Introduction

The use of algorithms, machine learning and automated decision-making systems is transforming several aspects of work. These systems are being developed and applied to (i) augment human skills (ii) substitute some human skills and tasks and create others (iii) change the processes for hiring, firing, determining pay and performance management or ‘optimisation’ and (iv) undertake some managerial and oversight functions wholesale.

Increasing and pervasive use of algorithms and automated systems combined with big data sets have also contributed to the development of some new types of business model/operations, generating new kinds of relationships between businesses, workers and consumers; shifts in balance of power and control; and changing expectations for work from individuals, employers and government. This includes but goes beyond the platform or ‘gig’ economy.

In this context, exploring the impact of technology on work and our experience of work must include understanding positive and negative implications for equality. This is key to shaping a future of work that is fair as well as prosperous through an age of rapid technological progress.

Purpose

The purpose of this workshop is to start mapping some of the most pressing issues for people in and out of work regarding the use of algorithms and automated systems in the work space. Many of these will have implications beyond the world of work, but the
workshop aims to tease out and examine some of these challenges through the lens of dynamic employer-worker-agent/platform relationships.

A wide range of stakeholders have been gathered to participate in this exploration, which will inform the new Institute for the Future of Work's 'Promoting Equality Through Transition' programme. The workshop hosts take the view that a collaborative approach to identifying and improving key aspects of work and practice - with a focus on promoting equality through the ‘technological revolution’ - is one of the best ways to make sure that technological innovation and social justice advance together.

**Agenda**

The workshop will consider 5 questions. It will consist of a series of 10-minute expert presentations followed by a break out in groups, facilitated by the panelists. The workshop will be chaired by Helen Mountfield QC and end with a group discussion and round-up on future priorities.

1. **What are the key issues?**

Participants will be invited to select and discuss what they consider are the most pressing issues currently faced by people regarding the use of AI, algorithms and automated systems in the work space. The focus of this presentation and discussion, led by Associate Professor of Machine Learning Michael A Osborne, will be technical capabilities and challenges.

Participants may wish to consider the nature of decisions made and the extent to which they are automated; increasingly widespread and pervasive applications; recent developments in machine learning which mean that systems are more powerful and predictive but less transparent; structural inequalities in training data sets; understanding and access to relevant, actionable information; oversight and accountability.

An annex is attached with examples of recent applications to aid this discussion, such as targeted advertising. Participants will be asked to supplement this list with real and
hypothetical examples of current challenges. Different notions of ‘fairness’ and ‘equality’ in the work space may be discussed and applied to the examples identified.

2. What are the broader implications for work and society?

The workshop will consider the implications of the examples selected on work, society and the economy more broadly, focusing on good and bad implications for equality. This presentation and discussion, led by Dr Anne-Marie Imafidon and Associate Professor of Economic Sociology Vili Lehdonvirta, is based on the premise that work connects the living standards and experiences of individuals with the social and economic health of the nation. It is expected to consider gaps in knowledge, as well as what is known or understood.

Technological innovation underpins productivity growth and, as a general rule, must be welcomed. Participants are invited to share different perspectives about the secondary effects of relevant disruptive innovations on, for example, the organisation of economic activities, impact on traditional and new communities, and the distribution of quality work and risk.

3. Which legislative regimes apply and how are they working?

Participants will be invited to share understanding and views about the application and enforcement of relevant UK legal regimes to use of algorithms and automated systems in the work space: employment, equality, data protection (GPDR), trade union and health and safety law. Each domain has a different focus and approach to liability, for example the purpose of the health and safety regime is to stop workers getting hurt or ill through work and is based on strict, statutory liabilities. Employment and equality laws, which regulate the relationship between employers and employees, are expected to be central to this presentation and introductory discussion, led by Associate Professor of Law Jeremias Prassl.

Participants may wish to discuss what we can learn from legislative regimes and responses abroad; and whether impact assessments, sharing best practice or test cases could add to
our understanding of how existing laws are being applied and enforced to the examples identified.

