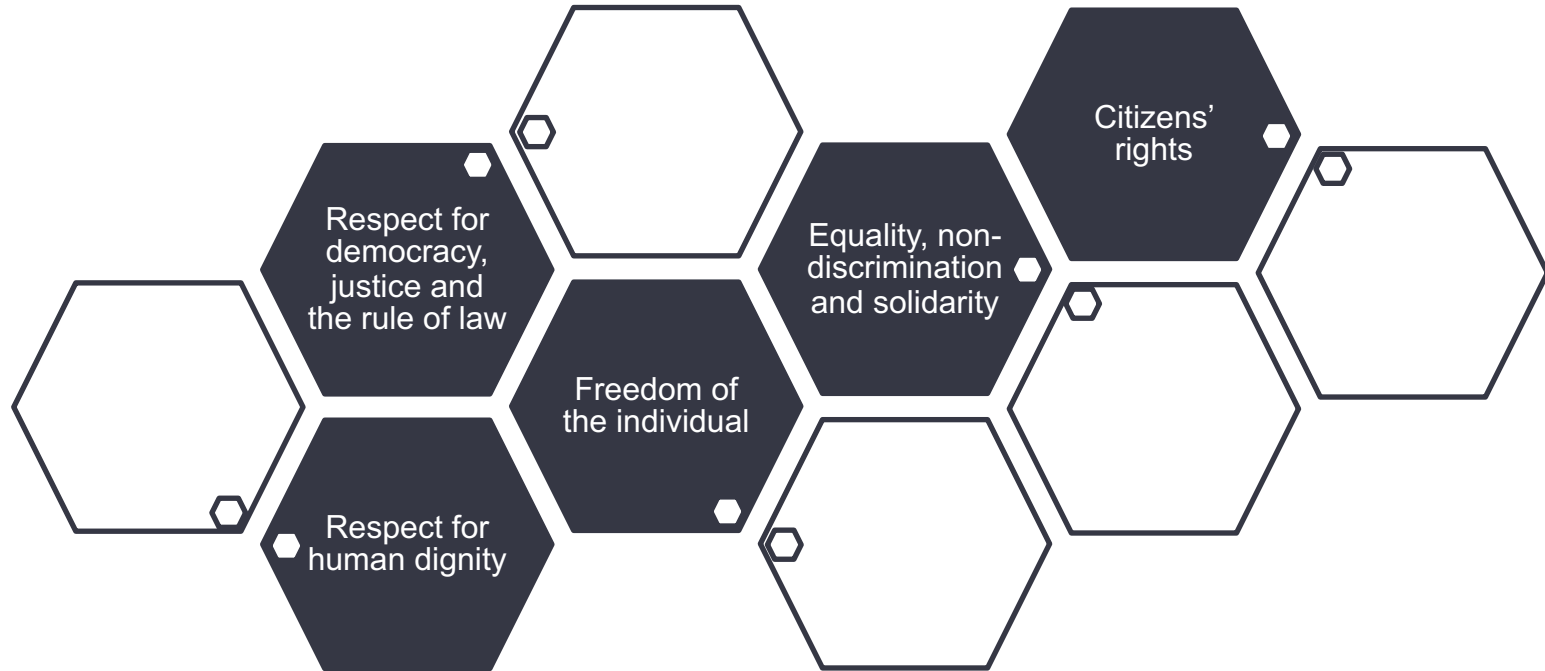
Third Group (G3)
- Certain aspects barely -or not included at all- in analysis of AI applications in Medicine and Healthcare

Source: Gómez-González, E., & Gómez Gutiérrez, E. (2020). Artificial Intelligence in Medicine and Healthcare: applications, availability and societal impact.

