THE GOOD, THE BAD, AND THE NUANCED:

EFFECTS OF GENAI ON THE JOB MARKET

THESIS

- ★ There is currently a lack of necessary data to make a strong conclusion about the overall effect of AI in the job market.
- ★ Despite limited data, our review of current AI research suggests that nearly all industries will feel some impact from AI.
- ★ Our study aims to explore the diverse effects of AI on jobs—covering its positive, negative, and nuanced aspects.

WANTED

★ DEAD OR ALIVE ★

NECESSARY DATA TO MAKE CONCLUSIONS ABOUT THE EFFECT OF AI ON THE JOB MARKET

REWARDS $1,000,000

WHY DON'T WE KNOW ANYTHING?

★ Studies about how AI will impact job market present very contradicting findings.

★ Need better and more detailed data about jobs and skills to better predict how automatable they are

★ This will help researchers predict how work will change because of AI.

★ Important to pinpoint which jobs might be taken over by technology to avoid widespread job loss.

★ Article 1, Article 2

THE GOOD

AI'S EFFECT ON THE AVAILABILITY OF JOBS

★ General consensus:

   ☆ AI will make some jobs obsolete

   ☆ But AI will create new jobs (albeit jobs for highly skilled workers)

   ☆ Overall there will be a reduction of jobs, but not by much.

★ This is a positive when taken in context with the popular belief that AI will replace all human jobs

★ But this can be a negative because the types of jobs being eliminated and created are not equal

★ Article 1, Article 2
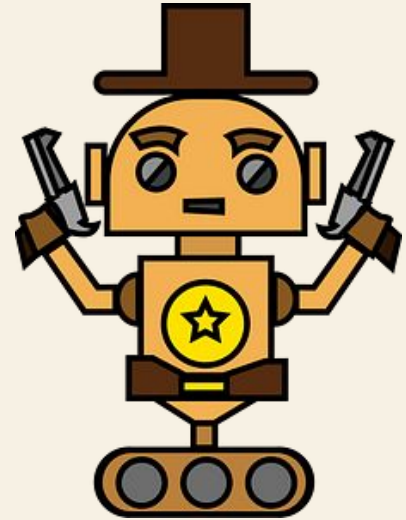
AI'S EFFECT ON OCCUPATIONAL SAFETY

★ AI has the potential to lower job risks and increase safety in the workplace

★ AI algorithms

　☆ predict safety issues

　☆ pinpoint hazards

　☆ and suggest ways to prevent danger in the workplace

★ Article 1, Article 2, Article 3
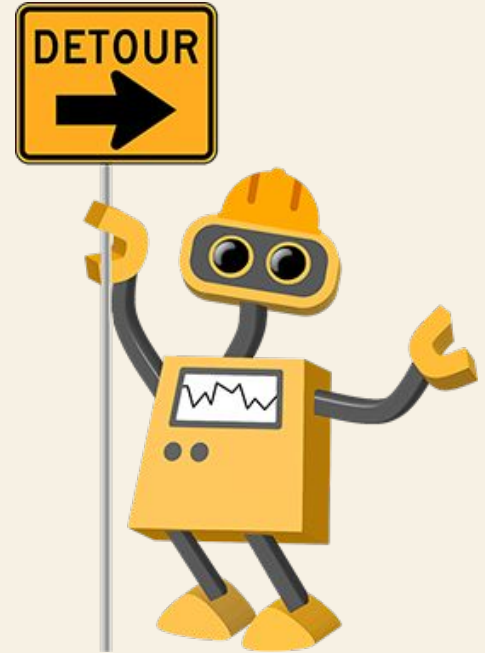
AI'S EFFECT ON GLOBAL ECONOMY

★ AI helps workers do their jobs better and faster, making them more productive overall.

★ The effect of AI on how much work gets done has massive economic benefits

　☆ $2.6 trillion - $4.4 trillion annually

　☆ Labor productivity growth of 0.1 to 0.6 percent annually

★ "Not everyone benefits equally from economic progress. An important concern is whether such positive impacts guarantee employees' well-being"

★ Article 1, Article 2
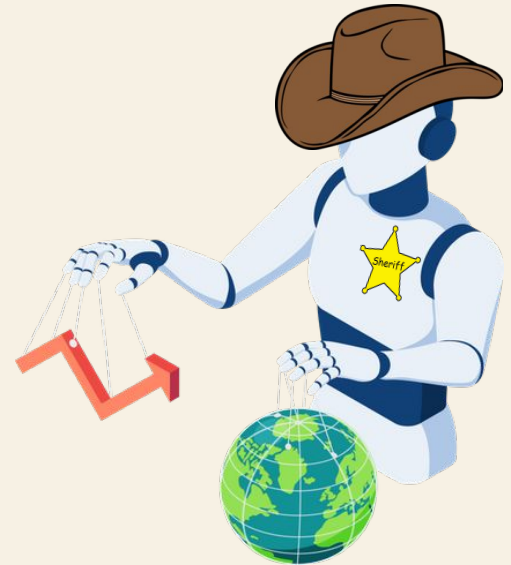
THE BAD

← →

WHAT ARE THE RISKS?

