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Artificial Intelligence and Human Rights at Work

Joe Atkinson and Philippa Collins

1 Introduction

Artificial intelligence (AI) is disrupting and transforming our lives across multiple dimensions of society. AI is now used to make decisions previously undertaken by humans in contexts such as policing, social security, immigration, and in the workplace. While the use of AI to automate work processes might eventually lead to a level of worker displacement and job destruction that threatens to undermine the right to work,[1] it is clear that the use of AI to manage and govern the workplace presents the more immediate and pressing challenge. This chapter addresses this latter innovation, namely the impact of technology on the *qualitative* rather than *quantitative* dimension of the future of work. Specifically, it is concerned with the implications for human rights of what Mateescu and Nguyen describe as 'algorithmic management', that is, a 'diverse set of technological tools and techniques to remotely manage workforces, relying on data collection and surveillance of workers to enable automated or semi-automated decision-making'.[2]

Our argument here is that the rise of algorithmic management poses a significant and pervasive threat to human rights at work, one that is not confined to the rights of privacy and equality concerns that have so far dominated scholarly attention.[3] The use of these tools has

[1] For discussion of this prospect and possible legal responses, see Cynthia Estlund, *Automation Anxiety: Why and How to Save Work* (OUP 2021).
[2] Alexandra Mateescu and Aiha Nguyen, 'Algorithmic Management in the Workplace' (2019) Data & Society 1.
[3] See eg Robert Sprague, 'Welcome to the Machine: Privacy and Workplace Implications of Predictive Analytics' (2014) 21 Richmond Journal Law & Technology 1; Bart Custers and Helena Ursic, 'Workers' Privacy in a

the potential to frustrate the protection of workers' human rights, which is an important normative goal for labour law. In the next section of this chapter, we elaborate upon the phenomenon of algorithmic management and illustrate how the integration of AI, and the data collection that underpins it, affects the working lives of individuals. In the subsequent part, we draw on the existing literature that paints a clear picture of how privacy and data protection rights, as well as the right to equality, are threatened by the deployment of algorithmic management processes. We go beyond these current analyses, however, by highlighting how algorithmic management poses a broader threat to human rights at work. Algorithmic management entails risks to a wide range of workers' rights in addition to privacy and equality, such as freedom of association, expression and thought and belief, as well as due process rights and rights to decent working conditions.

In the final section of the chapter, we argue that an adequate response to the risk to human rights presented by algorithmic management must involve the use of *ex ante* methods of regulation rather than merely relying on *ex post* responses and litigation. We identify two important pre-emptive means of ensuring employers' choices regarding algorithmic management respect the human rights of workers. First, collective bargaining over the use of these technologies, and second, legal duties to conduct a robust assessment of any human rights impacts before implementing a new policy or data processing method. Both these forms of *ex ante* governance have the potential to place limits upon algorithmic management that are tailored to the particular organisational context in question and ensure that workers are protected from excessive monitoring and unjust data-driven practices.

Digitalized World under European Law (2018) 39 Comparative Labor Law and Policy Journal 323; Ifeoma Ajunwa, Kate Crawford and Jason Schultz, 'Limitless Worker Surveillance' (2017) 105 California Law Review 735; Ifeoma Ajunwa, 'Algorithms at Work: Productivity Monitoring Applications and Wearable Technology as the New Data-Centric Research Agenda for Employment and Labor Law' (2018) 63 St Louis University Law Journal 21; Jeremias Adams-Prassl, 'What if Your Boss Was an Algorithm? Economic Incentives, Legal Challenges, and the Rise of Artificial Intelligence at Work' (2019) 41 Comparative Labor Law and Policy Journal 123.

2 Algorithmic Management and the Digital Revolution at Work

Algorithmic management is deployed at each major point of contact between a worker and their employer. From recruitment of new staff and the day-to-day management of tasks, through to disciplinary action and the termination of employment, management functions can now be delegated entirely to technology or significantly bolstered by the use of algorithms.[4] Whilst algorithmic management is currently most prevalent in platform work and the 'gig economy', these practices are rapidly spreading to other sectors of the labour market.[5] This shift has recently been accelerated by the covid-19 pandemic and a shared desire amongst many employers to use technology to manage a newly remote workforce.[6]

The first point of contact with an employer, where a candidate is applying for a job, is the most likely to be mediated by an algorithm.[7] It is increasingly common that seeking out and shortlisting applicants is conducted by algorithm. Using a set of training data, including online information, written answers or video interviews, algorithms can identify features of desirable candidates for the position. Some such features may be obvious, such as mentioning a particular technical skill or experience, but others may be apparently random factors that happen to be prevalent amongst successful candidates. In this way, candidates' application materials can be screened and sifted by AI software, which continues to learn and adapt as it is exposed to more data. Automated programmes can also be used during hiring to scrutinise social media profiles

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[4] Trades Union Congress (TUC), *Technology Managing People: The Worker Experience* (2020) <https://www.tuc.org.uk/sites/default/files/2020-11/Technology_Managing_People_Report_2020_AW_Optimised.pdf>.

