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Headline: What my washing machine taught me about human-machine collaboration

What my washing machine taught me about human-machine collaboration

Automation has made our lives easier, but it should complement human skills and not seek to displace them.

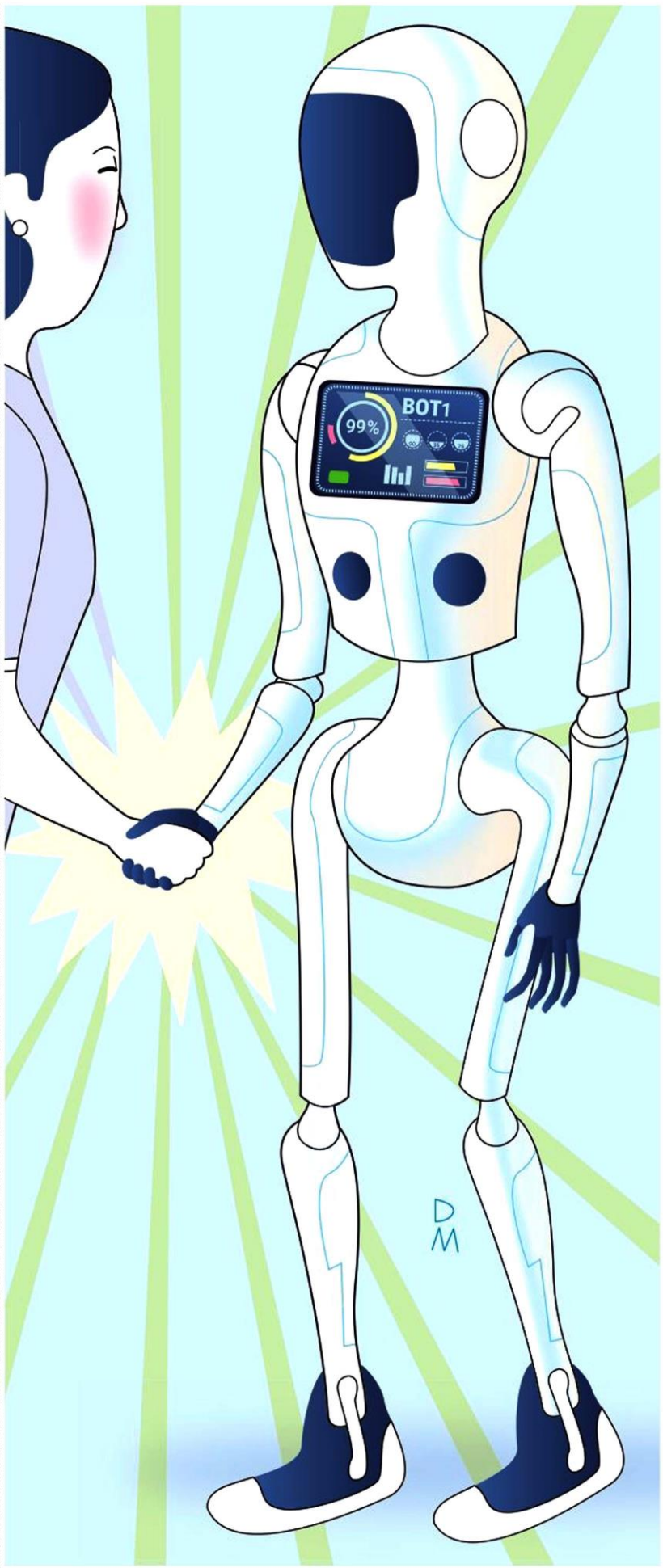
Lim Sun Sun

The year 2025 began in a banal, yet deeply reflective way for me. My washing machine mysteriously broke down mid-cycle and – unable to schedule any repairs until after the New Year holiday – I had no choice but to wash my laundry by hand. As I rinsed and wrung each piece of clothing in a large basin of water, I found myself literally elbow-deep in thoughts about automation, questioning the future of human-machine collaboration. Such is the blessing of automation that you take it for granted. That is, until it fails.

There is in fact much that a malfunctioning washing machine can teach us about the capabilities of humans and technology, and their implications for automation. These distinctions between the relative strengths of me and the machine bring to mind Moravec's paradox. This principle postulates that tasks which machines can do easily, humans struggle with and vice versa. Correspondingly, actions that even toddlers do unthinkingly, machines are still incapable of approximating. The latter require fine motor and cognitive skills coupled with sophisticated hand-eye coordination that roboticists are working hard to integrate but have yet to reach mass market applications.

Whereas my washing machine can effortlessly spin-dry 7kg of clothing, roughly a 15kg wet load at a violent speed, it does so indiscriminately, treating all the clothes as an undifferentiated mass. I, on the other hand, strain to even lift such a load but can effortlessly identify the more delicate fabrics and gently press them dry while wringing tougher garments with vigour. I am also able to disentangle pieces of clothing from each other to rinse them individually, and to carefully scrub out any stains I spot. These are things that washing machines just cannot do. Yet.

But creating efficiencies is a key objective of automation, albeit at a cost. In this instance, I willingly accept some rough machine handling of my clothes in exchange for the time and energy I save from not washing them myself. My manual treatment of the clothes may have provided greater care for some garments, but overall, I have more to gain from the machine washing all of them for me. Because when it comes to indiscriminate treatment of objects such as clothes and other consumer goods, the stakes tend to be low and do not demand extreme refinement or precision.