Study by [Walkowiak and MacDonald](), defines exposure as a proxy indicator measuring the potential impact of GenAI at the task level, particularly emphasizing time-efficiency in task completion.

Performed a study on the Australian workforce that found 38.9% of tasks within jobs are directly exposed to LLMs.

They measured ten categories of risk in order to create a mapping of of AI risks within the workforce.

The study built their exposure indicators using synthetic data generated by the GPT-4 API.

WHAT ARE THE RISKS? (CONT)

Table 1: Risk-exposure indicators

Risk-exposure	Definition
Privacy	GenAI can potentially generate, distribute, memorize, or reproduce personal information, violating privacy laws and regulations.
Cybersecurity	Vulnerabilities (unauthorised access, system manipulation or data theft) can be exploited by malicious actors.
Professional standards	Using GenAI to complete tasks requiring a professional license (e.g., a medical diagnosis or legal advice) can be a breach of regulations or professional guidelines.
Ethics and bias	GenAI can diffuse discriminatory or biased content that can harm people
Misinformation and manipulation	GenAI can generate, disseminate or propagate false or misleading information or be used to manipulate information.
Safety and harm	Using instructions given by GenAI or integrating GenAI with other systems can lead to physical harm (e.g., in healthcare or transportation)
Liability and Accountability	Using GenAI can involve an unclear assignment of responsibility when GenAI makes mistakes or causes harm.
Intellectual property	GenAI can contravene copyright, trademarks, or patents.
Industrial relations	GenAI can present some risks for collective negotiations, job displacement, wage pressure, or worker rights.
Competition	GenAI can change competition rules, including increased concentration or abuse of market power.

For these risks, the study prompted GPT-4 to adopt the role of a regulator and assess whether a worker with access to GenAI could complete tasks in a manner that potentially contravenes Australian laws and regulations.

WHAT ARE THE RISKS? (CONT)

Results: Within the 38.9% of tasks directly exposed to GenAI, they found the following AI risk exposures:

- ★ Privacy 12.4%
- ★ Cybersecurity 13.7%
- ★ Breach in professional standards 13.6%
- ★ Unethical or harmful bias 14.1%
- ★ Misinformation and manipulation 10.6%
- ★ Safety and physical harm 26.4%

While this study focused on the Australian workforce, these findings underscore the need to thoroughly investigate the risk associated with integrating this technology into any workforce.

WHO IS AI REPLACING?

ChatGPT's abilities in understanding and generating human-like text have the potential to replace certain tasks previously carried out by human freelancers.

A job replacement effect may potentially occur when companies and clients increasingly opt for AI-driven solutions as they are often cost-effective, readily available, and capable of handling repetitive tasks efficiently.

Study by Dermirci et al., found that there was a 14% decrease following the release of ChatGPT in the number of jobs associated with writing, statistical analysis, electronic engineering, accounting research, and web development within online freelance job platforms.

★ Trend was not seen in "manual-intensive" jobs.

★ This points to a potential negative indicator for job growth in "automation-prone" areas.

★ These findings may be indicative of a broader pattern of job market contraction across various sectors as GenAI advances.

A GLOBAL ANALYSIS

A study by [Gmyrek et al.](#) explores the transformative impact of automation on the job market with a global analysis of GenAI on job quantity and quality.

Notably, they found a gendered disparity between men and women in how exposed these two groups are to automation.

★ In high income countries, potential exposure to automation affects the share of women's employment more than two-fold compared to men (7.9% vs 2.9%)

★ Similar pattern observed in upper-middle-income countries (2.7% vs 1.3%)

The concentration of job losses in female-dominated occupations poses a threat to the progress made in increasing women's labor market participation over the past decades.

A GLOBAL ANALYSIS (CONT)

This study predicts that widespread adoption of GenAI could exacerbate global productivity disparities, with larger shares of jobs falling into the augmentation category.