[5] Alex J Wood, *Algorithmic Management: Consequences for Work Organisation and Working Conditions* (JRC Working Papers Series on Labour, Education and Technology 2021/07; European Commission 2021) 1.

[6] See Abigail Gilbert and Anna Thomas, *The Amazonian Era: How Algorithmic Systems Are Eroding Good Work* (Institute for the Future of Work 2021) 1, 17.

[7] TUC, see above note 4.

of potential employees for desirable, or more likely undesirable, characteristics that are revealed by their posts. Finally, video recordings of candidates answering pre-set questions can be assessed by AI programmes, such as HireVue, to generate an 'employability score' based on any number of visual, verbal or behavioural traits of the applicant. The complexity and opacity of these AI-based hiring processes adds to the difficulties that candidates for roles already face in understanding how decisions that affect their livelihood are made.

Once the candidate is appointed, the potential for algorithmic management continues. As Alex Wood observes, algorithmic management can be seen across a variety of employer functions, particularly in the direction, evaluation, and discipline of workers.[8] In terms of the direction of workers, a common use of algorithms is in the creation and allocation of shift patterns based on predictions of future demand. For example, Percolata's programme uses predictive analytics to create a schedule that aims to maximise sales. AI generates recommendations of the optimal mix of workers, and their allocated tasks, throughout 15-minute time periods throughout the day. Such programmes enable employers to match the amount of labour contracted for (and the associated costs of this) precisely with expected demand, which incentivises the use of atypical working arrangements and contributes to the continued fragmentation and fissuring of workplaces.[9]

The allocation of work between workers and the pace of the work to be performed is also frequently determined by algorithmic tools. The delivery driver with the nearest GPS location is sent to pick up the take-away food, whilst pickers in the Amazon fulfilment centres must adhere to an algorithmically determined 'Amazon pace' along the route to the next item they need to pick: not running but walking as fast as possible.[10] Workers may also receive

[8] Wood, see above note 5.
[9] Judy Fudge, 'Fragmenting Work and Fragmenting Organizations: The Contract of Employment and the Scope of Labour Regulation' (2006) 44 Osgoode Hall Law Journal 609; David Weil, *The Fissured Workplace* (Harvard University Press 2014).
[10] Alessandro Delfanti, 'Machinic Dispossession and Augmented Despotism: Digital Work in an Amazon Warehouse' (2021) 23 New Media & Society 39, 47.

directions on how to complete their allocated tasks via a mobile application or wearable device. Whilst previously workers would require some training and understanding of the processes in their workplace, the co-ordination of work can now be done by algorithm. Complex processes are divided into ever smaller and simpler components, so that each task can be completed with minimal training – workers need only follow pictorial directions on a handheld device in order to complete their tasks.[11]

Once work is allocated, AI technologies can be deployed to monitor and evaluate the performance of tasks on a moment-to-moment basis using data points gleaned from numerous sources, with the goal of optimising the efficiency of outputs or performance metrics identified by the organisation. Data is then processed and analysed so that it can be acted upon either by management or by the worker themselves, as they respond to real-time corrections and recommendations about their work performance. For example, a programme used by call centres, Cogito, engages in real-time voice evaluation, providing prompts to workers during calls based on this analysis – such as to be more empathetic or to talk more slowly.[12] Increasingly, businesses are using client and customer ratings as an important source of information for algorithmic assessments of an individual's performance. Platforms that offer services online, such as data entry, translation, and programming, combine customer ratings with digital monitoring based on keystrokes and screenshots to evaluate workers.[13] The shift away from periodic performance reviews to continuous and instantaneous evaluation is underpinned by 'prolific data collection and surveillance of workers through technology'.[14] Such pervasive monitoring has significant negative consequences for workers, such as being

[11] Simon Schaupp, 'Algorithmic Integration and Precarious (Dis)Obedience: On the Co-Constitution of Migration Regime and Workplace Regime in Digitalised Manufacturing and Logistics' (2021) 36 Work, Employment and Society 310, 317.
[12] Kevin Roose, 'A Machine May Not Take Your Job, but One Could Become Your Boss' *New York Times* (23 June 2019).
[13] See Alex J Wood, Mark Graham, Vili Lehdonvirta and Isis Hjorth, 'Good Gig, Bad Gig: Autonomy and Algorithmic Control in the Global Gig Economy' (2019) 33 Work, Employment and Society 56.
[14] Mateescu and Nguyen, see above note 2.

subject to heightened levels of subordination and control, the intensification of work processes, and increased risks to occupational health and safety.[15]

