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<p style="text-align:center">The Potential Effects of AI on the Economy and Society</p>

The current rate at which artificial intelligence is improving points to a future in which jobs continue to replace humans in every sector of the economy. By design, AI in combination with automation will continue to consolidate jobs in many industries, and fewer white-collar workers will be necessary to complete the same tasks. Automation has a long history of displacing workers in the United States, starting with the mechanization of agriculture in the 1800s and then later the advancements in manufacturing with the continued use and improvement of our factory systems. Some argue that the advancements in AI will continue automation's legacy of displacing workers by "using machines and computers to substitute for human labor in a widening range of tasks and industrial processes" as MIT professor of Economics Daron Acemoglu suggests (200). AI has already begun working its way into the sphere of white-collar workers, completing tasks such as composing legal documents, filing taxes, translating complex documents, and organizing inventories, reducing the overall number of tasks necessary and reducing jobs (Acemoglu, 201).

Automated for the people
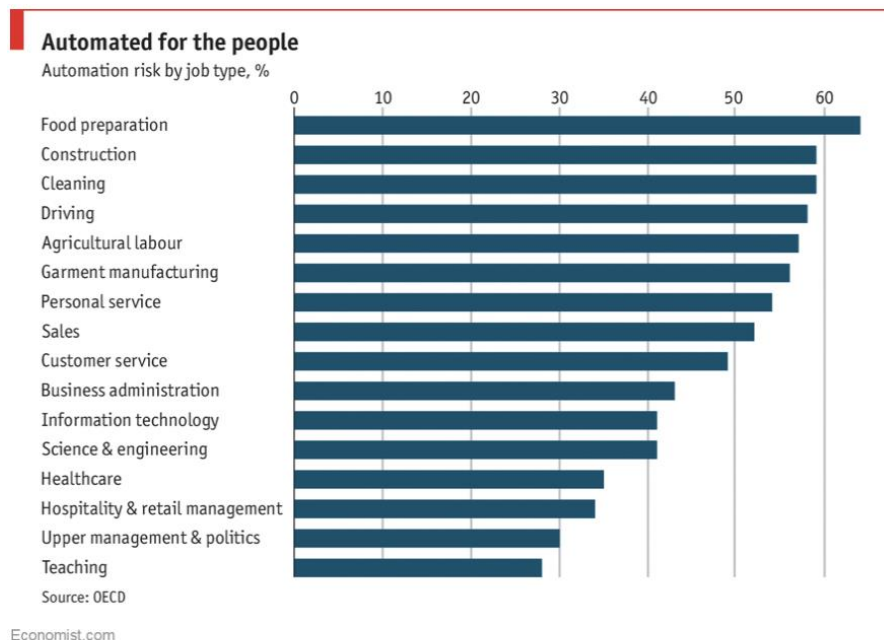Automation risk by job type, %

Source: OECD

Economist.com

Figure 1: Based on current AI and automation trends, this bar graph from The Economist illustrates which jobs are at the highest risk of being replaced by machine and software. https://www.economist.com/graphic-detail/2018/04/24/a-study-finds-nearly-half-of-jobs-are-vulnerable-to-automation

