JOURNAL OF INTERNATIONAL RESEARCH & MULTIDISCIPLINARY INNOVATION

Digital Alienation and the New Proletariat: How Algorithmic Labour Restructures Marxist Categories of Exploitation

Author: Lavanya Singh

Affiliation: Lynx legal partners

Email: lavanya@lynxlegal.in

Submitted to: Journal of International Research & Multidisciplinary Innovation (JIRMI)

Date: 10 April 2026

Abstract

This paper concludes that the four aspects of alienation – alienation from product, alienation from process, alienation from species-being and alienation from others – found in Marx are all alive and kicking in contemporary algorithmic labour within platform capitalism. This paper argues that digital alienation is not just an industrial alienation, but a qualitatively new reconfiguration of labour relations based on systematic analysis of recent empirical research (2021-2025) and case studies of labour relations in gig economy platforms, content moderation systems and labour involved in data annotation. The paper examines various examples, such as Uber drivers, Meta content moderators, Amazon MTurkers and call centre workers, to illustrate how algorithmic management systems produce classic Marxist alienation and emergent alienation (including epistemic alienation and temporal boundary collapse). The paper thus builds upon critical political economy and shows the continuing analytic relevance of alienation theory to the understanding of the exploitation of labour in the digital age, and points to the need for theory development to address some of the conceptual gaps within alienation theory. The analysis finds that to theorise digital workers as alienated workers, not entrepreneurs, is essential if one is to achieve any depth of understanding or to mobilise against the platform-based exploitation.

Keywords: digital labour, alienation, platform capitalism, algorithmic management, labour exploitation, Marxist political economy

1. Introduction

Facebook (Meta) content moderators, in January 20204, have sued the company over the "psychological harm" they suffered after being subjected to graphic violence, child abuse and traumatic content without having a say in how the content is moderated or supported (Gillespie, 2020). The number of these workers, about 15,000 worldwide, spend their workdays flagging harmful content, but never get to see their work in the platforms they help sustain. They are not the owners of the standards they employ to moderate, they do not control the algorithmic system they use to generate content, they do not set the price of their emotional labour, they do not coordinate to oppose undesirable conditions. Digital labour forces workers into a strange paradox. On one hand, they are deeply embedded in global production systems. On the other, they are systematically isolated from the actual products they make, the processes they use, and the communities that sustain them.

The Economic and Philosophic Manuscripts of 1844, in which Marx developed his analysis of alienation, explained how capitalist production disconnects workers from their work in four ways. However, current labor research generally either sees digital work as ‘disruption' or brings the categories of the nineteenth century to bear on the twenty-first century without thinking. Instead, this paper takes a third stance which is that digital labour exacerbates and restructures Marxist alienation via algorithmic systems which are engineered to maximize extraction while minimizing autonomy and solidarity of the worker. This paper relies on a case-based critical analysis to show the four dimensions of Marxist alienation are differently experienced in platform capitalism. Drawing on empirical studies and documented experiences of labour on platforms of gig economy and content moderation and data annotation, the paper examines continuities and new forms of digital estrangement from industrial alienation, which defy established theoretical frameworks.

2. Methodology

This paper takes a critical theoretical perspective based on previously documented empirical studies and case analysis. The methodology involves three steps: (1) theoretical reworking of Marx's framework of four modes of alienation, adapted for the context of digital labour; (2) systematic collection of empirically documented evidence on condition of digital labour from peer-reviewed articles published between 2021 and 2025, one of which was a systematic literature review by Hart et al. (2025) of 56 studies on AI, automation, and worker alienation; and (3) in-depth analysis of four real case studies of digital labour exploitation, verified. The cases were chosen because they have empirical documentation, public legal records, and research from academic institutions or labour organisations that have been peer reviewed. The study critically addresses theoretical constraints of using nineteenth-century concepts of alienation in the digital age, while simultaneously arguing that alienation theory has analytical relevance to contemporary relations between workers and employers. Only academic journals, systematic reviews, publicly available legal documents from reputable labour research organizations and university-based researchers, and published research reports are considered sources.