Just as algorithms and technology play a role in the other stages of an employment relationship, so too do they in the discipline and termination of the relationship. Software can be used to identify problems with a worker's attendance or performance, and either flag this to the employer or, less frequently, implement disciplinary action directly. At Uber, for instance, algorithms evaluate workers on the basis of their customer rating and the rate at which they accept jobs offered to them on the app. If an individual's score falls below the level deemed acceptable, the individual will be temporarily removed from the app as a disciplinary measure, meaning they will not have access to work for that period of time. If the driver's score is consistently below the algorithm's expectation or if the AI software flags fraudulent behaviour, the individual will be removed from the app permanently.[16] Similarly, Amazon's system monitors each workers' productivity and can issue warnings and automatic terminations if their productivity is not high enough.[17] In other systems, workers with lower productivity scores may receive less work or find their ability to book into shifts restricted,[18] meaning that it may become untenable to continue working through that platform or employer. Built upon a wider structure of digital monitoring and real-time surveillance of workers, the termination of

[15] Gilbert and Thomas, see above note 6; Karolien Lenaerts, Willem Waeyaert, Ine Smits, and Harald Hauben, *Digital Platform Work and Occupational Safety and Health: A Review* (European Agency for Safety and Health at Work 2021); Phoebe Moore, *OSH and the Future of Work: Benefits and Risks of Artificial Intelligence Tools in Workplaces* (European Agency for Safety and Health at Work 2019); Wood, see above note 5.

[16] Alex Rosenblat and Luke Stark, 'Algorithmic Labor and Information Asymmetries: A Case Study of Uber's Drivers' (2016) 10 International Journal of Communication 3758, 3774-3775; Sarah Butler, 'Court Tells Uber to Reinstate Five UK Drivers Sacked by Automated Process' *The Guardian* (14 April 2021); and Worker Info Exchange, *Managed by Bots: Data-Driven Exploitation in the Gig Economy* (2021) <https://www.workerinfoexchange.org/wie-report-managed-by-bots>.

[17] Colin Lecher, 'How Amazon Automatically Tracks and Fires Warehouse Workers for 'Productivity' (*The Verge*, 25 April 2019) <https://www.theverge.com/2019/4/25/18516004/amazon-warehouse-fulfillment-centers-productivity-firing-terminations> and Spencer Soper, 'Fired by Bot at Amazon: 'It's You Against the Machine'' (*Bloomberg*, 28 June 2021) <https://www.bloomberg.com/news/features/2021-06-28/fired-by-bot-amazon-turns-to-machine-managers-and-workers-are-losing-out>.

[18] Wood, see above note 5, 8.

employment based on an algorithm's recommendation is the natural endpoint of management-by-algorithm.

3 The Human Rights Dimensions of Algorithmic Management

The early years of analysing new technologies in the workplace have been dominated by discussions of their implications for workers' privacy, data protection and discrimination rights.[19] The rise of algorithmic management undoubtedly threatens these rights. In terms of informational privacy and data protection, workers are subject to increased monitoring and surveillance across a wider range of data points, which may include personal data relating to their health or lives outside of work. It is difficult for workers to understand what information is being collected on them, how this is being used and shared with others, as well as the risks involved in these processes. Indeed, in many instances, workers are not even aware of the technologies being used to recruit or manage them.[20] In some cases, employers incentivise or demand the sharing of intimate data with the organisation through a repurposing of smart wristwatches or similar wearable devices which track the wearer's location, heart rate, sleep, and activity rates.[21] Automated social media monitoring tools also track and monitor worker behaviour and speech away from the workplace, and this information may be used as the basis for disciplinary action.[22] The right to informational and behavioural privacy is therefore jeopardised, not only during working time but also beyond.

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[19] See above note 3.
[20] TUC, see above note 4.
[21] See Philippa Collins and Stefania Marassi, 'Is That Lawful? Data Privacy and Fitness Trackers in the Workplace' (2021) 37 International Journal of Comparative Labour Law and Industrial Relations 65.
[22] Lisa Kresge, 'Data and Algorithms in the Workplace: A Primer on New Technologies' (2020) Working Paper UC Berkeley Labor Center Technology and Work Program <https://laborcenter.berkeley.edu/wp-content/uploads/2020/12/Working-Paper-Data-and-Algorithms-in-the-Workplace-A-Primer-on-New-Technologies-FINAL.pdf> 6.

In terms of discrimination and equality, the technologies used to select, direct and evaluate workers outlined above serve to replicate, entrench and accentuate existing workplace inequalities.[23] The risk of bias in algorithmic decision making is now firmly established in the research and recognised by policymakers.[24] While it will (hopefully) be rare for algorithmic models to incorporate protected characteristics such as race, religion or gender directly, algorithmic decision-making may be discriminatory by relying on combinations of other factors that amount to close proxies to these characteristics. The combination of post code and educational history, for instance, may act as a proxy for ethnicity in some circumstances.[25] In addition to relying on protected characteristics or their closely correlated data points, algorithmic management may give rise to discrimination where the models reflect the biased assumptions and choices of the programmers or where a machine learning model is developed using 'training data' that contains bias or historical discrimination. Such algorithms are likely to reproduce, and even amplify, existing inequalities and historic discrimination in the workplace.