Trustworthy AI

- **Lawful AI -** "all legal rights and obligations that apply to the processes and activities involved in developing, deploying and using AI systems remain mandatory and must be duly observed" (EU,2019, p. 6)

- **Ethical AI** – "ensuring alignment with ethical norms" (EU,2019, p. 7)

- **Robust AI** – "Such systems should perform in a safe, secure and reliable manner, and safeguards should be foreseen to prevent any unintended adverse impacts. It is therefore important to ensure that AI systems are robust" (EU, 2019, p. 7)
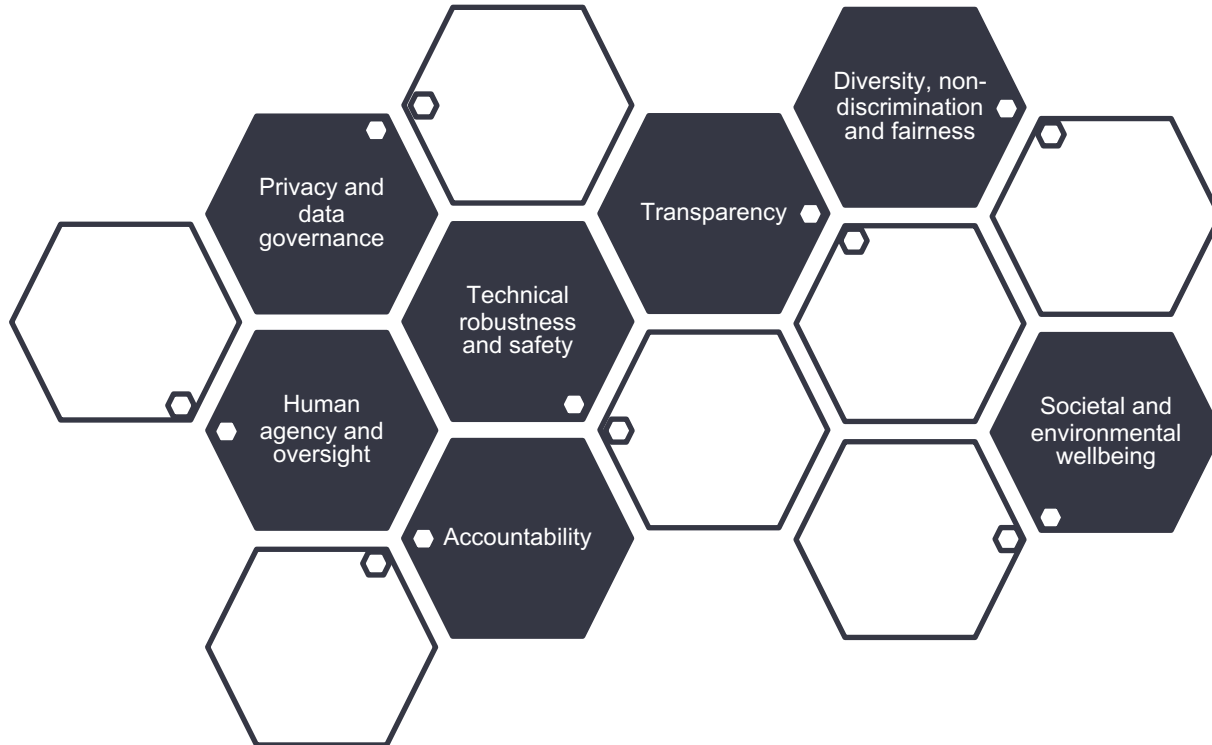
Fundamental rights

Respect for democracy, justice and the rule of law

Citizens' rights

Equality, non-discrimination and solidarity

Freedom of the individual

Respect for human dignity

Source: European Commission (2019). High-level expert group on artificial intelligence. Ethics guidelines for trustworthy AI.

Ethical Principles

Fairness

Prevention of harm

Explicability

Respect for human autonomy

Source: European Commission (2019). High-level expert group on artificial intelligence. Ethics guidelines for trustworthy AI.

Requirements of Trustworthy AI

Source: European Commission (2019). High-level expert group on artificial intelligence. Ethics guidelines for trustworthy AI.

Thank you