



## Predictive and Decision-Making Algorithms in Public Policy QSD on 12 February 2020

On 12 February 2020, Lord Clement-Jones (Liberal Democrat) is due to ask HMG “what steps they have taken to assess the full implications of decision-making and prediction by algorithm in the public sector”. This debate is limited to one hour.

### Summary

- Algorithms are unambiguous sets of instructions designed to perform specific tasks, the usage of which predates modern computer technology. However, as noted by the House of Commons Science and Technology Committee, recent years have seen huge growth in the use of automation to power decisions that impact lives and societies.
- Specifically, the increase in digital data and the advent of new algorithms using ‘machine learning’ and artificial intelligence (AI) has seen an increase in the potential for algorithmic decision-making.
- There is no universally-accepted definition of AI, which applies to a broad range of concepts and systems, but it can be regarded as a group of algorithms that can modify and create new algorithms in response to learned inputs and data, as opposed to relying solely on the inputs it was designed to recognise. This ability to change, adapt and grow based on new data is described as ‘intelligence’.
- Machine learning is commonly regarded as a subset of AI which allows computers to learn directly from examples, data and experience, finding rules or patterns independently.
- The result of these technologies is the development of systems capable of simulating human behaviour such as learning, reasoning and classification, which can make predictions and decisions upon which public policy can be based or through which it can be enacted.
- For example, the Harm Assessment Risk Tool (HART), designed by the Durham Constabulary and academics at the University of Cambridge, is a decision support system capable of taking different predictors such as past criminal behaviour, age, gender and postcode and using these to predict the risk of an individual reoffending.
- The potential uses of these technologies have proved controversial. There are a number of potential benefits to the use of AI, as the Government note in their published guidance on AI in the public sector. These include that AI can potentially provide more accurate information, forecasts and predictions leading to better outcomes—for example more accurate medical diagnoses; lead to more personalised services; and provide solutions to some of the most complex and challenging policy problems.
- However, no AI system can perform well without a large quantity of relevant high-quality data, raising questions about how this data should be collected, stored and shared, and according to what restrictions. Further, welfare and civil rights campaigners have argued algorithmic decision-making can disadvantage those from particular areas and social groups, as well as raising concerns about a lack of explicit standards and openness and transparency on the use of algorithmic systems in policy-making.

James Tobin | 3 February 2020

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## Key Information

- Government Digital Service and Office for Artificial Intelligence, [A Guide to Using Artificial Intelligence in the Public Sector](#), 10 June 2019

*Joint guidance from the Government Digital Service (GDS) and the Office for Artificial Intelligence (OAI) on how to build and use artificial intelligence in the public sector.*

- House of Commons Science and Technology Committee, [Algorithms in Decision-making](#), 23 May 2018, HC 351 of session 2017–19, pp 3–5 and 41–44

*Summary and conclusions and recommendations from the House of Commons Science and Technology Committee's report on algorithms in decision-making, addressing themes such as transparency and data protection.*

- House of Commons Science and Technology Committee, [Algorithms in Decision-making: Government Response to the Committee's Fourth Report](#), 10 September 2018, HC 1544 of session 2017–19

*The Government's response to the Committee's report, in which it highlights the Centre for Data Ethics and Innovation and its role in keeping the implementation of AI in the public sector under review.*

- Nesta, [Decision-making in the Age of the Algorithm: Three Key Principles to Help Public Sector Organisations Make the Most of AI Tools](#), November 2019, pp 4–10

*The executive summary of innovation foundation Nesta's 2019 report into algorithmic decision-making.*

## Parliamentary Questions

- [Oral Question on 'Public Authorities: Algorithms'](#), HL Hansard, 14 March 2019, cols 1131–3
- [Oral Question on 'Algorithms: Inappropriate Use'](#), HC Hansard, 4 July 2019, cols 1326–7

## Press Articles and Comment

- *Guardian*, ['One in Three Councils Using Algorithms to Make Welfare Decisions'](#), 15 October 2019
- *New Statesman*, ['Revealed: How Citizen-scoring Algorithms Are Being Used by Local Government in the UK'](#), 15 July 2019
- The Health Foundation, ['Artificial Intelligence in the NHS: Getting the Priorities Right'](#), 4 October 2019

## Further Information

- HM Government, '[AI Council](#)', '[Office for Artificial Intelligence](#)' and '[Centre for Data Ethics and Innovation](#)', accessed 3 February 2020
- The Law Society, '[AI: Artificial Intelligence and the Legal Profession](#)', 1 May 2018
- European Parliament, '[Understanding Algorithmic Decision-making: Opportunities and Challenges](#)', March 2019
- HM Government, '[The Data Ethics Framework](#)', 30 August 2018
- Nesta, '[10 Principles for Public Sector Use of Algorithmic Decision-making](#)', 20 February 2018
- Marion Oswald, '[Algorithm-assisted Decision-making in the Public Sector: Framing the Issues Using Administrative Law Rules Governing Discretionary Power](#)', *Philosophical Transactions of the Royal Society*, 2018
- Oxford Insights, '[Government Artificial Intelligence Readiness Index 2019](#)', 2019