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Rage Against The Machine: Artificial Intelligence, Automation & The Future of Work

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Key points

Artificial Intelligence is no longer science fiction. It is a reality which is developing in unprecedented rates. This rapid development raises an important question: Are human workers ready to compete? Research suggest that they are not. Over 54% of jobs in Europe are expected to be automated by 2040. Such dynamic can have major socioeconomic consequences such as mass displacement of workers and increased inequalities. Many critics have pointed out that AI will create new jobs and therefore there is no reason to worry. Nevertheless, even if this assumption is true it's most likely that these new jobs will require advanced training which most workers lack. Modernizing education in Europe is vital in order for states to deal with this problem. Furthermore, it is critical that these policies take place at a European level in order to avoid a fragmented Single Market.

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Introduction

There are two types of artificial intelligence:

1. Narrow Intelligence (ANI) which specializes in doing one task,
2. General Intelligence (AGI) which is able to execute every task that a human being can do.

Currently automation is programmed by narrow intelligence software. This describes everything, from the algorithms that generate targeted advertisements, to the robotics in the car factories which assemble the vehicles. Artificial narrow intelligence is already displacing jobs. But as this wasn't enough, AI is improving in every way possible. It's getting better, faster and cheaper. This is caused firstly by the exponential increase of computational power available on the market and secondly by the economic incentive that

companies have to develop such systems and reduce costs. In other words, automation is no longer bounded to routine manufacturing jobs.

The transportation industry is an excellent example. Driverless cars are already here. Companies like Google, Tesla and Uber have produced successful prototypes proving that the automation of transportation is imminent.[i] Autonomous cars may not be perfect, but they don't have to be. They just have to be better than human drivers. It is indicative that according to last years' Accident Report issued by the European Commission, 1.4 million people were injured in just one year due to traffic accidents. It is estimated that autonomous vehicles will be able to cut down on the injuries and deaths of traffic accidents by 80%[ii]. Autonomous cars don't blink, don't get tired and don't get hungry. In 2013, two Oxford-based researchers estimated that the risk of automation for Driver Workers in the next 20 years is 98%[iii]. Today, in the EU there are 11 million transportation workers[iv]. All of them are under threat.

Manual workers aren't the only ones that should be worried. Just as human muscles are being pushed out of the workplace by mechanical muscles, human brains will soon be replaced by mechanical brains. Lawyers are great examples. While the word "lawyer" is connected to images of courtrooms, a large amount of legal activity is concerned with document discovery. This is a task which can be automated, and which will save law firms valuable time and resources. Consultancy company McKinsey has estimated that 35% of paralegal activities can already be automated[v]. In other words, white collar workers are not off the hook. So, what is the big picture?

A widely referenced Oxford study estimated that 54% of all European jobs will be automated by 2034[iii]. A similar research conducted by the Bank of England estimated that 15 million of UK jobs are under threat[vi]. It should be mentioned that these papers are only considering the threat of Narrow Intelligence and do not calculate for General Intelligence which scientist have pointed out to be 20 years away[vii].

These arguments are not universally accepted. Counter-arguments are pointing out to the beginning of the Industrial Revolution and claim that artificial intelligence will not just destroy jobs, but it will create new ones as well. Hence, there is no need to worry about mass unemployment because a big proportion of the workforce will realign their career paths.[viii]

It is important to consider the possibility that this wave of automation is truly unique. As mentioned before, previous technologies of automation replaced muscle power. However, AI is threatening to replace the last unique property than human workers possess: cognitive power. Therefore, there is no reason to believe that a sufficient amount of jobs will be created. In our political reality, 25% of unemployment constitutes a crisis. The Oxford researchers predicted that 54% of jobs will be lost. Even if half of their predictions are correct, we still need to worry[ix]. We simply cannot be sure that humans will better at

performing in these new jobs than AI systems[xii]. Horses are helpful in understanding this. The creation of the car engine did not create new jobs for horses. It rendered horses useless.

Nevertheless, even if the critics are correct and this new round of automation creates an abundance of jobs, there are still reasons to worry. Historically, automation led workers from one low skilled job to another. When an industrial worker became unemployed because of automation it was probable that he could find a routine job in the service sector, e.g. as a cashier. However, AI is expected to create high skilled positions. Software engineering is a good example of an occupation that will probably thrive[x] [xi]. Therefore, the transition of workers is not guaranteed to be smooth this time around. It is hard to imagine a Truck Driver losing his job to AI at the age of 40 and going back to school in order to retrain as a software engineer[xii]. Workers lack the training necessary for the increasing number of jobs that require sophisticated digital skills[xiii] [xiv].