In the context of recruitment, for example, Kelly-Lyth cites examples such as an Amazon algorithm that was abandoned after marking down applications that contained the word 'women's' (as in women's sports teams or colleges), and others that have learnt to associate female names with domestic duties.[26] Facial recognition and analysis algorithms have also been shown to discriminate against people of colour and pose challenges for people with

[23] Cathy O'Neil, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* (Broadway Books 2016); Sandra G Mayson, 'Bias In, Bias Out' (2019) 128 Yale LJ 2218; and Pauline T Kim, 'Data-Driven Discrimination at Work' (2017) 58 Wm & Mary L Rev 857. For analysis of how UK discrimination law applies in this context, see Joe Atkinson, 'Automated Management and Liability for Digital Discrimination under the Equality Act 2010' (*UK Labour Law Blog*, 2020) <https://uklabourlawblog.com/2020/09/10/automated-management-and-liability-for-digital-discrimination-under-the-equality-act-2010-by-joe-atkinson/>.

[24] See Centre for Data Ethics and Innovation, *Review into Bias in Algorithmic Decision-Making* (2020); and All-Party Parliamentary Group on the Future of Work, *The New Frontier: Artificial Intelligence at Work* (2021) 26.

[25] See the present volume's part on discrimination, in particular the chapter by Koen and Mufamadi.

[26] Aislinn Kelly-Lyth, 'Challenging Biased Hiring Algorithms' (2021) 41 Oxford Journal of Legal Studies 889.

disabilities that affect their facial movements.[27] A person with a physical disability may well be disadvantaged by an algorithm that controls the pace of work, particularly as the employers' duty to make reasonable accommodations is unlikely to be reflected in the design of the software. Similarly, algorithms that allocate shifts and approve holiday requests are unlikely to take into account factors such as individuals' caring responsibilities or religious beliefs. A final concern in respect of discrimination is the role of customer or client evaluations in algorithmic management, as these may be tainted by the conscious or unconscious bias of the customer and lead to biased performance evaluations, with dramatic consequences for workers' livelihoods.[28]

Whilst the above discussion illustrates that algorithmic management is a serious threat to workers' privacy and equality rights, we argue that the risk posed to human rights at work is much broader than has been appreciated thus far. As labour lawyers, we might start by considering the right to form and join a trade union for the protection of one's interests. contained in the right to freedom of association in Article 11 of the European Convention on Human Rights (ECHR) and Article 22 of the International Covenant on Civil and Political Rights. Algorithms can be used by employers to 'get ahead' of workers' attempts to unionise, targeting their efforts to ensure that workers do not exercise their right to freedom of association. In 2020, Wholefoods in the US was revealed to use a 'heatmap' to predict which stores were at risk of unionisation based upon a combination of metrics. This algorithmic prediction was calculated using a combination of external risks (size and proximity of local unions to the store, local unemployment rate, rate of union-related incidents and complaints to the National Labor Relations Board), store risks (stores with lower racial and ethnic diversity and lower wage rates were flagged as higher risk for unionisation) and team member sentiment,

[27] Joy Buolamwini and Timnit Gebru, 'Gender Shades: Intersectional Accuracy Disparities in Commercial Gender Classification' (2018) Proceedings of Machine Learning Research Conference on Fairness, Accountability and Transparency; Kerri A Thompson, 'Countenancing Employment Discrimination: Facial Recognition in Background Checks' (2020) 8 Texas A&M Law Review 63.

[28] See Alex Rosenblat et al, 'Discriminating Tastes: Customer Ratings as Vehicles for Bias' (2016) Data & Society 1.

drawn from surveys of employees.[29] Employers can also use technological monitoring and analysis of worker interactions to identify individuals likely to be involved in unionisation efforts and then take steps to try to prevent this from happening. For example, software can be used to scan workers' emails, personal messenger communications, or conversations recorded via wearable devices for key words and phrases relating to union activities. Similarly, Google has introduced a tool that flags and monitors large internal meetings of employees which clearly has the potential to be used to identify and suppress union organising.[30]

Less directly, the working environment created through algorithmic management makes it difficult for workers to exercise their rights to join trade unions and act collectively that are protected as part of freedom of association. Algorithmic management enables increased use of zero hours contractors, agency workers, and other forms of precarious work where there are significant hurdles to collective organising. Similarly, constantly changing shift patterns determined by algorithms, and the digital enforcement of a high pace of work during shifts, leave workers with little time or opportunity to develop the solidarity and social bonds needed for unionisation and the exercise of collective power within the workplace.[31] To give a specific example, Deliveroo has been held to discriminate against trade union members participating in strike action (amongst other groups) by an Italian labour court.[32] Deliveroo's algorithm removed union members from a 'priority group' who enjoyed privileges with regard to work allocation because they failed to attend a booked slot. By failing to take into account *why* the rider had not attended, namely because they were taking industrial action, Deliveroo

[29] Jay Peters, 'Whole Foods is Reportedly Using a Heat Map to Track Stores at Risk of Unionization' (*The Verge*, 20 April 2020) <https://www.theverge.com/2020/4/20/21228324/amazon-whole-foods-unionization-heat-map-union>.

