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Machine Learning and Automata

In the era of digital, where nearly everyone owns a laptop or smartphone, people are implementing devices in their daily lives exponentially. As this market continues to develop, companies must adapt and implement innovative technology to keep up. The adoption of automation and AI will inevitably affect the future of work and change the models of what work means in our society. The main question of "what is possible to automate?" branches out to other problems, such as our ability to deploy technology and how it affects the labor-market dynamics. In recent years, artificial intelligence and autonomous systems have made astounding developments, with the benefits of higher efficiency and less error rates, but at the risk of unemployment going up. In this position paper, we will discuss the effects of AI on the labor market and aim to provide reasonable solutions to the potential problems it may cause.

I.   Estimating the Labor Market Effects of AI

What makes modern advancement of technology so different from the previous decades is that it is no longer just adding muscle or automating routine tasks, as we are starting to develop machines that can perform cognitive tasks via machine learning. This involves feeding neural networks data to create patterns and data analysis. Therefore, it is crucial to estimate the overall effects of these advancements, especially on the labor market since this affects every individual.

Throughout history, we have seen the labor market rise and fall with every new change, and this will be no different. Therefore, we must be able to estimate the effects artificial intelligence will have on the labor market by conducting studies and surveys throughout several different job fields. Experience is another reliable source of information, meaning that certain parts of history could be analyzed to predict how automation will affect the changing labor market. This will particularly make it easier to understand, considering there are people who have lived through the last automation period. It is important for us to do this because the McKinsey Global Institute already conducted their own study and concluded that roughly 51% of activities are relatively easy to automate today, which is a fearsome number to consider (Manyika). The risks and benefits would have to weighed in order to fully understand the effects of AI.

The risks that comes forth from implementing advancing AI technology is that it puts the replaced human labor force out of jobs. With most of these humans limited by not having additional educational values behind them, they find themselves in a threat of being put out of work. With AI advancing the capabilities of automata, this speeds up the predatory nature of machines taking the majority of the labor force. The biggest driving skill that AI is evolving is its way to self-correct. Manykia's interview also says: "Machine learning is essentially a set of techniques that take advantage of neural networks. We feed neural networks a lot of data, and they build up, through what are called "training algorithms," patterns of what the data mean; they build structure and sense out of that." These machine learning techniques closely replicate the same thing that we as humans do when it comes to completing tasks. The best part of it is that these machines do not have all the baggage that comes with hiring and managing people such as: break times, salary raises, healthcare, workers rights, human resources ETC. By not having these accommodations required by the company, the cost breakdown of paying for a machine upfront versus having to invest in people, of which are not guaranteed to stay with the company, is why companies are starting to opt into automata.

Of course, as a group of professional individuals, we hope there will be more benefits than risks when it comes to artificial intelligence. We may someday work with this kind of application so if it were to produce mostly positive results, it would really assist us and others create more to help society. It is known that the demand for robots and sophisticated electronics are on the rise, meaning more people will be needed, therefore more job openings (Casselman). At the same time, with each innovation period comes new inventions and better living. With AI, more change can come and a better way of life could be on the way.

All in all, it is essential to evaluate how AI will affect our labor market and the people working entry-level jobs. If these changes force too many people out of a job, it could prove to be detrimental to our economy since there will be people without income. This is why we must understand what is going to happen if we want to lessen the repercussions. It is in our best interest, as a society and professional individuals, that artificial intelligence brings more than it takes.

II.   The Effect of AI on Relative Earning Power Amongst Classes

The people left behind from being dislocated by AI will need to have enough time to educate and retrain themselves before entering a new labor market. "More permanent policies to supplement work incomes might be needed to support aggregate demand and insure societal fairness. More comprehensive minimum-wage policies, universal basic income, or wage gains tied to productivity growth are all possible solutions being explored." (McKinsey 2017). The transition being discussed will leave workers out of the market for enough duration to damage many middle- and lower-class families who either live paycheck to paycheck or on government

welfare already. By implementing policies in place to promote reeducation, we create a new, more advanced class of workers eager to create more impacts in new fields.

Avoiding higher economic inequality will prevent the inevitability of the masses rising up against the elite 1%. It is crucial for the long-term success of our current economic system to mandate companies to proactively plan for worker displacement. "Many companies are finding it is in their self- interest – as well part of their societal responsibility- to train and prepare workers for a new world of work." (McKinsey 2017). Focusing on the labor market of manufacturing, if the lowered costs of goods is accredited to automation, the consumers can reap the benefits of these competitive prices if they themselves have no income to feed back into the economy.

According to MGI's "Jobs Lost, Jobs Gained" report, between 75 million and 375 million people may need to change occupational categories and acquire new skills by 2030. With that said, a lot of jobs that had new technologies developed to make them easier had the workers expanding to something else, like how bank tellers main activity changed from doing transactions to helping customers sign up for products and services. Technology writer Alec Ross said that "65% of the job types that will exist when they [preschool children] graduate from college don't exist today." As we continue forward, we need to recognize that it is important to teach with adaptability in mind.

Automation provides great potential for a lot of jobs to automate and disappear, which could create opportunities for inequality, exacerbating the divide between owners of capital and the vast majority of people defined by the value of their labour (the working class). Futurist author Martin Ford states that, "inequality can greatly increase as essentially what's happening with artificial intelligence is, capital is displacing labor and of course capital is owned by very few people; wealthy people tend to own lots of capital, and most other people don't own much." Of course, as mentioned earlier, there is a higher possibility of new jobs being created. However, if all the new jobs are stuff like engineers and researchers and scientists, these jobs require a lot more skill and education in a time where student debt is the highest it's ever been at $1.5 trillion (Friedman).