Artificial intelligence has proven itself as a useful tool today, and its nature of completing narrow tasks is complementary to human efficiency and subsequently has been used in that way across the board, whether you are considering how AI has improved the quality of life with developing technologies such as self-driving cars, or how AI is used to generate income in a corporate setting. As companies and humans become more and more dependent on AI, further research and development will propel the technology forward in the future; AI's potential applications are too vast for it to be obsolete anytime soon. Currently, artificial intelligence doesn't have the ability to outright replace jobs that require a certain level of decision-making, but as the technology improves, jobs that we consider high-skill or white-collar will be replaced by AI, albeit at lower rates than jobs that are thought of as lower-skill. The biggest issue with artificial intelligence now is that it will continue to replace jobs that Americans and people globally rely on, possibly having social and economic consequences such as increased financial hardship, homelessness, and economic collapse. If manufacturing and artificial intelligence advancements allow companies to hire fewer workers and further advance the progression of automation, this could prove disastrous for middle-class and lower-class workers. While examining the current state of artificial intelligence, we must consider both its effective use in various industries such as healthcare and manufacturing and its possible harmful effects on our society in the future.
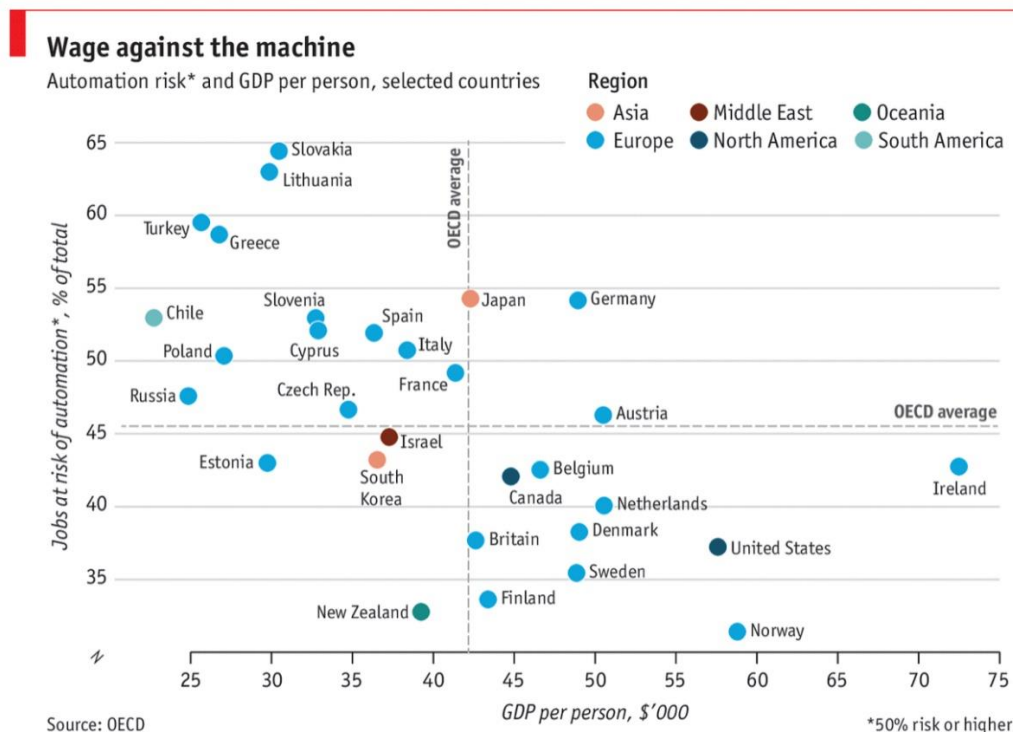
Figure 2: Correlation graph from the economist showing which countries are at the highest risk of automation compared to income.
https://www.economist.com/graphic-detail/2018/04/24/a-study-finds-nearly-half-of-jobs-are-vulnerable-to-automation

The killer robot scenario depicted in popular movie franchises such as *The Terminator* are amusing. The current state of computers and the way they improve is not sufficient to create something as complex as General AI. Transhumanist and life extensionist Alexey Turchin discusses the avenues in which AI could become catastrophically dangerous in the future in his article analyzing AI and AGI. One such scenario depicts the case where machines gain the ability to navigate the internet, develop natural language processing, and perform better than humans in most tasks. He argued that further AI development in dangerous fields such as biotech or military technology also carries risk, but the riskiest form of AI improvement is a system that can self-improve, causing an "intelligence explosion" which is "already occurring with systems like AutoML and the use specially designed hardware at Google" (Turchin). General artificial intelligence is a theoretical system that is capable of continuously improving itself, being able to understand and learn tasks at a rate that is comparable to humans.

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Stephen Hawking: 'AI could spell end of the human race'

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As computers advance, we only observe a speed increase in the computer's ability to use algorithms at a computational level. While computers have the tendency to continue to improve over time, this does not necessarily mean we are closer to sentient life or fictitious technological advancements like those shown in the Netflix TV show *Black Mirror*. Artificial intelligence is implemented through algorithms that can evaluate large data sets, drawing similarities and patterns and learning from them ("What Is Strong AI?"). AI was realized in the 1950s and has since improved in its accessibility, speed, and cost, as well as its capacity in various applications. Machine learning algorithms have also improved their efficiency over time, leaving people better equipped in choosing which algorithms to use for their specific problems (Anyoha). While