If research is confirmed, we are looking at two possible scenarios. The first possible outcome is mass unemployment. A large amount of the workforce is currently under threat. If the predictions about AI automation are correct, these people will be unable, firstly to hold on to their jobs, and secondly to find new ways of employment. This new class of people will not just be unemployed. They will be unemployable. Yuval Noah Harari, an Israeli historian, coined the term "useless class" to provocatively describe this new kind of social stratification[xii]. If left in their own devices, the unemployable workers are expected to cause socioeconomic unrest.

The second possible outcome is increased economic inequality. Automation is mainly threatening middle skill jobs. On one hand, high skill jobs demand capabilities which artificial intelligence cannot yet match. On the other hand, low skilled jobs are expensive to automate due to low wages and the minimal costs they pose to businesses[xv]. Therefore, middle skill jobs are the prime target of automation[xvi]. This dynamic is expected to create a hole in the middle of the social ladder and thus increase the existing inequalities among geographies and people[xvii].

All in all, AI automation poses too many threats for states to remain inactive. There are some member-states that have already developed policies surrounding the issue. Emmanuel Macron's government drafted a comprehensive AI Strategy in March 2018[xviii]. Germany and Finland have established research platforms concerning AI. Last but not least, Denmark has implemented policies regarding digital education which aims to minimize the impacts of AI.[xix]

These policies are innovative, however there are some problems that need to be addressed. Firstly, AI policies tend to focus on the economic opportunities that AI presents and tend to ignore the impacts on the labor markets. Secondly, most member-states have remained completely silent concerning this issue. Therefore, it is urgent for The European

Commission to act, in order to avoid a fragmented Single Market and a multi-speed Europe. The Commission took the right step in April 2018, when a report was issued in order to raise awareness among European Institutions regarding AI.

Recommendations

Education should be a prime concern for states. Researchers have pointed out that the consequences of AI automation are expected to unfold in the next couple of decades. This means that students currently enrolled in schools will most likely face these challenges and will most likely be unprepared. We need to change that. According to The Future Society[xx], enhancement of STEM training in secondary education is critical. Furthermore, STEM needs to be diversified and include courses beyond computer science such as innovation, entrepreneurship and data science. Emphasis should also be given to skills that will most probably be impossible to automate like creativity, critical thinking and emotional intelligence[xiii]. Last but not least, member-states should be encouraged to set up national training and retraining schemes in order to deal with automation-driven unemployment.

Conclusion

The approach to AI described in this policy brief shows the way forward and highlights the need for intergovernmental cooperation. Together, member-states can put artificial intelligence at the service of the many, not the few.

References

[i] E., Brynjolfsson, & A., McAfee. (2011). Race Against The Machine. Digital Frontier Press.

[ii] P., Liu, R., Yang, & Z., Xu. (2018). How Safe Is Safe Enough for Self-Driving Vehicles? Journal of Risk Analysis.

[iii] Frey, C. B., & Osborne, M. (2013). The Future of Employment: How susceptible are jobs to computerization? Retrieved from

[iv] The EU explained: Transport [Pamphlet]. (2014). Luxembourg: Publications Office of the European Union.

[v] Knight, W. (2017, November 6). Is Technology About to Decimate White-Collar Work? MIT Technology Review.

[vi] Elliott, L. (2015, November 12). Robots threaten 15m UK jobs, says Bank of England's chief economist. The Guardian.

[vii] Bostrom, N., & Parot, F. (2017). Superintelligence. Paris: Dunod.

[viii] Automation and anxiety. (2016, June 25). The Economist.

[ix] Drum, K. (2018, July/August). Tech Word: Welcome to the Digital Revolution. Foreign Affairs, 97(4).

[x] Ford, M. (2016). Rise of the robots: Technology and the threat of a jobless future. New York: Basic Books.

[xi] Jobs lost, jobs gained: Workforce transitions in a time of automation (Rep.). (2017). McKinsey Global Institute.

[xii] Harari, Y. N. (2016). Homo Deus. Harvill Secker.

[xiii] Future of work and skills (Rep.). (2017). Hamburg, Germany: Organization for Economic Co-operation and Development.

[xiv] Rotman, D. (2015, June 16). Who Will Own the Robots? MIT Technology Review.

[xv] Neufeind, M., O'Rilley, J., & Ranft, F. (Eds.). (2018). Work in the Digital Age. Rowman & Littlefield International.

[xvi] Acemoglu, D., & Autor, D. (2011). Skills, tasks and technologies: Implications for employments and earnings (Working paper No. 16082). Cambridge, MA: National Bureau of Economic Research.

[xvii] Kasriel, S. (2017, August 14). 6 ways to make sure AI creates jobs for all and not the few. World Economic Forum.

[xviii] Villani, C. (2018, March 8). For a meaningful artificial intelligence: Towards a French and European strategy (Rep.).

[xix] Larosse, J. (2017). Denmark: Towards a Digital Growth Strategy (Rep.).

[xx] Miailhe, N. (n.d.). Making the AI Revolution work for everyone (Rep.). The Future Society Institute.