[30] Nick Statt, 'Google Accused of Spying with New Tool that Flags Large Employee Meetings' (*The Verge,* 23 October 2019) <https://www.theverge.com/2019/10/23/20929524/google-surveillance-tool-accused-employee-activism-protests-union-organizing>.

[31] John Holland, 'Amazon Inquiry' (*Notes From Below*, 7 October 2020) <https://notesfrombelow.org/article/amazon-inquiry>.

[32] Tribunal of Bologna, Order no 2949/2019, 31 December 2020. See commentary in Vincenzo Pietrogiovanni, 'Deliveroo and Riders' Strikes: Discriminations in the Age of Algorithms' (2021) 7 International Labour Rights Case Law 317.

discriminated against trade union members and the company was ordered to correct the discrimination and pay compensation.

Management by algorithm can also stymie worker attempts to exercise voice and negotiate collectively over their terms and conditions of work. The deployment of data-driven management strategies widens the existing information asymmetries between workers and employers.[33] Thus, any bargaining efforts commence from a more unequal starting position. Moreover, employers will not generally themselves be in control of the design of AI systems they deploy: these systems are frequently 'bought in' from a specialist company that retains proprietary rights over the process and may refuse to share information from within the 'black box'. In such situations there are additional hurdles to unions and employers seeking to negotiate, in that any agreement about the internal operation of an algorithm will not have any effect unless a third-party supplier puts it into practice. This they may refuse to do, leaving the employer little choice (one would hope) but to stop implementation of the proposed strategy. Once introduced, algorithmic management is also not conducive to the input and influence on individual decisions that union representatives may otherwise have. These systems are less adaptive to individual circumstances and have less room for discretion or ability to take workers' interests into account, than human decision-makers. In addition, the data points used by the algorithm and weight ascribed to them are likely to be entirely hidden from view. Worker representatives will therefore struggle to understand or have meaningful influence over the systems by which their work and livelihood is managed.

Away from freedom of association, algorithmic management threatens a range of other human rights at work. Automated monitoring of a worker's emails or social media posts, without more, can constitute an interference with the right to freedom of expression, which would only be compounded if their speech is flagged as in breach of company policies and

[33] Rosenblat and Stark, see above note 16.

leads to disciplinary action against the individual.[34] Where workers are made aware of any such monitoring practices, as is required by the ECtHR,[35] this would have a chilling effect on their expression and cause employees to be inhibited in their interactions within and beyond the workplace. Emotion recognition and sentiment analysis technologies, which seek to 'read' what an individual is feeling and thinking from audio or visual data, will also infringe upon a person's ability to form their own views freely and without being penalised.[36] Attempts to glean information about these most intimate aspects of a person's thoughts and reactions are a source of significant concern from the perspective of the right to freedom of thought, conscience and belief.[37]

The rights to due process at work, of the kind that are protected under Article 6 and the procedural aspects of the other European Convention rights,[38] are also at risk where staff are managed with minimal human intervention. The contracts of Uber drivers, for example, are terminated where the AI system detects what it understands as fraudulent behaviour.[39] Although Uber states on its website that there is human review of the flagged behaviour before termination,[40] these workers have no meaningful opportunity to influence or challenge these technology-driven decisions to flag their conduct and end their employment – or even to understand why this has happened.[41]

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[34] Virginia Mantouvalou, '"I Lost My Job over a Facebook Post: Was That Fair?" Discipline and Dismissal for Social Media Activity' (2019) 35 International Journal of Comparative Labour Law and Industrial Relations 101; *Bărbulescu v Romania* Application no 61496/08 (ECHR, 5 September 2017); *Antović and Mirković v Montenegro* Application no 70838/13 (ECHR, 28 November 2017).

[35] *Bărbulescu v Romania* ibid., discussed in Joe Atkinson, 'Workplace Monitoring and the Right to Private Life at Work' (2018) 81 MLR 688.

[36] Discussed in Valerio De Stefano, 'Neurosurveillance and the Right to Be Human at Work' (*On Labor,* 15 February 2020) <https://onlabor.org/neuro-surveillance-and-the-right-to-be-humans-at-work/>.

[37] See also the chapter by Temperman in this volume on such attempts outside the workspace.

[38] Philippa Collins, *Putting Human Rights to Work: Labour Law, The ECHR and The Employment Relation* (OUP 2022), 67-8.

