Artificial Intelligence and the Future of Human Employment

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In this explainer, we first focus on Generative Artificial Intelligence (GenAI), specifically its impact on the future of human employment. We begin by describing what GenAI is. We then review news articles on multinational companies that have started or plan to replace jobs with GenAI, followed by implications for Trust, Identity and social resilience. We add a brief section on the knowledge economy, highlighting how GenAI reshapes knowledge-intensive work differently from prior industrial or agrarian automation. We conclude with governance frameworks, compensation models, and other AI forms (Agentic AI, robots, and human-AI teams.).

What is Generative AI?

Generative AI (GenAI) refers to software that uses advanced algorithms trained on large datasets to create new content or *artefacts* [1]. These can include text, images, audio, and code; popular tools include ChatGPT, Microsoft Copilot (formerly Bing AI), and DeepSeek.

Most GenAI systems are powered by Large Language Models (LLMs) - a type of machine learning model designed to perform a large range of language related tasks. Such tasks include the generation of text, translating between languages, answering questions and summarising information. Beyond text processing, GenAI tools can also generate images, videos and music.

The capabilities of GenAI have expanded significantly in recent years, leading to its adoption in multiple industries including manufacturing [2], pharmaceuticals [3], banking [4], and finance [5]. Use cases for GenAI include:

- **Manufacturing:** Designing products, optimising production processes, predicting equipment failures, simulating scenarios, and detecting defects [2].

- **Pharmaceuticals:** automating routine tasks such as summarising and/or translating documents, detecting diseases early and developing personalised treatments [3].

- **Banking:** Assisting customers with account set up, resolving disputes and providing investment advice [4].

- **Finance:** Detecting fraud, forecasting stock prices, processing insurance claims and automating tasks like drafting templates and providing customer support [5].

In short, GenAI isn't just a technological breakthrough—it's reshaping how we work, create, and resolve problems.

GenAI replacing human personnel

In constructing this section, we reviewed news articles reporting on companies that are starting or planning to replace jobs

typically held by humans with GenAI systems. Many businesses are using GenAI software to improve productivity [6]. Consequently, several multi-national companies (MNCs) have announced plans to lay off employees due to AI-driven organisational changes. For example:

- AI-based call centre software has enabled Microsoft to save US$500 million in call centre costs, after 9,000 employees were laid off [7].

- Employees in Google's Platforms and Devices unit were offered a severance package as part of a strategic push towards AI and the unit's aim to streamline operations [8].

- Meta has announced that it will lay off 3,600 employees and plans to use the money saved from these layoffs to hire new employees to develop its AI infrastructure [9].

- DBS Group, a major bank in Southeast Asia, plans to reduce around 4,000 temporary and contract staff over the next three years as the bank adopts AI across its business [10].

Earlier automation transformed agrarian and industrial economies by mechanising manual and routine work. GenAI targets non-routine cognitive tasks central to the knowledge economy – editing, coding, analysis, research synthesis, drafting, and design – reconfiguring professional work itself.

GenAI in the knowledge economy

GenAI is starting to automate slices of professional work – drafting, summarising, coding, and first-pass analysis. In economics studies, access to a GenAI Assistant boosted customer support productivity by around 14% on average (and around 34% for novices), showing how entry-level tasks are especially exposed to

tool-based automation (Brynjolfsson et al., [47]).

As this spreads, expect a reshaping of white-collar work: growth in high-wage, AI-complemented roles at the frontier; growth in lower-wage, AI-adjacent roles; and pressure on mid-tier 'safe' knowledge jobs. Large assessments find that non-routine cognitive tasks – once seen as automation resistant – are now directly impacted, with higher-income occupations often more exposed to LLM capabilities (Lane [48]).

Firms that accumulate proprietary data, models, and workflows can scale knowledge production at very low marginal costs, widening gaps between frontier and laggard firms – a dynamic now amplified by AI (OECD [49]).

All of this raises a training challenge: if GenAI eats the 'apprentice work', how do juniors learn? Early sector reports (especially in law and software engineering) flag worries about a thinning skills pipeline even as firms report efficiency gains (Akka [50]). Unsurprisingly, GenAI in knowledge work also strains TIPPS.

Critical issues for trust, identity and social resilience

Computers and industrial automation displaced millions of jobs in the twentieth century [12]. For businesses, the computer presented an opportunity to save money by reducing operating costs through workers retrenchment. For workers, the loss of their jobs threatens their livelihood. For the state, its survival depends on retraining its workforce and ensuring that existing and future workers are equipped with the skills for adapting to the changing landscape. GenAI represents a new level of cognitive displacement, including creative and professional services once thought safe from automation [11]. As AI diffuses,

disparities in income and wealth may widen across sectors and classes [12] – especially within the knowledge economy, where expert tasks are increasingly being automated.

