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MY ARTICLES

WILL AGRICULTURAL ROBOTS REPLACE HUMAN AGRICULTURAL LABOUR? | OPINION

They might not be the kind you'd find in sci-fi fantasy books and movies, but believe it or not, plenty of robots are already being used in a variety of fields—literally. Agricultural robots have even made their way to greenhouses and farmland. Will they completely overtake the human work force? No. But will they change the way we work? They already have.

It's a bit conflicting, isn't it? I mean, our reliance on technologies to make our lives better and easier, versus our apprehension towards other technologies that might threaten our occupation or expertise. It's completely normal to feel a twinge of fear and frustration when your source of livelihood could potentially be taken away from you, when your profession and financial stability could be jeopardised by new technology-especially so if your family is dependent on your income.

This fear has only gradually increased in the last years, growing parallel to the development of improved technologies, particularly for those with blue collar jobs that require manual labour. Historically, manual work has been the first to be replaced by technologies—just think of the machines invented during the Industrial Revolution, which took the place of the human workforce (for better or for worse).[1] And since the 1900s, agricultural employment has dropped from 40% of the total global workforce to a mere 2% today.[2] So if new machines are increasingly introduced, what will happen to the 9.7 million people still working in European agriculture today?[3]

ROBOTS IN AGRICULTURE

In greenhouses and open fields, you can already find agricultural robots completing necessary tasks like spraying, pruning, cutting, planting and packaging (just to name a few). Standing in an open field, you might occasionally see a drone fly by to precisely drop biocontrol or beneficial insects among the crops, or you might find a self-driving tractor-looking robot removing weeds from soil.

Machines are already bringing automation to agriculture, making farming more efficient, allowing humans to dedicate themselves to less laborious and debilitating tasks. Simultaneously, in maximising food production, technologies have been central to the rapid decrease in famine over the course of human history.[4] Now, isn't that a good thing?

BUT WILL WORKERS BE OUT OF A JOB?

The dilemma of introducing new technologies lies at the meeting point between technology and *individual* livelihood. How can we protect the lives and financial stability of those who currently depend on farm work for a living? What will happen to those who are reliant on their hands-on work with agricultural crops?

Agricultural robots and automation in agriculture should *help* and work alongside the human labor force, taking up the draining monotonous tasks and freeing people from harsh working conditions. You could argue that this would still potentially reduce workers' wages, but why resist systematic change that would benefit the standard of work (and thereby, living) of agricultural workers? If robots could keep individuals from throwing out their back while completing laborious and repetitive tasks in agriculture, or coat their skin in chemicals as they spray pesticides across the field, or work under the blazing sun beating on their backs, why not employ them? Why should individuals be doing all this, even for the sake of income, if there are technologies that can help alleviate their work life?

HUMANS ARE TREATED LIKE ROBOTS

Fact of the matter is, in the past decades, agricultural methods have had to adjust to accommodate consumer demands for quality produce, less pesticides and more sustainable production. And while this has been beneficial for consumers and the environment, it has come at a cost to workers.

Erik Pekkeriet, Program Manager of Agro Food Robotics at University of Wageningen, explained how greenhouse horticulture has been pushed to be more energy efficient while maintaining higher crop yields. In the last 10 years, greenhouses have seen a temperature increase of 5°C and 20% more humidity,[5] which creates harsh conditions for the workers who need to maintain and harvest the crops. In addition to working in conditions akin to a sauna, workers are often employed to complete monotonous and seemingly menial tasks. With such conditions, more workers now opt for other jobs in other labour fields with similar pay, like construction or infrastructural work.[6]

Erik puts it in a new perspective, "I think people who are currently working in the primary process are really treated like robots. I think we have to improve the working conditions of the primary worker force fast, otherwise we will lose them."

From an ethical standpoint, improved working conditions is absolutely necessary, especially considering the additional issues of human trafficking in some countries-an illegal exploitation of workers near the brink of slavery, with people paid as little as 3 euros per hour, or even less when their employers decide to pay for less hours than were actually worked.[7] So, if robots can help set a new standard for the human work force and improve their working environment, I'm all for it.

FARMING ROBOTS CAN HELP, BUT ONLY UP TO A POINT

But even if we all agreed that farming robots should take over these arduous tasks, their complete autonomy still isn't possible. In fact, building an autonomous harvesting robot is way harder than it may seem.

First of all, fruits and vegetables come in different shapes and sizes, making it difficult for robots to recognize any that are "out of shape". Second, fruits and vegetables can be difficult to spot sometimes, as they can hide behind leaves. And lastly, gently handling the fruits and vegetables to ensure that they aren't bruised or damaged during picking is another feat in itself, especially for soft fruits and vegetables like strawberries or asparagus.

Jos Balendonck, Researcher of Sensing and Robotics at University of Wageningen, helped construct SWEEPER, a bell pepper-picking prototype robot. He explained how sweet pepper is one of the most difficult vegetables for robots to pick, because peppers are often hidden behind leaves and they grow in clusters that make harvesting just one of those peppers difficult. As it stands, robotics still requires the human touch, whether that means guiding the robot during harvest or even collecting the fruits and vegetables the robot may have missed.