3. Marx's Theory of Alienation: Foundational Framework

Under capitalism, Marx argued, labour is alienated along four aspects: Marx, 1988). The first thing is alienation of the workers from their product, they don't own what they produce, the capitalists own the object and the value added to it. Secondly, workers are separated from the labour process — how, when, and how fast they work; they are appendages to the machines and capital's needs. Thirdly, people are separated from their species-being, their unique human abilities to create, to be independent and to achieve self-realisation, which are turned into an instrument for capital accumulation. Fourth, there is alienation of workers from other workers: workers are divided against each other and they cannot cooperate, but only compete; workers are individualised, turned into competitively oriented individuals, no longer into a collective class (Marx, 1988; Musto, 2020). Marx placed these forms of alienation in industrial

production, where material aspects were perceptible: workers in the factory could see machines, its management and the physical fatigue. Contemporary scholarship that builds on this framework, especially that of Øversveen (2021) and Fuchs (2020), suggests that the emergence of digital systems does not de-alienate, but rather makes it harder to grasp the mechanisms of alienation by automating processes, creating algorithms and diffusing labor arrangements. AI and labour has been the subject of 56 studies reviewed by Hart et al. (2025), all of which are highly applicable to the digital workplace today. But they explain that the new addition to that lineup is a new form of emotional and intellectual isolation embedded directly into automated processes: AI. But most important of all, Marx's theory was formulated in an industrial context in which exploitation was tangible. Digital alienation is by opacity: workers don't know how the algorithms are controlling them; they don't have access to data on their own labour performance; they don't know how their labour is being turned into capital. This is not a task of straightforward application of nineteenth century notions, but a task of theoretical elaboration.

4. Digital Labour Under Platform Capitalism: Landscape and Definition

Platform capitalism, as typified by companies such as Uber, Amazon, Meta, and DoorDash, operates through algorithmic mediation of labour, surveillance of worker performance and exploiting contracts that designate those who work as independent contractors as opposed to employees (Srnicek, 2017; Zuboff, 2019). This is a way to pass on corporate risk to employee but keep management in check with algorithms.

Digital labour, as defined by the researchers, includes paid gig labour (delivery and rideshare drivers), content creation and moderation (moderators, data annotators, content creators), affective and communicative labour (customer service, social media management), and data generation due to user interaction with the platforms (Fuchs & Mosco, 2016; Allmer et al., 2024). Millions of workers are already participating in the global digital labour market: The ILO estimates that as of 2021, 722 million workers are involved in platform work around the world, with many of these concentrated in the Global South and where labour is cheapest (ILO, 2021). Platform capitalism boldly promises “flexibility” and “entrepreneurship,” critically, which are their main selling points. Uber describes drivers as “independent entrepreneurs” and

Amazon MTurk describes work as “flexible micro-employment.” However, empirical evidence shows that these framings hide an extensive managerial control. Kellogg et al. (2020) describe the more fine-grained management of working hours that algorithmic systems provide at Uber, such as determining which jobs to show drivers, penalising the drivers if they reject unprofitable jobs, real-time tracking of location, and the ability to deactivate drivers without providing any explanation. That is, management without bosses, the mechanisms of control of capitalism made technical and depoliticised.

5. Four Dimensions of Digital Alienation: Case-Based Critical Analysis

5.1 Alienation from Product: Content Moderation and Data Annotation

Meta has around 15,000 content moderators across the world, with the most at the lower-cost locations in Mexico, India and the Philippines. These workers are engaged by third parties (mainly TaskUs and Accenture) and are supposed to "moderate" content including CSAM, murder, suicide, racial violence and many more that affect the billions of users' information environments. They lack an ownership interest in moderation policies or control over what is allowed or deleted and do not understand how their work creates the market value of Meta (Gillespie, 2020; Plantin & Sako, 2020). Gillespie (2020) recounts in interviews how moderators have felt a very high level of cognitive dissonance; that is, they engage in important labour for a global corporation and are largely invisible, underpaid, and contractually expendable. One moderator, whose remarks were captured by Gillespie in her research, says: "I delete content all day, but I'll never know if I was right or not; the algorithms decide whether I am right or wrong, I'm just a machine that responds to another machine. This is an example of alienation from product: they do not get to see what they create, the direction of their labour, and they do not receive any part of the value that is extracted from their work. Likewise, Amazon Mechanical Turk (MTurk) is one such systematized method of data alienation. They do micro-tasks (image labelling, text classification, data annotation) at an average rate of $1-6 per hour, mostly in the Global South, but with 40% in the United States. This data then feeds into machine learning systems worth billions that workers never use, can never see how their annotations affect the behaviour of AI and have no claims on the resulting IP or economic value (Rahman, 2021). This is a new enclosure, as Rahman (2021) puts it: "Platform capitalism