Trust: Trust between employees and management underpins productivity [29]. Without a shared understanding of the impact on human personnel when GenAI tools are deployed across the company's business units, employees may mistrust the motivations, intentions and decisions of company management. Some firms promise reskilling in AI and data skills (e.g., DBS Group [13] and Ikea [14]), but whether generic AI/data skills secure longer term employment remains uncertain. Human-in-the-loop designs and checks and balances remain essential as GenAI influences decisions [15, 16]. Hence, whether AI diminishes trust relates to issue of AI alignment. If the AI that has replaced the human is ethically aligned, then (at the organisational level) trust may not be impinged much but it if the AI has a different value set driving its algorithms or if it is impossible to know (because transparency is poor) then trust will likely be diminished.[1]

Identity: Deployment of GenAI tools in the workplace threaten workers' psychological needs for competence, relatedness and autonomy [17,18]. Highly skilled workers can develop a sense of professional inadequacy [18] and may feel the pressure to develop new skills and capabilities so that they can compete against the GenAI tools [17]. A recent study that analysed the attitude of 181 licensed psychotherapists found that 40% who identify as non-technically

inclined possess a negative attitude on the use of AI due to a gap in their knowledge of AI [19].[2]

Social resilience: The overreliance on GenAI has been shown to impair humans' ability in critical thinking [21,22,23,32]. This in turn compromises our collective capability to counter information disorder[3], thereby reducing resilience towards harms caused by, for example, disinformation campaigns [23, 32]. However, benevolent bots could help combat misinformation[4]. Over relying on GenAI tools has been shown to reduce critical thinking and creativity in humans and deskill knowledge workers in the workplace [21, 22]. However, benevolent bots such as a 'virtual coach' could potentially support the upskilling of workers [40].

Future developments and reactions to GenAI

Gregory & Sircar [39] highlight unresolved Intellectual Property (IP)/ authorship and fair use questions for training data. To address this issue, frameworks that govern the use of GenAI in the workplace are needed. Several articles have discussed regulation of AI within specific contexts such as democracy (Cupac and Sienknecht [24]), regulatory challenges (Hacker [25]), harm to individuals due to misinformation (A. Haq [26]), and responsible use of AI in the workplace (Söllner et. al. [27]), but governance for employment and skill ecosystems remains under-specified.[5]

Humans have often spent years of their lives mastering a specific set of skills. The knowledge underpinning those skills

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[1] Insights and analysis on AI alignment can be found in the explainer titled "AI Alignment in the Context of TIPSS" by Apeh et. al. [30].
[2] Analysis and insights into identity erosion can be found in the explainer titled "AI and Identity Erosion" by Lu, Y. et. al. [20].
[3] An explanation of information disorder can be found in the explainer entitled "Artificial Intelligence and Information Disorder" by McAlaney et. al. [38].

[4] Insights into benevolent bots can be found in the SPRITE+ Sandpit 4 project titled "Misinformation Intervention Countermeasures for Health Advice (MICHA): Benevolent Bots for Combatting Misinformation in Online Health Communities" by Wu et. al. [37].
[5] A detailed discussion on AI governance can be found in the explainer titled "Beyond Principles: Adaptive Governance for AI's Next Frontier" by Mostefaoui et. al. [31].

becomes training data for GenAI tools which then learn how to create new content. The GenAI tools are then capable of generating new content (at great speed), which can threaten the livelihood and income of their human trainers.

Because GenAI is trained on human-produced knowledge, it can generate outputs that compete with 'teachers'. This motivates compensation models that account for contributions by individuals and tools e.g., a similarity score approach allocating rewards between artists and diffusion models [28]. In knowledge-work settings, adjacent ideas (dataset provenance, licensing, levy-style mechanisms) are being explored to sustain creative and professional labour markets.

Other Types of AI

Other AI-based systems, including robots and software agents - have long replaced human roles in semiconductors [33] and automative manufacturing [34]. Recent

work explores robotics substitution in construction, with frameworks to assess substitution potential and specialised robots for specific tasks [35] Agentic AI systems that can make decisions are predicted to replace human decision makers in the future [41].

Collaborative approaches emphasise human-robot/AI teaming. Matthews and Greenspan [36] argue for collaboration over machine-only systems. Hauptman et. al. [42] explored AI agents as active team members. They showed that the chances of a human-AI team succeeding increases significantly when AI agents can adapt to changing situations and adjust their behaviour. Simón et. al. [43] showed that collaborations between humans and AI agents can create value for a company when humans and AI agents engage in productive dialogue. Li et. al. [44] found that when humans team up with an AI agent and endorses the AI agent's

effectiveness and authenticity, consumers acceptance of AI agents increases.

Concluding remarks

GenAI is here to stay – and in the knowledge economy it changes not just *what* gets automated, but *how* expertise is trained, tested, and rewarded. Done well

(augmentation, human-in-the-loop, protected training time, and hybrid AI skills), it can lift both productivity and capability [45]. Done badly, it widens inequality, hollows out early-career pipelines, and erodes autonomy [46]. And if GenAI proves highly effective, a tougher questions looms: as firms integrate it, what stops large-scale layoffs – do we inch toward pockets of a 'jobless society' (Dijmărescu and Ionescu [51]), and if so, who pays the bills? Do we expand unemployment insurance, consider universal basic income, or mandate work-sharing and retraining? That's where policy comes in: stress-test safety nets, consider targeted reskilling, work-sharing or income supports, and set guardrails on high-velocity tech adoption so efficiency gains don't come at the expense of people.

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