III.   Anticipating the Growth of AI From Future Technology Advances

Being able to utilize the timeline of computing advances directly correlates to the even faster paced timeline of Machine Learning. "If the evolution of the robotics industry is analogous to that of computers, then we can expect important social and ethical challenges to emerge from robotics, as well, and attending to them sooner rather than later will likely help mitigate those negative consequences. (Lin,Pg 1). These negative impacts that Patrick Lin is referring to break down to the main aspects of: Income wage structures, worker dislocation, and economic inequality. According to McKinsey and Company, "We know that work in manufacturing always

had slightly higher wages compare with, for example, work in activities like care work, where there are teachers or elder-care workers, and so forth" (Manyika, 2017). Since the wages were attractive and the work required for these wages were physically repetitive, this has created a class of workers that usually don't have significant skill sets outside of their job. This places manufacturing labor in a high risk of worker dislocation. By creating more unemployment at the ultimate cost of the lower and middle class, the capital gains are seen by the individuals who run the company and creates larger wealth gaps.

The White House report acknowledges that there is a substantial amount of uncertainty about how strong the effects of automation will be on the economy. It may be possible that AI will not have large, new effects on the economy, since the coming years are going to be subject to similar workforce trends. There may also be a larger shock which results in more workers in need of assistance. Which is why we need to address this issue because there could be millions of people in need after they are replaced. Either way, it will open up new opportunities for individuals, economy, and society, but policymakers must be prepared for a range of outcomes. What is utmostly certain is that automation will allow many tasks to be void of human labor, so many workers, especially those of the triple D jobs, will face job reconstruction or displacement (Lee).

The report suggests that policymakers implement five strategies for dealing with the projected economic effects of AI. The first few are changes in the landscape of the job market and changes in the skills demanded by the job market. This change of skills prompts their suggestion expanded upon in the previous assignment, which proposes that fundamentals such asmath, reading, computer science, and critical thinking be focused upon so people get a broader set of skills. Next on their strategies is the potential for job displacement and uneven distribution of economic impact across wage levels, education levels, job types, and locations. It "specifically recommends modernizing and strengthening the social safety net to ensure that workers who lose their jobs can still make ends meet, retrain, and transition careers" (Wladawsky-Berger).

While automation is sure to have some sort of effect on the economy, the report clarifies that more work remains to further explore the policy implications of AI. Continuing to engage with the government, scientists, experts, and the general public will be important as policy shifts towards broadly shared prosperity. The strategies they listed above work so that automation can serve society as a whole, and so long as they benefit everybody instead of the upper class who own capital, automation will "redirect the economy towards new goals: promoting human health and well-being, building rich and social cultural lives, and guaranteeing environmental sustainability" (Williams).

All things considered, we must be able to anticipate the social and economic impacts of artificial intelligence if we want to learn how to manage it. And even though it is difficult to

establish an accurate framework when it comes to future innovations, it is possible to predict based on past events and changes occurring now. The last three revolutions serve as an example of what could happen, whether it be communities moving or otherwise. It provides information as to how people behave in response to big changes and helps the government already suggest strategies to help those who could be affected by AI. Professionals should have an interest in how it will play out and contribute to the findings, if possible.

IV.   The Opportunities of AI and the Social Responses

As it has been witnessed before, new technology has the ability to change how humans go about their everyday lives, like how it transitioned us from farm to city. This new upcoming change could ultimately be considered the fourth revolution, because it will present opportunities and transformations never seen before. And even though it consists of both negatives and positives, this change of pace will do good for the youth of today because it will open so many doors for those who wish to pursue this field. Nonetheless, for this to occur, society will need to work together and ensure positive economic effects and equal benefits for everyone.

It is important to address this topic because society is currently focused on the negative impacts automation can produce, such as unemployment rates increasing which will lead to a wider gap between social classes. And this will only prevent us from accepting the new changes AI is predicted to cause. Artificial intelligence has so much more to offer than just new technology and robots, but it will provide new information and new jobs related to these fields.

In the past, there have been strategies put into place to ensure that society's response is informed and positive, but it clearly needs more work. Unfortunately, over the past couple decades, investments and policies to support the workforce has decreased, along with little to no changes in education models (Manyika). Therefore, if we want to successfully adapt to the transition, these trends will have to change. Societies will need to work with new training models, programs to ease the transition for workers, income support, and sustained investment to facilitate the upcoming developments (McKinsey, 2017). Providing job retraining would highly benefit those in entry-level jobs because they will gain additional skills and keep their jobs. The public and private sectors will need to collaborate in order to accommodate those on the verge of being replaced, so companies could have a pool of qualified candidates to perform any given task.

Based on our viewpoint, we fully desire for more opportunities to become available due to artificial intelligence and positive economic outcomes, along with inclusivity. This will not only help society as a whole, but it will help students and future employees imagine a new world where AI is fully supported, so they could responsibly create so much more.

The upcoming transitions should not be feared, but embraced if we want to successfully adapt to it. It is important to realize that AI will have negative and positive outcomes, but the negatives will only affect us if we are not ready to change our current system. There needs to be modifications in the education system, along with added support to employees who could be replaced by automation. And if we wish for opportunities to be available, this will help society invest in other departments, such as renewable energy or infrastructure. In other words, if we treat this change correctly, the effects seen as negative could become positive and will dissipate most of the current fears.

Conclusion

Ethically speaking, this transition into a cheaper, extremely productive workforce cannot happen immediately. There are currently millions of workers at risk of being displaced and if not given the proper transition and welfare needed, the economy will be the root scapegoat. Reeducating the work force and creating plans for displacement will benefit not only the workers themselves, but also the capital gainers whose best interest is to keep the economy alive and well. By examining past and current examples, future manufacturing administrators like myself can ensure that these transitions happen.

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