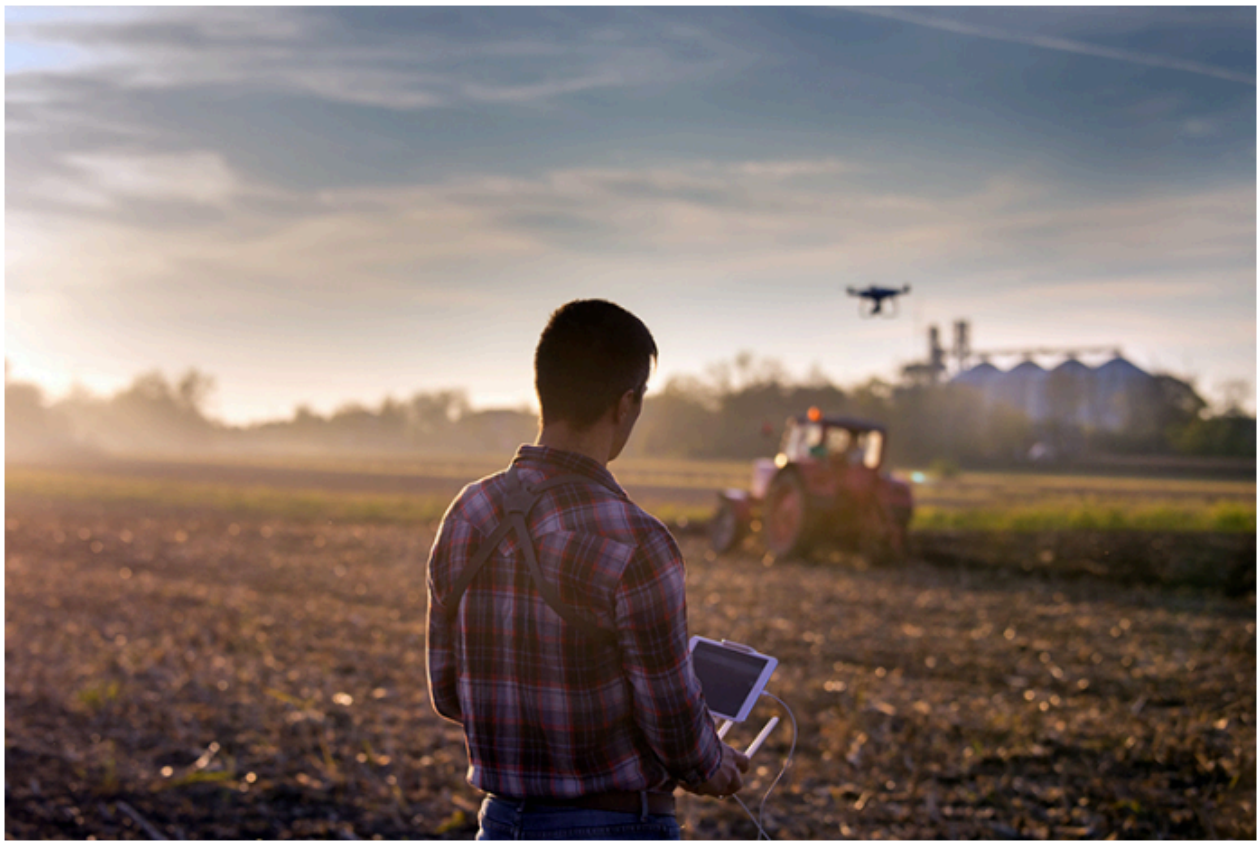
ROBOTS AND HUMANS WORKING TOGETHER

So while we're a long way off from building a fully autonomous robot, Jos says that "in the meantime, we have options where people can assist the robot or the robot assists people, with remote control as a further option to help robots running around in the greenhouse." In this way, workers can guide the robot remotely so they can work comfortably away from harsh agricultural conditions.

In the end, we should ensure that robotics do not evolve to disrupt workers but to aid them and improve their working conditions. In fact, robots and automation might even help workers earn a higher salary, as many primary workers earn bonuses depending on volumes of harvest and how fast they can deliver their products. With most primary workers earning minimum wage–and illegal workers earning much less than that–robots and automation might help them to meet their bonus objectives without exposing themselves to unendurable physical pressure.

And with crises, like the coronavirus and its succeeding quarantines, threatening the stability of the food supply system by keeping workers from their agricultural duties, robots might just be the cushion farmers need to keep feeding the billions of mouths around the world.

THE FUTURE IS BRIGHT



We certainly need to take precautions as we continue to develop robotic technologies so we don't find ourselves in an apocalyptic sci-fi world, where robots have taken over and wiped out mankind. But, we don't live in a world of fiction. We live in a reality that we are all responsible for, so let's build for the good of humanity together (with robots).

So what do you think of agricultural robots and automation in agriculture?

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