hypothetical, more is needed to develop artificial general intelligence, a novel approach to technology that tackles the replication of human reason and decision-making. Without knowing what is to come, what implications would understanding human consciousness and its inevitable replication have on our world? Every process in the brain is theoretically replicable, as the human brain is fundamentally structured in binary; Neurons either fire or don't, and these two states act like 0 and 1 in a binary system. Although we are at the elementary stages, mapping the human brain for purposes of understanding consciousness and fighting neurodegenerative diseases has become one of the biggest challenges in the scientific community today and is spearheaded by the Human Connectome Project (Geddes). As more and more resources are poured into the advancement of artificial intelligence and artificial general intelligence, the technology could improve to a point that would spell a disaster for society, where it replaces lower-class jobs first, working its way up to middle-class jobs and potentially reducing a large portion of the workforce. Some estimate that around fifty percent of jobs will be at risk of automation in the next two decades (Rodgers III). Although artificial general intelligence is speculative as we have not realized such technological advancements yet, considering how artificial intelligence in its current state drastically changes our daily lives, it would be foolish to not draw a similar conclusion about how artificial general intelligence would have a large effect on society, albeit much more uncompromising and obstructive. On the other hand, some claim that the future advancements of artificial intelligence will force us to up-skill as workers, further developing our productivity. While there is merit to the idea that upskilling the workforce will help society in the long term, the practicality of this produces negative effects on workers without safety nets in place to facilitate the transition.

OpenAI considers human impact when developing artificial intelligence, a starkly unique approach in developing and utilizing this technology. Co-founder Greg Brockman explains his organization's approach to artificial intelligence: "Our goal is to advance digital intelligence in the way that is most likely to benefit humanity as a whole, unconstrained by a need to generate financial return." Currently, the way in which artificial intelligence systems are built is using closed-source algorithms that aren't accessible to the outside world. In the business of generating capital through advertisements, these companies use your data in combination with other factors such as how you use their website to target you with specific advertisements. Artificial intelligence has already changed the way that we fundamentally do things, how we interact with our phones, how we travel, and how we are influenced by social media and advertisements, along with many other facets of our lives that we rarely give any thought to. In 2019 the World Psychology Association published a journal that describes how social networking companies develop sustained use of their platforms: "leading technology companies have been accused of intentionally capitalizing on the addictive potential of Internet, by studying, testing, and refining the attention-grabbing aspects of their websites and applications ("apps") to promote extremely high levels of engagement, without due concern for user well-being" (Firth). Conversely, organizations and companies including OpenAI have committed to using open-source code and non-proprietary technologies in their research and development of artificial intelligence, an

approach that incorporates an equilibrium between artificial intelligence and human beings. These two contrasting attitudes towards artificial intelligence both have benefits and drawbacks. To realize the maximum potential of artificial intelligence, resources and capital that is only available to tech giants are necessary for harboring something as complex as general artificial intelligence. Although the extent to which the technology would be useful would reach its full potential, its applications would not be far-reaching as these companies would have full control over how and where they would be used. This could lead to further economic consequences down the road. Companies such as OpenAI are unique but lack the resources and workforce necessary to realize the full potential of artificial intelligence and artificial general intelligence. A balance is necessary between these two trains of thought, where the quality of life of humans is improved by artificial intelligence and the companies who produce the technology yield a return on their investment. If implementing artificial intelligence and automation is inevitable and unrelenting, the way in which it is integrated is paramount in determining if this technology would prove disastrous or beneficial to society. Developing AI to generate money would speed up our rate of improvement in general innovation while lacking the maximum social potential that the technology could have. A non-profit approach to AI hinders our speed of innovation and improvement while maximizing the benefits that society would have from the creation of said technology, while providing a social and economic safety net for workers through an ethical implementation, leaving the beaten path that automation has led in worker displacement. The creation of artificial general intelligence would be groundbreaking, a completely new frontier in the way humans and machines harmonize. Something as simple of a task as driving for humans would be a cakewalk for a system that has human intelligence. Technologies we consider cutting edge today such as self-driving cars would be a trivial implementation for artificial general intelligence. Artificial intelligence has immense potential in an optimistic society, with a cache of unrealized applications that could help humans in every way imaginable. The road to artificial general intelligence is less clear, greatly due to the infancy in which artificial intelligence is implemented and developed today. There is currently no

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To avoid economic and social consequences, legislation and regulations need to be set to differentiate between AI that is beneficial and detrimental to society in the long term.

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