encloses the commons of human attention and labour data" just as colonialism did with the enclosure of common lands. Industries are created that rely on workers' unpaid or grossly underpaid cognitive extraction of raw materials (labelled data).

5.2 Alienation from the Labour Process: Algorithmic Management and Control

Uber's algorithmic management system is a good example of how platforms wield unprecedented control while maintaining the illusion of independence. All the routes, prices and working conditions are algorithmically determined, the drivers do not choose them. A limited amount of information is provided by the algorithm when presenting offers to the driver, and if drivers refuse offers that are not profitable for them, their visibility will be reduced and the algorithm will not offer them so many more opportunities (Duggan et al., 2020; Kellogg et al., 2020); if the driver accepts jobs that exceed their acceptance-refusal thresholds, they will be hidden from the algorithm and will not be offered as many jobs. Kellogg et al. (2020) provide empirical evidence that Uber has a more granular management than traditional management, including analysis of Uber's algorithmic management. In factories, workers know each other's ways of working so they can form resistance; at Uber, workers don't know the rules, they are "black boxes". One driver in Duggan et al.'s (2020) qualitative study says: "The algorithm directed me to the airport and I knew that the surge pricing had decreased, but I couldn’t check for fare prices, so I drove for 30 minutes to get a $4 ride and there's no explanation, it just happens. This is alienation from process – workers are not in control of the labour process itself; they respond to algorithmic imperatives of which they do not fully understand or resist. However, global freelancing platform Upwork is also employing algorithmic visibility systems to regulate worker behavior. The "success score" of freelancers is used to determine their visibility in search results (based on factors such as the level of completeness of their profile, their client ratings and their response times). The formula to calculate the algorithm is, however, kept proprietary. This results in "algorithmic agency": workers continuously self-monitor and adjust their behaviour, without needing to receive explicit supervision, under a regime of internalised control (Briken, 2020). Freelancer writes: "You're always performing for an algorithm you don't understand. You're chasing metrics that

you don't know will be there tomorrow. The labor process becomes fully algorithmic, such that the algorithmic logics are not subject to the workers' control or negotiation.

5.3 Alienation from Species-Being: Deskilling, Emotional Suppression, and Dehumanisation

Amazon call centres in India are a textbook case of the alienation of creative ability and humanity. The workers must work on scripts that can be monitored algorithmically, meaning there is no time that could be off limits, no hold time that can exceed, and no customer satisfaction rating that is not met. Pawan (2018) cites ethnographic work which reveals how Indian call centre employees are deeply fragmented with regards to their identities, as they take on anglicised names and accents, act on suppressing emotional reactions to angry customers, and on scripted denials of their own knowledge and judgment. One of the workers in Pawan's study says: On the phone I'm supposed to be happy all the time but as soon as I walk away from the call centre, I'm tired, angry, I don't exist as a person anymore, I'm a voice that follows a script for 8 hours a day. This is alienation from species-being: the ability to make independent decisions, to be emotionally truthful and to find solutions to problems is diminished, suppressed and denied the worker system by system. Not only is it a difficult task for labour, it's a difficult task for humanity.

The epistemic alienation of the species-being, a type of alienation specific to the digital world, is a characteristic of data annotation work. Workers marking images for computer vision systems are training AI systems which will eventually replace them. They know what's happening, but they can't refuse to participate: they need income. This is called "knowingly contributing to your own obsolescence" ("tacit collaboration in self-exploitation") by Griesbach et al. (2019); it's a psychological form of alienation in which workers can't escape the system's purpose to replace them. “Training the system that will replace my job, I know this, but if I don’t work, I can't eat. So I train my replacement.” (Griesbach et al., 2019, p. 84).