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As we head into a new year where the use of AI is only going to further intensify, we must push for automation to place human needs first, and not be condescended to as inconvenient hindrances to progress. Human skills have served us admirably and should not be diminished but refined and sharpened by automation.

PERILS OF AUTOMATION

However, it is when the stakes are high, such as in healthcare, finance or education, that automation may overlook the peculiarities of individual cases and introduce harms in its gross, undifferentiated approach. For instance, algorithms that are designed to automate the prioritisation of organ donations, expedite the authorisation of loans and identify the worthiest college applicants lack the fine judgment and discretion needed for exceptional cases that human intervention can offer. In such realms, therefore, the use of automation must be carefully managed and supported by human review and oversight.

Prior research has shown that algorithms, if poorly designed or trained on insufficiently representative data, are replete with biases that severely disadvantage some people. In her book Automating Inequality: How High-Tech Tools Profile, Police, And Punish The Poor, American political scientist Virginia Eubanks argues that automation exacerbates existing social inequalities by entrenching biases in the systems designed to assist marginalised communities. She highlights how automated systems, like those used in welfare and social services, often lead to dehumanising outcomes, disproportionately harming low-income people and other minorities.

For example, in 2019, researchers discovered that a hospital algorithm used to manage care for up to 70 million Americans exhibited racial bias. It prioritised healthier white patients over sicker black patients in need of additional support for chronic illnesses. While 47 per cent of black patients should have qualified for extra care, only 18 per cent were referred. The bias stemmed from the algorithm's reliance on healthcare expenses as a measure of risk. Underserved populations, including minorities, tend to incur lower healthcare costs given their more limited resources, which led the software to underestimate their health needs despite their actual level of illness.

Similarly, in 2020, due to Covid-19 disrupting exams, the UK's Ofqual used an algorithm to predict A-level results, which led to significant downgrades for students from lower socioeconomic backgrounds. The algorithm considered factors such as a school's historical performance, which inadvertently penalised high-achieving students from underperforming schools, many of which were in less affluent areas. Following widespread criticism and protests, the algorithmic results were scrapped in favour of teacher-assessed grades.

Clearly, we must expect and demand greater transparency and accountability in the design and implementation of automated systems. Scholars like Professor Eubanks emphasise the need for public oversight to ensure these systems do not reinforce biases. We must always leave the door open for human-centred, equitable alternatives over automated processes that wilfully or unwittingly perpetuate inequality. Future AI development must not lose sight of this critical ethical principle even as automation accelerates.

Returning to my laundry epiphanies, I also found the process of repeatedly rinsing and wringing increasingly boring and my mind began to wander. Furthermore, unlike the steel drum of the washing machine that can withstand harsh cleaning agents, I had to don rubber gloves to protect my hands as I immersed them in the soapy water. Indeed, automation has been a veritable lifesaver, doing work that is dull, dangerous and demeaning.

Machines have helpfully relieved humans of onerous and risky burdens such as clearing toxic waste or expunging harmful content from online platforms. They can also be designed to be impervious to hazards, and to predictably complete relentless tasks that humans would regard as drudgery. Far from inducing insecurity, the disruption of such jobs by automation is most welcome indeed.

FINDING MEANING IN WORK

In recent years, however, working adults have begun to legitimately fear displacement by automation, especially with the onslaught of generative AI. Quite apart from losing employment, people are rightly anxious about what growing automation may mean for their working lives. This discontent can be traced to the value of work itself. Notwithstanding our constant quest for rest and relaxation, we humans derive gratification from labour.

People find meaning in both intellectual and physical labour by connecting our work to a sense of purpose, identity and personal fulfilment. Intellectual labour provides avenues for intellectual challenge, creativity and problem-solving, while physical labour fosters a sense of tangible accomplishment, craftsmanship, and connection to one's body and environment. Both forms of work can contribute to a deeper sense of self-worth, community and contribution to society.

Despite the tedious experience of hand-washing my clothes, did I feel a sense of achievement at seeing the clothes drying on the line? Certainly. Did I experience satisfaction from working out my arms through all the wringing and lifting? Absolutely, because labour can be rewarding. This is where the tech companies, in their relentless push for driving AI adoption and developing agentic AI, must consider how we humans do not wish to outsource all of our tasks and decisions to technology. Instead, automation must be developed through the lens of human-machine collaboration and continue to put a premium on human abilities while serving human needs for stimulation, purpose and meaning.

As we head into a new year where the use of AI is only going to further intensify, we must push for automation to place human needs first, and not be condescended to as inconvenient hindrances to progress. Human skills have served us admirably and should not be diminished but refined and sharpened by automation. Ultimately, my hand-washing experience shows that while automation can provide efficiency and relieve us from tedious or hazardous tasks, it cannot – and perhaps should not – replace all aspects of human work.

As AI and automation continue to advance, we should remain mindful of the balance between technological innovation and human fulfilment. The future of AI should not be about replacing human judgment and agility, but about creating systems that complement and enhance our uniquely human qualities, while strengthening the ethical principles that safeguard against the harms of unchecked technology. The real challenge will be ensuring that, as machines become more capable, they never overshadow the invaluable human touch that gives work its true purpose.

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