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Beyond Risk Classification: Worker-Centred Governance of AI in Industrial Workplaces

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Abstract

This paper moves beyond a purely risk-based and product-safety-oriented reading of the EU Artificial Intelligence Act (Regulation (EU) 2024/1689, 'AI Act') by focusing on the governance of legitimate workplace uses of AI. Taking industrial management and ergonomics as a case study, it argues that AI systems deployed to optimise logistics, occupational safety, ergonomics and worker well-being pursue objectives that warrant regulatory treatment beyond prohibition or rigid risk classification.

Situated at the intersection of EU AI regulation, data protection law and labour law, the paper examines the limits of the AI Act's risk-based architecture, particularly its emphasis on product safety and technical compliance. It adopts a fundamental rights-based perspective that explicitly balances the freedom to conduct a business (Article 16 CFR) with the rights and interests of workers, whose structural informational asymmetries and dependency are often intensified by AI-driven management tools.

The analysis is organised around three interrelated questions. First, it examines whether AI systems used in industrial settings to enhance operational efficiency and to support

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ergonomic assessment and occupational safety fall within the scope of the AI Act, including where such systems are developed in-house and deployed exclusively for internal purposes. Second, it assesses how these systems should be classified in terms of regulatory risk, particularly where workers' images or abstract biometric representations (such as *keypoints*) are processed. Third, and most centrally, it asks whether heightened regulatory risk should primarily lead to prohibitive responses (such as bans on video-based monitoring), or whether it should instead trigger enhanced informational, participatory and governance-based safeguards.

The paper advances the central thesis that legitimate workplace uses of AI aimed at business organisation, innovation in management practices, and the protection of workers' safety, health and well-being should not be addressed predominantly through prohibitions, whether under the AI Act or national labour law. Rather, higher levels of risk should be compensated through reinforced duties of information, transparency and worker involvement, capable of supporting genuinely free and informed decision-making and mitigating structural power imbalances inherent in employment relationships.

Building on the recognised limits of the AI Act's product-safety focus, the paper argues that national labour and employment law must play a decisive role in operationalising worker-centred AI governance, while safeguarding the conditions for legitimate innovation in industrial contexts. It proposes a participatory model in which workers from different levels of seniority and functional roles are actively involved in the design, deployment and adjustment of AI systems to concrete industrial use cases. By reframing AI governance beyond risk classification and prohibition, the paper contributes a normative framework that seeks to secure legitimacy, trust and acceptance of workplace AI, while preserving its potential benefits for innovation and worker well-being.

Main references

Alavigharabagh, A., Hajihashemi, V., Machado, J. J. M., & Tavares, J. M. R. S. (2023). Deep learning approach for human action recognition using a time saliency map based on motion features considering camera movement and shot in video image sequences. *Information*, 14(11), 616. <https://doi.org/10.3390/info14110616>

This work was funded by Fundação para a Ciência e a Tecnologia – UIDB/00443/2025-2029, Centro de Investigação Interdisciplinar em Justiça

Aloisi, A., & De Stefano, V. (2023). Between risk mitigation and labour rights enforcement: Assessing the transatlantic race to govern AI-driven decision-making through a comparative lens. *European Labour Law Journal*, 14(2), 283-307. <https://doi.org/10.1177/20319525231167982>

Jeganathan, B. (2025). AI-Powered ergonomics: Enhancing workplace safety through posture detection. *International Journal of Research and Scientific Innovation (IJRSI)*. <https://doi.org/10.51244/IJRSI.2025.12020037>

European Parliament. (2021). Improving working conditions using Artificial Intelligence: Opportunities and risks for labour markets and work environments (Study requested by the Special Committee on Artificial Intelligence in a Digital Age (AIDA)). Policy Department for Economic, Scientific and Quality of Life Policies, European Parliament. [https://www.europarl.europa.eu/RegData/etudes/STUD/2021/662911/IPOL_STU\(2021\)662911_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2021/662911/IPOL_STU(2021)662911_EN.pdf)

Grote, G. (2023). Shaping the development and use of artificial intelligence: How human factors and ergonomics expertise can become more pertinent. *Ergonomics*, 66(11), 1702-1710. <https://doi.org/10.1080/00140139.2023.2278408>

Gharahbagh, A. A., Hajhashemi, V., Ferreira, M. C., et al. (2024). Hybrid time-spatial video saliency detection method to enhance human action recognition systems. *Multimedia Tools and Applications*, 83, 74053-74073. <https://doi.org/10.1007/s11042-024-18126-x>

Jarota, M. (2023). Artificial intelligence in the work process: A reflection on the proposed EU regulations from an occupational safety and health perspective. *Computer Law & Security Review*, 49, 105825. <https://doi.org/10.1016/j.clsr.2023.105825>

Krzywdzinski, M., Gerst, D., & Butollo, F. (2022). Promoting human-centred AI in the workplace: Trade unions and their strategies for regulating the use of AI in Germany. *Transfer: European Review of Labour and Research*, 29(1), 53-70. <https://doi.org/10.1177/10242589221142273>

Minotakis, A. (2025). Regulating AI in the workplace: A critique of the EU AI Act and the platform work directive through a worker-centred lens. *Platforms & Society*, 2. <https://doi.org/10.1177/29768624251396248>

Özkiziltan, D., & Landini, F. (2025). Trustworthy and human-centric? The governance of workplace AI under the EU AI Act. *Transfer: European Review of Labour and Research*, 31(4), 503-517. <https://doi.org/10.1177/10242589251336193>

Pereira, C., Silva, D., Lopes, P., Magalhães, M., & Santos, M. (2025). Designing new technologies in an industrial workplace: What role do workers and their current and future work play in the design process? In M. Lowe & Y. Luximon (Eds.), *Creativity, innovation and entrepreneurship (AHFE International Conference 2025, AHFE Open Access, Vol. 166)*. AHFE International. <https://doi.org/10.54941/ahfe1006121>

This work was funded by Fundação para a Ciência e a Tecnologia – UIDB/00443/2025-2029, Centro de Investigação Interdisciplinar em Justiça

Thatcher, A., Appah Acquah, A., Aublet-Cuvelier, A., et al. (2026). Ergonomics/human factors and the future of work: A global systems perspective. *Applied Ergonomics*, 131, 104665. <https://doi.org/10.1016/j.apergo.2025.104665>

Todolí-Signes, A. (2021). Making algorithms safe for workers: Occupational risks associated with work managed by artificial intelligence. *Transfer: European Review of Labour and Research*, 27(4), 433-451. <https://doi.org/10.1177/10242589211035040>

Transparency and Disclosure Declaration

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