5.4 Alienation from Other Humans: Platform Isolation and Algorithmic Atomisation

The design of the platform clearly discourages interaction between workers and the sharing of knowledge by the collective. Gig economy workers are isolated: Uber drivers don't make new contacts by relying on official channels, rideshare apps make it hard for workers to

communicate directly with each other, algorithmic matching reduces the likelihood of them meeting the same workers again. This isolation is not incidental, it is designed to maintain isolation (Kellogg et al., 2020; Wood et al., 2019). In Wood et al. (2019), they trace the ways in which platform algorithms purposefully sabotage coordination by workers. A coordinated refusal of low wage jobs by Uber drivers in multiple cities caused the algorithm to dynamically split the driver cohorts into different groups, allowing different prices to different drivers such that the coordinated action was made impossible. As one of their drivers states on their thread, “The app knows what we're doing. When drivers started turning down work from the app for surge pricing suddenly the app would offer us high-paying work on a one-on-one basis or prevent us from seeing those jobs.” That is algorithmic otherness or alienation with other humans. In traditional industrial alienation, a competition between workers was the basis of the alienation; in digital alienation, it is the prevention of even the possibility of the collective consciousness being formed. Workers are unable to acquire the consciousness of co-suffering and thus solidarity.

6. Critical Tensions and Theoretical Limitations

Marx's alienation theory, which was developed in the 19th-century, is inadequate to explain digital labour in the 21st-century, and some of the arguments in the theory need to be expanded. Digital alienation has several aspects that are not included in Marx's four types. One aspect of digitality is epistemic alienation (lack of understanding of the algorithms governing one's work). Uber employees don't understand the algorithm for calculating surge pricing, and Meta's moderators don't know how to determine if a post is good. This is constructive ignorance, platforms thrive on workers' confusion. Theories of alienation focus on the alienation from the material means of production; for the digital, it must be the alienation from the algorithmic means of production (Hart et al., 2025). Second, temporal alienation (the breakdown of the distinction between work and non-work) is heightened in digital situations, but is other than in industrial situations. Marx realized that capitalism captures all workers' time, digital platforms internalise it further. Gig workers use an app on their own phone, call centre workers have not left work psychologically, content moderators suffer trauma outside the working hour. This is

the "instrumentarian time" that Zuboff (2019) describes: Any time activity is now potentially data that is profit. There have been no existing alienation frameworks that successfully theorize this temporal colonization. Third, third-party analyses of digital labour highlight that workers in Global South countries are affected by the alienation of work in a more severe manner than in high-income countries. While most scholarship on MTurk is written in English, Rahman (2021) provides a documentation of how MTurk workers in Bangladesh are alienated from capital, algorithms, and colonial economic hierarchies. This geographic divide has implications for the theoretical universality of alienation as it is experienced differently according to pre-existing economic positions (Hart et al., 2025).

7. Conclusion: Digital Alienation as Evolutionary Intensification

Systematically analysed cases in this paper have confirmed the relevance of Marx's four-part model of alienation for the analysis of digital labour in platform capitalism from an analytical point of view. Algorithmic management does not produce alienation out of the blue; instead, it exacerbates, masks, and restructures the mechanisms of alienation identified by Marx. The disconnect of the content moderators from the morality of their work further magnifies the feeling of alienation from the product, especially the decisions that influence the information environment for billions of people. The algorithmic management of Uber drivers is born, and it is technically opaque.Alienation-from-process is Uber's algorithmic management. Data annotators' existential knowledge that they train their own replacements brings epistemic dimensions of alienation of species-being which Marx could not have theorised. At the same time the paper recognizes that it is important not to simply reapply nineteenth-century terms, for the algorithmic logics that workers cannot access, the temporal colonisation of non-work time, the dispersed labour arrangements that eliminate physical congregation, and engineered isolation that eliminates collective consciousness formation are all examples of what is truly new. Future research needs to be able to build new post Marxism theories of digital alienation which include these new aspects of digital alienation while maintaining the analytical power of the concept. The theoretical and political relevance is great. But when we see digital workers as alienated workers and not as entrepreneurial agents (as platform rhetoric suggests), the