Suggests that GenAI systems like GPT are more likely to become productivity tools benefiting high-income countries due to existing infrastructure. However, low-income countries risk falling behind as potential benefits of GenAI are limited by the lack of reliable infrastructure.

This may cause a growing "digital divide":

★ Access to GenAI tech is dependent on broadband connectivity and electricity.

  ☆ In 2022, a third of the global population lacked internet access, and many with access faced limitations in connection quality and service costs.

  ☆ Reliable electricity remains a challenge in developing countries with 49% of registered firms experiencing electrical outages lasting an average of 4.5 days per month. (World Bank Survey, 2018)

A GLOBAL ANALYSIS (CONT)

Potential Solutions:

★ Need for strategies that manage the transition of workers affected by automation and to mitigate potential negative impacts on job quality for those influenced by augmentation.

★ Building and strengthening systems of social dialogue, including workplace consultation, can facilitate a smoother transition.

★ Policy attention is needed for countries lacking the requisite physical infrastructure and skills to benefit from this new technology.

By pursuing these solutions we can hope to work towards a more inclusive and equitable future amidst the evolving landscape of GenAI and its impact on jobs

THE NUANCED

FREELANCE WORK

Freelancers can convert the threat of replacement into an opportunity by crafting services that complement AI's capabilities.

★ 7.81% increase in transaction volume for freelancers that embraced AI
★ 4.51% decrease for those resisting using AI

Labor platforms should promote AI adaptation, possibly through training sessions to tailor their marketplace to emerging customer needs.

Article
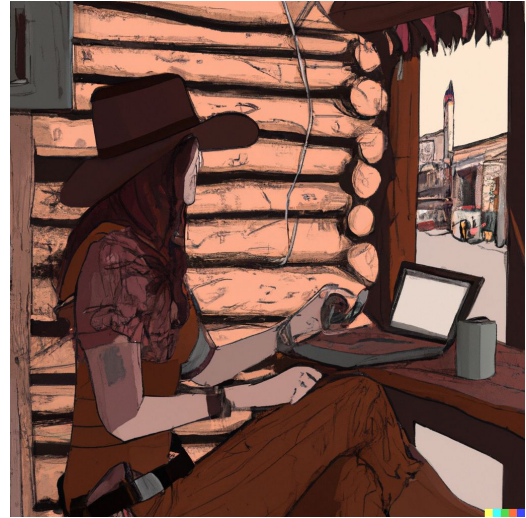
RADIOLOGY

At an artificial intelligence conference several years ago, deep learning pioneer Geoffrey Hinton publicly asserted, *"We should stop training radiologists now."*

2022 study: One-sixth of medical students who would have chosen radiology as their first choice did not due to concerns about AI.

Several AI technologies have already been integrated into clinical practice.

[Article 1](), [Article 2]()

RADIOLOGY (cont'd)

★ AI augments the diagnosis decisions of humans rather than replace them altogether
★ Humans still needed to report results & communicate with patient-facing doctors
★ Imperative that radiologists are involved as AI is developed for clinical practice

Humans working in radiology who are not radiologists *may* have their jobs automated completely. Radiologists perform many other non-prediction tasks, and so artificial intelligence is *unlikely* to automate these tasks.

Article 1, Article 2

LONG-TERM IMPACTS

★ Identification of jobs susceptible to technology is crucial to prevent widespread job loss
  ○
★ The importance of education and training to ensure broad positive impact
  ○
★ Businesses utilizing AI must consider ethical implications

★ There is little evidence that AI will completely replace humans

AI's role in computer learning is crucial for the future.

Article

CONCLUSION

THE GOOD:
New jobs, occupational safety, increased productivity

THE BAD:
Privacy concerns, cybersecurity threats, biases, loss of jobs

THE NUANCED:
Adaption to AI in jobs, augmentation of jobs with help of AI, necessity of AI ethics

★ Despite data limitations, we can determine there are good, bad, and nuanced aspects of AI's influence on the job market.

★ AI presents opportunities for increased efficiency and productivity, it also poses challenges related toerns, and global inequalities.

★ Future developments in AI will require careful consideration of these factors to ensure a balanced and inclusive approach to technological advancements.

TAKEAWAYS

★ Who benefits financially from the increased productivity enabled by AI?

★ What responsibilities does the government have to equitably distribute the wealth generated by AI advancements?

★ Considering the anticipated job loss and industry disruptions, should we provide a universal basic income?

★ How can we assist workers in adapting, acquiring new skills, and securing new employment opportunities?

★ Additionally, who bears the responsibility for funding these initiatives?