[39] Natasha Bernal, 'They Claim Uber's Algorithm Fired Them. Now They're Taking it to Court' (*Wired*, 2 November 2020) < https://www.wired.co.uk/article/uber-fired-algorithm>.

[40] Uber, *Fraud Activities on the Uber Driver App* <https://www.uber.com/gb/en/drive/driver-app/fraud-activities>.

[41] See Philippa Collins, 'Automated Dismissal Decisions, Data Protection and The Law of Unfair Dismissal' (*UK Labour Law Blog*, 2021) <https://uklabourlawblog.com/2021/10/19/automated-dismissal-decisions-data-protection-and-the-law-of-unfair-dismissal-by-philippa-collins>.

Finally, the heightened intensity of work that results from algorithmic management practices will frequently harm worker's physical and mental health, thereby threatening their rights to health and bodily security. There is mounting evidence that use of workplace surveillance and algorithmic management tools leads to high levels of stress and creates significant risks for occupational health and safety.[42] For example, an app used in engineering settings monitors how quickly every worker completes particular tasks in order to find the fastest operator. The app then calculates 95 percent optimisation for that task, in relation to the quickest worker, and all staff are expected to comply with that work rate.[43] Such a pace of work may not be achievable for every worker, leading them to push themselves physically to meet the demands set by the AI management software and thereby jeopardising the right to a healthy and safe work environment.[44]

Taking a step back, we can see that the deployment of AI technologies to manage workforces places a downwards pressure on the quality of work and threatens to undermine the right to fair and just working conditions found in Article 7 of the International Covenant on Economic, Social and Cultural Rights. Individuals working 'in the shadow' of an algorithmic boss feel constrained by the knowledge that they are subject to monitoring and that the data is used to determine their access to work or to mete out sanctions. As workers do not know the data points used in these technologies, they may attempt to predict what behaviour will be viewed favourably by the algorithm and engage in 'anticipatory compliance practices', thereby internalising its assumed decision-making processes.[45] This kind of anticipatory behaviour amounts to a general 'chilling effect' on a person's willingness to exercise their human rights

[42] See above note 15.
[43] Gilbert and Thomas, see above note 6, 13.
[44] See further Adrian Todoli-Signes, 'Making Algorithms Safe for Workers: Occupational Risks associated with Work Managed by Artificial Intelligence' (2021) 27 Transfer 433.
[45] Eliane Leontine Bucher, Peter Kalum Schou, and Matthias Waldkirch, 'Pacifying the Algorithm: Anticipatory Compliance in the Face of Algorithmic Management in the Gig Economy' (2021) 28 Organization 44, 52.

freely,[46] as workers attempt to pacify the algorithm by refraining from exercising their rights such as freedom of expression or association in ways they believe might lead them to be penalised. While not a comprehensive survey, the above analysis demonstrates the pervasive threat that AI poses to human rights at work, one that extends beyond the rights to privacy and equality.

4 Thinking Ahead: An *ex ante* Approach

Once the true extent of the threat to workers' fundamental rights generated by algorithmic management is understood, it is important to consider how the risk to these rights can be addressed and minimised. Although *ex post* legal frameworks with appropriate remedies are surely necessary to regulate the use of AI and protect rights in the workplace, the effectiveness of these measures in this fast-moving area of technology is limited due to their reactive nature. By the time litigation has made its way through the courts, or new legislation is introduced to address an identified harm, the issues faced by workers are likely to have evolved. Moreover, even where remedial regimes exist, it will be important for these to be supported by preventative policies and frameworks aimed at ensuring employers do not deploy workplace technologies in a manner incompatible with human rights.

In an area that is moving so rapidly it is particularly useful to consider methods of regulation that have the primary goal of preventing infringements of workers' human rights from the use of algorithmic management in advance of their occurrence. For example, the EU's draft AI Act adopts an approach along these lines to 'high risk' systems, which includes

[46] For an example of surveillance technologies being found to infringe other rights due to this chilling effect, see *Big Brother Watch v UK* Application no 58170/13 (ECHR, 25 May 2021).

software used to hire, select, manage or terminate employment.[47] The draft Act imposes obligations upon the provider (i.e. the developer) of the software to ensure, in advance of marketing the system, that it meets requirements such as appropriate data and data governance systems, transparency, human oversight and accuracy, robustness and cybersecurity.[48] These *ex ante* obligations are central to the Act, although they are supplemented by obligations to monitor the use and impacts of the system once it is deployed by the user. Whilst there are legitimate concerns about the reliance upon methods of self-assessment by providers,[49] this approach does have the benefit of seeking to prevent harms rather than merely providing a remedy after they occur. Here, we focus on two valuable *ex ante* modes of regulating algorithmic management that are currently in force: pre-emptive duties on employers under data protection and equality law and collective bargaining over the introduction and use of technology at work. We regard these as mutually reinforcing mechanisms that could be used to improve the position of workers who are subject to algorithmic management.