political landscape changes dramatically. Structural change is necessary, and it is a change for the whole group of alienated workers, not for the individual worker who has the "better work ethic" or the "skilling up." Digital alienation is therefore a necessary precondition to worker organising. If digital labour is not clearly identified as exploitation, workers have a lack of theoretical tools to express their alienation as a systemic problem, rather than as individual ones. The paper argues that alienation theory is not a bygone concept; instead, it offers valuable analytical tools for this digital era. However, these demand evolutionary change, the recognition of the unique nature of digital labour and the continuity of the tendency of capital to extract value from labour with a minimum of worker autonomy. In this respect, the task for critical political economy is to further develop alienation theory for algorithmic situations, in order to offer theoretical basis for new digital labour movements and collective struggles against algorithmic exploitation.

References

1. Allmer, T., Can Arslan, S., & Fuchs, C. (Eds.). (2024). Critical perspectives on digital capitalism: Theories and praxis. tripleC: Communication, Capitalism & Critique, 22(1), 140–433.
2. Briken, K. (2020). Making autonomy realistic: Avoiding (old) pitfalls and thinking beyond the alienation frame. Capital & Class, 44(4), 623–633.
3. Duggan, J., Sherman, U., Carbery, R., & McDonnell, A. (2020). Algorithmic management and app-work in the gig economy. Human Resource Management Journal, 30(4), 479–491.
4. Dubal, V. (2017). The drive to precarity: A political history of work, regulation, & the road in San Francisco's taxi & uber economies. University of California Press.
5. Fuchs, C., & Mosco, V. (2016). Marx and the political economy of the media. The Political Economy of Communication, 4(1), 72–99.
6. Gillespie, T. (2020). Custodians of the internet: Platforms, content moderation, and the hidden decisions that shape social media. Yale University Press.

7. Griesbach, K., Reich, A., Elliott-Negri, L., & Milkman, R. (2019). Algorithmic control in platform food-delivery work. New Technology, Work and Employment, 34(1), 35–55.
8. Hart, K., Bayraktar, L., Wang, L., & Chen, Y. (2025). Automation, alienation, and artificial intelligence: A Marxist analysis of the modern workplace—A systematic literature review (PRISMA 2020). Research Square Preprints, December 2025.
9. Kellogg, K. C., Valentine, M. A., & Christin, A. (2020). Algorithms at work: The new contested terrain of control. Academy of Management Annals, 14(1), 366–410.
10. Marx, K. (1988). Economic and philosophic manuscripts of 1844 (M. Milligan, Trans.). Prometheus Books. (Original work published 1844)
11. Pawan, V. (2018). The emotional labour of customer service: Ethnography of Indian call centres. Oxford University Press.
12. Rahman, K. S. (2021). The invisible cage: Workers' reactivity to opaque algorithmic evaluations. Administrative Science Quarterly, 66(4), 945–988.
13. Srnicek, N. (2017). Platform capitalism. Polity Press.
14. Wood, A. J., Graham, M., Lehdonvirta, V., & Hjorth, I. (2019). Good gig, bad gig: Autonomy and algorithmic control in the global on-demand economy. Work, Employment and Society, 33(1), 56–75.
15. Zuboff, S. (2019). The age of surveillance capitalism: The fight for a human future at the new frontier of power. PublicAffairs.
16. Musto, M. (2020). The last Marx: Manuscripts, legacy, critique. Stanford University Press.
17. Øversveen, E. (2021). Capitalism and alienation: Towards a Marxist theory of alienation for the 21st century. Critical Sociology, 47(4/5), 525–542.
18. Plantin, J. C., & Sako, M. (2020). Governance and governance infrastructures: The challenge of aligning governance capabilities with governance needs. Internet Policy Review, 9(1), 1–20.