

Artificial intelligence and workplace safety and health: The future of work or a complex challenge?

EU-OSHA Executive Director William Cockburn talks about the impact of artificial intelligence on occupational safety and health

Artificial intelligence (AI) has revolutionised many aspects of our daily lives, from how we learn and entertain ourselves, to how we travel or communicate with others. Work is not an exception, with various AI-based technologies being more and more commonly integrated into different industries and job roles. However, a question often arises: will AI be beneficial or detrimental for occupational safety and health (OSH)? Let's explore the challenges and opportunities that artificial intelligence presents for workers' safety, health and wellbeing.

Understanding AI in the workplace

What exactly is AI? AI refers to systems that display intelligent behaviour by analysing their environment and taking actions with some degree of autonomy to achieve specific goals. For instance, one of the most common forms of AI used at work nowadays include text editors and autocorrect features, which have evolved from simple mistake detectors to systems using algorithms to identify incorrect language use, offer corrections and even predict text while writing, seemingly reading people's minds.

AI is also employed in automated vegetable harvesting in farms, self-driving cars, chatbots used in customer support, systems optimising supply chains, quality control and project management, automated grading in education, and many more. This technology therefore appears in very different forms and can be integrated in many sectors and jobs, each presenting their own possibilities and risks. We analyse here several key areas to understand their implications for OSH.

Connecting workers and clients through AI

[Digital platform work](#) is a relatively new form of work in which simple forms of AI algorithms match demand and supply of labour through a platform. Think of an app connecting someone ordering food with a delivery driver, or a website matching a person needing help fixing a leaking tap with someone offering their plumbing services. These connections are facilitated by AI-based algorithms, which are sets of instructions guiding computers' software to solve specific problems, such as pairing labour supply and need.

For instance, in the food delivery situation, the algorithm allocates the job considering factors like location, but also others like the rating and previous reviews of the worker. This reliance on AI algorithms presents a significant risk: the lack of transparency. Workers and employers often have little insight into all the factors influencing algorithmic functioning and the outcomes they generate, which can lead to undetected biased decisions, dangerous situations for workers and ethical issues.

While platform work also offers [potential benefits](#) for workers such as a high degree of flexibility and the opportunity to develop different skills and acquire work experience, this opacity poses challenges to platform workers' OSH. Their precarious employment status, coupled with job insecurity and unpredictable income, and factors such as high work intensity and long working hours further add to the bill.

Automating tasks with AI

Another way AI is reshaping the workplace is through [task automation](#), where AI-based systems can assist or take over repetitive or dangerous tasks. This allows workers to focus on more stimulating work and avoids high-risk situations. For example, implementing automated airport check-in kiosks or fast-food ordering machines in which repetitive tasks (scanning boarding passes, taking orders, etc.) are delegated to AI-based systems, frees up time for workers to engage in more creative and meaningful work. Moreover, robots automating processes like welding, painting or cutting in industrial settings keep workers out of harm's way.

While this automation means that workers are potentially safer and more fulfilled with their jobs, it also introduces OSH risks. These include diminished human situation awareness and overreliance on the technology, leading to reduced vigilance and attention, and could cause fatal mistakes. Other challenges are related to the loss of workers' skills and the emergence of psychosocial risks stemming from reduced motivation to maintain manual skills and fears about job loss.

AI and algorithms managing workers

An additional area where AI and algorithms are largely present in the workplace is [worker management](#). AI-based systems collect real-time data from the workspace, tasks and workers and use it to make automated decisions regarding worker management. For instance, AI systems organising shifts consider factors like employee availability, skills and workload to create a schedule. They can also use insights on client satisfaction, task duration and productivity levels to assess worker performance and suggest rewards or penalties.

AI-based worker management has the potential of improving OSH by monitoring risks, analysing work patterns and human behaviour and, as a result, detecting and preventing dangerous situations and accidents. For example, AI systems can monitor workers' postures to identify whether they are at risk of developing neck and back pain and other [musculoskeletal disorders](#).

However, as a result of the rapid work pace often encouraged by these systems, workers can experience anxiety and other psychosocial issues, particularly evident in call centres where systems track the duration of the calls, intervals between them and frequency of the workers' breaks. Moreover, the capacity of AI to undertake tasks carried out until now by middle managers can result in a loss of relationship between workers and managers, which is proven to increase work-related stress. Additionally, given that AI management systems need to gather a considerable amount of personal data, there may be risks associated with data privacy and excessive surveillance, for example regarding an employee's health or personal conversations.

Tackling the issue from a legislative perspective

Addressing the risks to OSH posed by AI requires a comprehensive approach, of which legislative action is the first step. Several regulatory efforts have been initiated at the national level, and the European Union has also started its legislative process in this regard.

The [EU AI Act](#) is a landmark legal framework aimed at regulating AI. It includes algorithmic transparency, highlighting the importance of developing AI systems in a manner that ensures traceability and clarity. Furthermore, the recently approved [EU directive on digital platform work](#) aims to enhance transparency in the algorithms managing human resources and ensure that workers are adequately informed and have the right to contest automated decisions.

What's next?

Moving forward, it is key to recognise that legislative measures on their own will not be able to create safe and healthy work in the digital age, and collaboration among companies, workers, regulatory authorities and tech firms is essential. Together, they must proactively address OSH challenges originating from this technology in order to seize the many benefits that it can bring to the world of work.

Employers bear the responsibility of safeguarding employees and mitigating potential risks — and technology developers could be of great help. Workers and their representatives should be actively informed, consulted and involved whenever AI-based systems are introduced or used at their workplace. Adopting a 'human in command' approach to enjoy the strengths of digital technologies while ensuring safety and health at work is crucial to place humans at the centre of workplace digitalisation.

Discover more:

- Discover [EU-OSHA's 'Safe and healthy work in the digital age' campaign](#).
- The campaign's priority areas include [digital platform work](#), [automation of tasks](#) and [worker management through AI](#) and
- More information about #EUhealthyworkplaces, OSH and AI on EU-OSHA's [Facebook](#), [X](#) and [LinkedIn](#).

EU-OSHA is the European Union information agency for occupational safety and health, promoting a risk prevention culture to improve Europe's working conditions. Set up by the EU in 1994 and based in Spain, EU-OSHA researches, develops and distributes reliable, balanced and impartial safety and health information, networking with organisations across Europe.

FACTS AND FIGURES

- 5% of workers in the EU use machines or robots that incorporate AI at work and 3% use robots that interact with them. (EU-OSHA, [OSH Pulse 2022](#)).
- 6% of workers have earned part or all of their income working for a digital labour platform (EU-OSHA, OSH Pulse).
- The right to **algorithmic transparency** for digital platform workers, covered within the legal framework of the [EU directive on digital platform work](#), has already been established at the national level in some EU countries such as Spain, through the Riders' Law. ([EU-OSHA, 2022](#))
- The sectors with the highest prevalence of human-robot interaction in the EU are **manufacturing** (28% of companies have implemented it); **wholesale and retail trade, repair of motor vehicles and motorcycles** (19%) and **construction** (7%). (EU-OSHA, [ESENER 2019](#))
- Across the EU, 30% of workers report that their organisation uses digital devices to organise work, 27% state that their performance is rated by third parties (e.g. customers, colleagues, patients etc.) through digital technology and 25% indicate that technology is being used to supervise or monitor their work and behaviour. (EU-OSHA, OSH Pulse, 2022)