4. How are employers, government and other actors responding?

Participants will be invited to consider current initiatives in response to challenges, and perceived challenges, relating to the use of AI, algorithms and automated systems at work. This will lead to a discussion about the emerging roles of business, trade unions, individuals, and government in deciding how to apply and monitor use of this technology in ways that will promote equality through transition. It may help to explore this question by thinking about changes and constants to employer-employee-agent/platform relationships.

For example: Facebook has developed a tool called ‘Fairness Flow’ as an internal project which it claims can detect bias in AI. The tool is being tested on Facebook’s jobs algorithm. Facebook has not yet disclosed whether the tool found bias or whether any changes have been made to the jobs algorithm or tool. Given that such tools are being developed who - if anyone - should oversee this initiative? Should a body other than Facebook be able to access information derived from the tool?

5. What principles should guide policy-orientation?

Given the breadth of topics covered and novelty of some of the issues raised, participants will be invited to start a conversation at the end of the workshop about the kind of overarching principles that might guide future policy orientation. This may inform a final discussion about what ‘fairness’ or ‘equality’ should mean in the work space, whether existing response to challenges and regulation is adequate, and what future priorities should be.

Participants will be invited to include some discussion about the Commission’s foundational principles and draft Charter for Good Work.
Consultation

Throughout the workshop, participants are invited to share their views on relevant recommendations made by the Commission on the Future of Work (which is the backdrop for the establishment of the Institute for the Future of Work).

These include recommendations (and probing amendments tabled to the Data Protection Act) to refine and develop:

- a positive right to ‘fairness’ in algorithmic or other automated decision-making where the decision impacts on a fundamental component of work (hiring, firing, pay, hours)
- a supporting right to an explanation concerning decisions involving automated processing affecting a fundamental component of work
- a duty to undertake an ‘algorithmic impact assessment’ (or safe harbour defence) to check and correct any bias where automated systems or algorithms are used in the work space
- a freestanding labour right to not be subject to significant decisions based solely on automated processing for workers and prospective workers
- a private sector equality duty, based on the public sector equality duty to have ‘due regard’ to the the impact of decisions (automated, semi-automated and non-automated) on protected groups. Socio-economic disadvantage could be added as a protected characteristic
- an extension of obligations to inform and consult workers when automated systems or algorithms are introduced into the work space. This may be linked to increasing productivity, identifying training needs and improving wellbeing
ANNEX 1

Examples of current practices:

- **Targeted advertising.** Companies are now using micro-targeting to place job adverts at ever narrower sets of people. ProPublica\(^1\) has documented several dozens of US companies using Facebook's advertising platform targeting by, for example, “users 25 to 36 years old who lived in the nation's capital, or had recently visited there, and had demonstrated an interest in finance”. The ability for advertisers to direct their message to the audience most likely to respond is the intended practice. Exposing job opportunities only to certain age groups raises concerns about discrimination by age - and the ability to spot or challenge this practice. The practice was defended by Facebook\(^2\) who said “used responsibly, age-based targeting for employment purposes is an accepted industry practice and for good reason: it helps employers recruit and people of all ages find work.” The practice was defended by companies who claimed that some of the job adverts were for graduate scheme placements, and that the cost of showing the advertisement to those outside their target recruitment selection would have been too costly. A class-action complaint alleging age discrimination has been filed in the US on behalf of the Communications Workers of America\(^3\). A collection of adverts have been captured and stored by ProPublica\(^4\). Similar practices have occurred permitting advertisers to exclude target audiences by race on Facebook\(^5\).

