

Reflections on Data Science 2023

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#1. Lead author: [Ludek Cizinsky], Calling BS on "Amazon, Google, Meta, and Microsoft already laid off more than 51,000 people. Apple did 0 layoffs so far. The secret is very simple - they were hiring responsibly and never overhired."

[Claim] The LinkedIn post by Linas Belinas discusses recent layoffs by big tech companies. Linas claims that Apple is the only major big tech company that has not laid off any employees (yet). He suggests that this is because Apple has been avoiding overhiring and hiring responsibly, unlike other companies such as Amazon, Google, Meta, and Microsoft. Linas supports his claim by showing a relative employee count change in the last 3 years (from 2020 to 2022). [Why is it BS] However, this claim is questionable as Linas provides only one possible interpretation of the hiring data. Additionally, he supports his claim with a dramatic statistic that looks more significant than the year-to-year growth of companies. For instance, Facebook (Meta) grew according to Linas by 94%, but looking at Figure ??, we can see that Facebook has grown relatively consistently year-to-year. According to this [source](#), Facebook's growth from 2021 to 2022 was only 20%. It is also important to compare companies in the same sector. Amazon is the largest company and a significant part of its workforce is in logistics. Thus, it is crucial to take into account the type of business that a company is in. In e-commerce, the workforce often scales according to current demand, especially during Christmas. This is apparent in Figure ??, where Amazon had to address the high demand for its services due to the Covid-19 pandemic. Finally, as one comment points out, it is important to define what constitutes an employee, as big tech companies like Apple may have many subcontractors, and getting rid of a subcontractor can be reported as 0 employee layoffs. [Tools used] I selected this post because I gave it a like, but now I recognize that this may show my confirmation bias. As a big Apple user, it is natural for me to overlook details that may prevent me from seeing alternative explanations. This leads me to another technique - alternative hypothesis. As mentioned above, Apple may not lay off any of its employees but could get rid of its subcontractors. Additionally, all mentioned companies have versatile businesses, so perhaps a fairer comparison would be to look at their specific divisions. Finally, Linas mentions that all companies laid off a total of 51,000 people, while Apple made 0 layoffs. This total number of laid-off workers may seem significant, but it is relatively small compared to the size of the mentioned companies (order of magnitude). [(Un)intended consequences] The clear consequence is that Apple gains great PR, while other companies are put in a bad light. On a micro level, this might negatively affect managers who had to make tough decisions about laying off selected employees. For instance by being seen as the ruthless ones.



Figure 1: Year-to-year growth of employee count ([source](#))

#2. Lead author: [Ludek Cizinsky], Calling BS on "Will a robot take YOUR job? Study reveals the careers that face the highest risk of being replaced by AI - with call centre workers, English and History teachers topping the list"

[**Claim**] In an article in Dailymail, the author discusses the findings from a recently published paper about how advances in language modelling (LM) will affect occupations. The paper uses an **AI Occupational Exposure metric** (AIOE) to measure how much each occupation is exposed to these advances. In the paper authors' own words, *...the AIOE measures "exposure" to AI, but whether that exposure leads to augmentation or substitution will depend on the specifics of any given occupation.*

¹ For this reason, I find problematic claims in the article stating that a given occupation is likely to be **made redundant** or **even replaced**. Apart from the click-bait title, I therefore call BS also on the sentence *A study from Princeton University in New Jersey, US has revealed the 20 occupations most at risk of being made redundant thanks to AI.* [**Why is it BS**] The adjusted AIOE measures an occupation's exposure to advances in LM, however, it doesn't indicate whether the occupation will be replaced or augmented. The metric for each profession consists of three terms that are multiplied with each other for each ability and summed together. **Ability-level exposure** (A) measures how each of the selected 52 human abilities (e.g. oral expression) is affected by the LM advances. This is then weighted by **Ability's prevalence** (A) and **Ability's importance** (I) in the given profession. Figure ?? displays the detailed explanation. In summary, instead of explaining what AIOE is and how it is computed, the article author took a shortcut that is more understandable for the general audience. [**Tools used**] I believe the author is appealing to **confirmation bias**, especially among non-technical people. These individuals may not fully understand the capabilities of the technology and have likely been exposed to numerous media articles or videos about how AI will take over the world, including jobs. Furthermore, the article places emphasis only on one possible way of interpreting the results, i.e. if your profession is X, then AI will most likely take your job soon. However, as argued above, this is highly dependent on the specifics of the profession and it is quite possible that you will have to learn rather how to use AI to become more productive at the given job. (**multiple hypothesis**) [(Un)Intended Consequences] The article instills fear rather than excitement about new technologies. This can negatively affect the mental well-being of people whose professions are mentioned on the list. Furthermore, it may decrease their self-confidence and self-worth, as the article implies that they are replaceable by a robot.

We then calculate the AIOE for each occupation k as follows:

$$AIOE_k = \frac{\sum_{j=1}^{52} A_{ij} \times L_{jk} \times I_{jk}}{\sum_{j=1}^{52} L_{jk} \times I_{jk}} \quad (2)$$

In this equation, i indexes the AI application, j indexes the occupational ability, and k indexes the occupation. A_{ij} represents the ability-level exposure score. We weight the ability-level AI exposure by the ability's prevalence (L_{jk}) and importance (I_{jk}) within each occupation as measured by O*NET by multiplying the ability-level AI exposure by the prevalence and importance scores for that ability within each occupation, scaled so that they are equally weighted.

Figure 2: Explanation of the computation of AIOE metric ([source](#))

¹Note that AIOE was originally designed to measure exposure to AI in general, i.e., to all kinds of AI fields including NLP. This metric was adjusted in the paper such that only language modelling is considered.