

2 December 2022:

**I, Robot: the use of technology in the
immigration system, Professor
Elspeth Guild**

Defining the terms (1)

Artificial intelligence: the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making etc.

Predictive artificial intelligence: a method of data analysis, capable of predicting and anticipating the future needs of the customer; focus: trends coming, predicting risks and their solutions.

Algorithm: a process or set of rules to be followed in calculations or other problem-solving operations, especially by a computer (similar to a recipe). Rule-based algorithms are static, because their rules can only be altered through programming; machine-learning algorithms are dynamic because their rules change depending on the input data.

Defining terms (2)

Machine learning: an application of AI that enables systems to learn and improve from experience without being explicitly programmed. Machine learning focuses on developing computer programmes that can access data and use it to learn for themselves; the key is access to data on which to ‘train’ an algorithm.

Machine Learning Algorithms: machine-learning algorithms ‘learn’: autonomously adapt, evolve and improve in order to optimise any given outcome based on any input data without being explicitly programmed to do so.

Algorithmic discrimination: unjustified unfavourable treatment of, or disadvantage experienced by, specific categories protected by the law either explicitly (e.g. protected grounds) or implicitly (e.g. general or open-textured non-discrimination clauses) – nationality as a proxy for a protected ground.

How?

- (a) data used to train an algorithm is unrepresentative of the general population, inadequately deals with outliers or does not include particular minority groups;
- (b) self-learning algorithms fed with unbalanced or biased data generate unbalanced and biased output based on detection of correlations and patterns in that data (ML);
- (c) unbalanced or biased data replicate and magnify bias ('bias in, bias out');
- (d) self-learning algorithms: feedback loops that reinforce already existing patterns of structural discrimination by 'reifying' and further enacting discriminatory correlations;
- (e) the correlation and proxies challenges: **correlation**: reproducing and strengthening existing patterns of inequality by reifying discriminatory correlations resulting from deeply engrained, structural discrimination; **proxy**: trivial, non-suspect proxy masks conscious discrimination based on a protected ground;

Responsibility, law and application

Who is responsible? Those setting the objectives, deconstructing decision-making processes, programming and training algorithms, collecting and preparing the training data, using algorithms for decision making, monitoring and supervising their effect;

The language of law? Ethics: 'bias' and 'fairness'; law: 'discrimination' and 'equality'.

Applicability to immigration: example ETIAS screening rules algorithm based on specific risk indicators for security, illegal immigration and high epidemic risk.