Comparable to the AI Act's self-assessment approach, there are existing pre-emptive duties on employers to conduct assessments of any proposed algorithmic management strategy in advance of its introduction. In the UK, for example, there is a specific duty imposed on all public sector actors to have regard to equality considerations when making decisions,[50] and this should guide and constrain the implementation of algorithmic management in the public sector. Similarly, employers' duty to make reasonable adjustments for workers with a disability means they must take steps to ensure that the implementation of any workplace technology

[47] Proposal for a Regulation of the European Parliament and of the Council Laying Down Harmonised Rules on Artificial Intelligence and Amending Certain Union Legislative Acts (COM/2021/206 final) ['EU AI Act'], Annex III, para 4.
[48] EU AI Act, Chapter 2 and Article 16.
[49] From the labour sphere, see Valerio de Stefano, 'The EU Proposed Regulation on AI: A Threat to Labour Protection?' (*Regulating for Globalization Blog*, 2021) <http://global-workplace-law-and-policy.kluwerlawonline.com/2021/04/16/the-eu-proposed-regulation-on-ai-a-threat-to-labour-protection/>; and Aislinn Kelly-Lyth, 'Dispatch 39 - European Union: The AI Act and Algorithmic Management' (2021) Comparative Labor Law & Policy Journal 1.
[50] Equality Act 2010, section 149.

does not disadvantage them.[51] Of more general relevance to these data-driven technologies is the duty, imposed by Article 35 of the GDPR, to conduct impact assessments where technologies pose a high risk to the rights of data subjects.

Algorithmic management of the kind outlined herein falls within the scope of the GDPR's listed situations that require a data protection impact assessment (DPIA).[52] The assessment must include, amongst other content, an assessment of the risks to the rights and freedoms of data subjects and outline the measures envisaged to address the risks. A broad interpretation of the phrase 'rights and freedoms' is supported by the recommendations of the Article 29 Data Protection Working Party.[53] We argue that it should be taken as referring to the rights contained in the EU Charter of Fundamental Rights,[54] as well as those in the ECHR as discussed above. In a recent case relating to a Police authority's use of facial recognition software, the UK Court of Appeal held that, despite attempting to address the Article 8 ECHR implications of its high risk processing, the DPIA 'failed properly to assess the risks to the rights and freedoms of data subjects and failed to address the measures envisaged to address the risks' as required by the GDPR and Data Protection Act.[55] In the context of algorithmic management tools, therefore, employers are required to undertake an assessment of the risk to a wide range of human rights and identify steps to minimise them. Failure to comply with the obligation to conduct a DPIA may result in a significant fine.

Soft law and self-regulatory measures such as impact assessments will not prevent all infringements of workers' fundamental rights by algorithmic management.[56] Nevertheless, these assessments do have the potential to raise awareness amongst employers of likely impacts

[51] Ibid., sections 39(5) and 20.
[52] See GDPR, Article 35(3)(a).
[53] Article 29 Data Protection Working Party, *Statement on the Role of a Risk-Based Approach in Data Protection Legal Frameworks* (WP 218, 30 May 2014) 4.
[54] Heleen Janssen, 'An Approach for a Fundamental Rights Impact Assessment to Automated Decision-Making' (2020) 10 International Data Privacy Law 76.
[55] *R (Bridges) v The Chief Constable of South Wales Police* [2020] EWCA Civ 1058, para 152.
[56] See the chapter by Ortalda and De Hert on impact assessment in this volume.

upon human rights and to help avoid unintentional violations from taking place. Provided, of course, that they are taken seriously by employers and not regarded as a mere tick box exercise. One significant shortcoming in respect of the current law's effectiveness is that the assessments conducted under the GDPR are not publicly accessible, making it difficult for workers, unions and external organisations to audit them. This is problematic, as access to and scrutiny of impact assessments is key if they are to make a valuable contribution to the protection of human rights at work. This is therefore an area where further reform is needed, for example through the introduction of independent external auditing requirements.[57] It is unfortunate that, while there is some provision for external certification of this kind in the EU's draft AI Act, it does not take the opportunity to extend certification to the use of algorithmic management of work.[58]

If DPIAs were publicly accessible, they could form part of a virtuous circle with the second important mode of *ex ante* regulation identified here: collective negotiation and agreements between employers and trade unions. As Valerio de Stefano argues, in addition to setting out adequate standards for the treatment of the worker, regulation of technology in the workplace must be adaptable and adapted to the needs of specific workplaces.[59] Collective bargaining and agreements provide a flexible and context-specific means of shaping the algorithmic management of workers.[60] Trade unions or worker representatives are in a position to highlight the threats that workers face in their particular workplace, which are likely to include those set out above, as well as more context-specific threats to fair, decent and safe working conditions. For example, union representatives may be able to resist an algorithm that sets an expected pace of work at 95 percent of the quickest worker, on the grounds that such a high standard is inappropriate and impractical given that the workforce contains a range of