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\(^3\) Outten Golden Complaint, available at: https://www.documentcloud.org/documents/4334241-Outten-Golden-Complaint-FILED.html

\(^4\) “These Are the Job Ads You Can’t See on Facebook If You’re Older”, ProPublica, (2017), available at: https://projects.propublica.org/graphics/facebook-job-ads

Automated hiring practices. In the United States, approximately 72% of CVs are never seen by human eyes. This is due to a significant rise in the use of automated tools to sift CVs and covering letters (sometimes called Applicant Tracking Systems) attempting to score applications against criteria required by the role. These CV parsers use denominators such as keyword searches, keyword frequency, keyword ratios, exact-match keywords, resume content parsing, and variable match rate. Some more advanced tools are using Natural Language Processing to identify phrases, and descriptions of skills and competencies. All major human resources software vendors such as Taleo, iCIMs, Jobvite, PeopleFluent, CornerstoneOnDemand, and Workday now provide tools facilitating such practices. These tools have been adopted widely within large companies and are actively improving their analytics although research suggests many of these tools are rudimentary and do not perform basic analytical tasks competently. For example, they fail to correlate word variations, e.g. “MBA” may be identified, but “Master’s of Business Administration,” might not.

70% of employers are using social media to screen job candidates before hiring them, with 51% of the employers deciding not to hire a candidate based on information found on social media. Some Applicant Tracking Systems are automatically searching and scraping social media data to assist employers in selecting candidates. There is little visibility into how these automated systems are avoiding using information that cannot be used to make a hiring decision, such as age, gender, sexual orientation or religion. Meaningful consent is not always sought.

Some employers use chatbots, or AI-powered assistants to ask screening questions or answer frequently asked questions about the job, with a recent survey indicating

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7 Are applicant tracking systems now a commodity, Delloitte, (2013) http://blog.bersin.com/are-applicant-tracking-systems-now-a-commodity/
8 https://www.jobscan.co/faq
that 92% of HR professionals agreed that in the future chatbots will be important to direct employees to find the information they need.\textsuperscript{10}

- The practice of bringing candidates in for interviews is undergoing a transformation with some companies offering standardized, video interviews that are scored and that employers can then review on their own time; or automated telephone interviews that assessed for personality and other attributes.\textsuperscript{11} Increasingly these companies claim to be “using artificial intelligence to give you more insight into a candidate’s skills and capabilities”\textsuperscript{12} by analyzing verbal and non-verbal cues, to identify emotional engagement, problem solving style, and culture fit. The tools themselves are promoted as reducing bias in hiring decisions and are in use by large firms such as Unilever, Vodafone, IBM and others.

- **Neo-taylorism.** Use of reputation algorithms by companies like Uber and TaskRabbit have become widespread in the gig economy. These reputation scores are ostensibly calculated on the basis of consumers’ anonymous feedback following tasks, but in practice include hidden criteria other than performance, such as opting into mobile alerts or accepting credit card payments\textsuperscript{13}. Such tools are criticised as poor substitutes for company management structures, and it has been suggested that the true purpose is to control worker performance, and may lock them into a particular platforms’ eco-system. While practices vary between companies, such tools commonly result in situations where the gig worker is subjected to near constant monitoring or cannot realistically exercise ‘data portability’. This raises the issue of whether ratings within gig economy should be standardised and meet data-portability standards. Useful precedents may be:
  - In the banking sector there is the Current Account Switch Service which permits anyone with a UK current account to switch from one participating bank or building society, to another. A related project is

\textsuperscript{10} “AI recruitment: could recruiting ever become fully automated?”, Verdict, (2018), available at: https://www.verdict.co.uk/ai-recruitment-could-recruiting-ever-become-fully-automated/

\textsuperscript{11} “We can no automate hiring, is that good?” Harvard Business Review (2013), available at: https://hbr.org/2013/12/we-can-now-automate-hiring-is-that-good

\textsuperscript{12} https://www.hirevue.com/

\textsuperscript{13} Beyond Disruption, Data and Society (2018), available at: https://datasociety.net/output/beyond-disruption/
the Open Banking Standard\textsuperscript{14} which is a secure set of technologies and standards that allow customers to give companies other than their bank or building society permission to securely access their accounts. This means customers can, if they choose, easily use services from a range of different types of regulated companies without the need to share credentials with any third parties.

- Data Transfer Project which is a common framework, including data models and protocols, to enable direct transfer of data both into and out of participating online service providers. Participants currently include Google and Microsoft.\textsuperscript{15}

\textsuperscript{14} https://www.openbanking.org.uk/
\textsuperscript{15} https://github.com/google/data-transfer-project