[57] Ifeoma Ajunwa, 'An Auditing Imperative for Automated Hiring Systems' (2021) 34 Harvard Journal of Law & Technology 622.
[58] Kelly-Lyth, see above note 49, 9.
[59] Valerio De Stefano, '"Negotiating the Algorithm": Automation, Artificial Intelligence, and Labor Protection' (2019) 41 Comparative Labor Law & Policy Journal 15, 30.
[60] Ibid., 31.

physical abilities. In this way, collective agreements reached between unions and employers can complement more abstract national regulation by introducing a framework that is tailored to countering the distinctive risks that arise in a particular workplace or sector.

Indeed, collective negotiations and agreements relating to algorithmic management have already begun. In Spain, for instance, the government reached an agreement with social partners earlier this year on the rights of platform workers.[61] It requires platforms to share information about how working conditions are determined by mathematical or algorithmic formula with the legal representatives of workers. The legislation is a huge boost for the position of unions in relation to bargaining to improve the conditions and treatment of workers in the sector. In the UK, public sector workers in Wales are now covered by a set of principles on 'Digitalisation at Work' agreed between trade unions, public sector employers and the Welsh Government. Key principles emphasised in this agreement are the centrality of worker voice and consultation when introducing new technology in the workplace, that implementation must be managed in such a way so as not to negatively impact workers' health or wellbeing, and that workers' rights must be safeguarded in the design and implementation of new technology.[62] Whilst these changes were realised due to Government action, there have also been successful negotiations over algorithmic management practices in the private sector, with similar negotiations and agreements existing in the logistics and transport sectors.[63]

These examples show that it is possible for social partners and collective negotiations to lead to specific regulations that strike a fair balance between the rights of workers and the desire of employers to reap the benefits of new technologies. Of course, for collective

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[61] Ane Aranguiz, 'Spain's Platform Workers Win Algorithm Transparency' (*Social Europe*, 18 March 2020) <https://socialeurope.eu/spains-platform-workers-win-algorithm-transparency>.

[62] See Workforce Partnership Council, *Agreement Partnership and Managing Change* (2021) <https://gov.wales/sites/default/files/publications/2021-12/workforce-partnership-council-agreement-2021.pdf>.

[63] See Unite the Union's *Draft New Technology Agreement* (2017) <https://www.unitetheunion.org/media/1236/draft-new-technology-agreement-october-2016.pdf>; and Communication Workers Union, *Key Principles Framework Agreement* (2018) <https://www.cwu.org/wp-content/uploads/2020/12/Joint-draft-KEY-PRINCIPLES-FRAMEWORK-AGREEMENT_18_12_20_Final.pdf>.

bargaining to be an effective means of regulating algorithmic management it must be facilitated by supportive legal frameworks and reinforced by the ability of workers to take industrial action in disputes over the use of workplace technology. For example, a UK union, Independent Workers of Great Britain, staged protests against the introduction of fingerprint scanning for clocking in/clocking out. Their resistance was successful: the employer halted the policy's implementation.[64] To realise the potential of collective bargaining for influencing the integration of technology and AI in the workplace, it is vital that legal mechanisms exist to enable workers to exercise voice over the use of algorithmic management and exert pressure on employers by going on strike. This indicates the importance of further research into how existing legal frameworks can be leveraged to allow workers to participate in decisions relating to algorithmic management and thereby ensure the use of these technologies is consistent with their human rights.

5 Conclusion

In this chapter, we have provided an overview of the current uses of AI and related technologies by employers for the purposes of algorithmic management and highlighted how these pose a fundamental threat to human rights in the workplace. The risk of employers infringing workers' human rights through exercises of their discretion and managerial prerogative does not recede, and indeed becomes more acute, where decisions are fully or partially automated. A human rights framing of algorithmic management can also assist us in developing a detailed regulatory response to this phenomenon, including by placing clear limits upon the use of technologies in

[64] Ben Chapman, 'UCL Strike: Outsourced Workers to Walk Out in Protest Over 'Bullying and Discrimination' *The Independent* (6 November 2019).

the workplace and protecting workers from invasive or unfair uses of surveillance or management by AI. Further research is required to investigate the particular duties and remedies that should be put in place to protect rights in this context.[65] But these measures must be complemented by pre-emptive consideration of context-specific risks and commitments to take steps to mitigate those risks: collective bargaining and impact assessments are important tools for employers, unions and workers in this process. While these alone will not be sufficient to secure workers' human rights against the full-frontal threat posed by new technologies, they are nevertheless central elements of the broader package of measures needed to govern AI in the workplace.

[65] For a proposed comprehensive statute protecting human rights at work, see Collins above note 38.