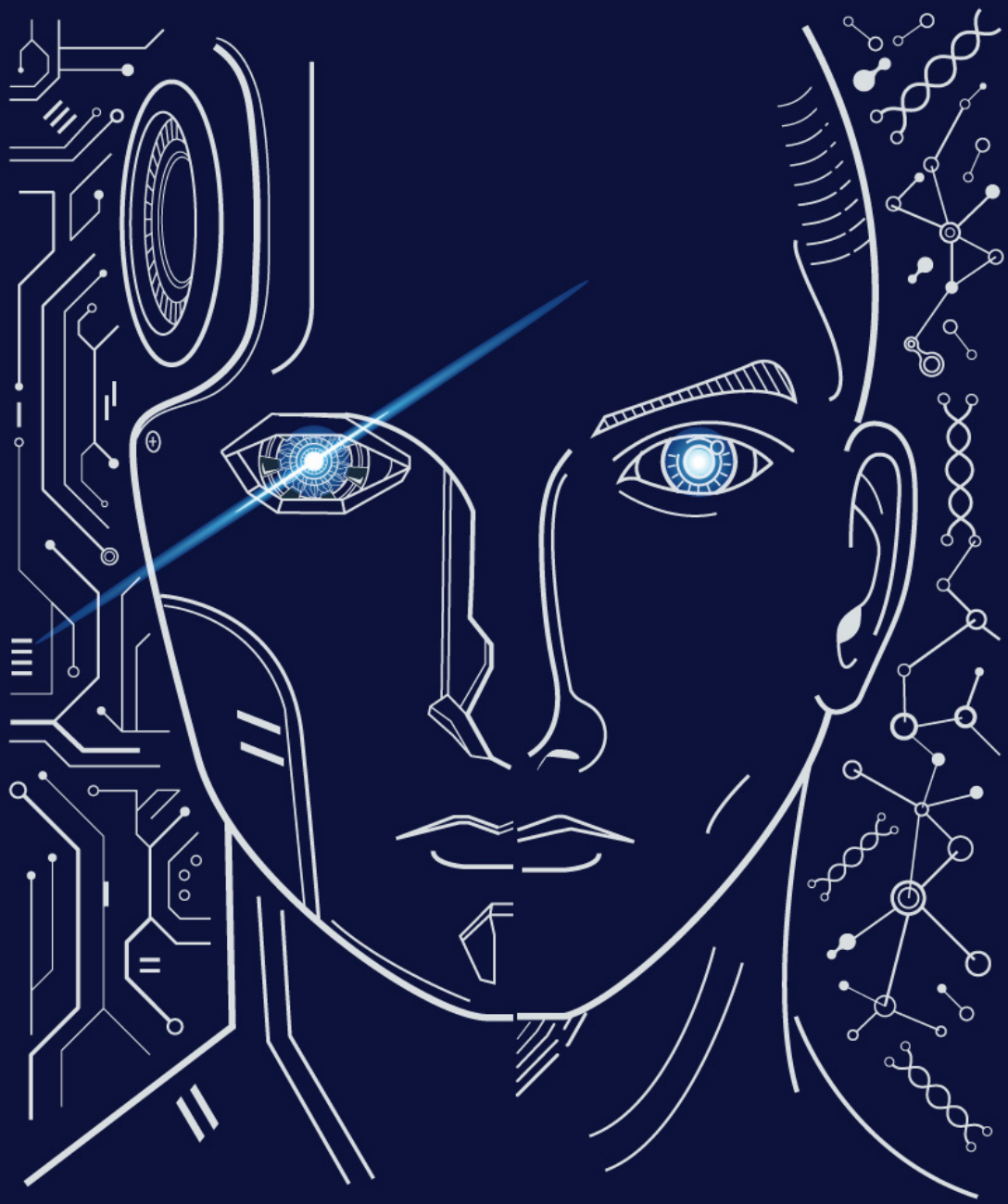
Navigating the New Economy

Jobs & Automation, Challenges & Opportunities



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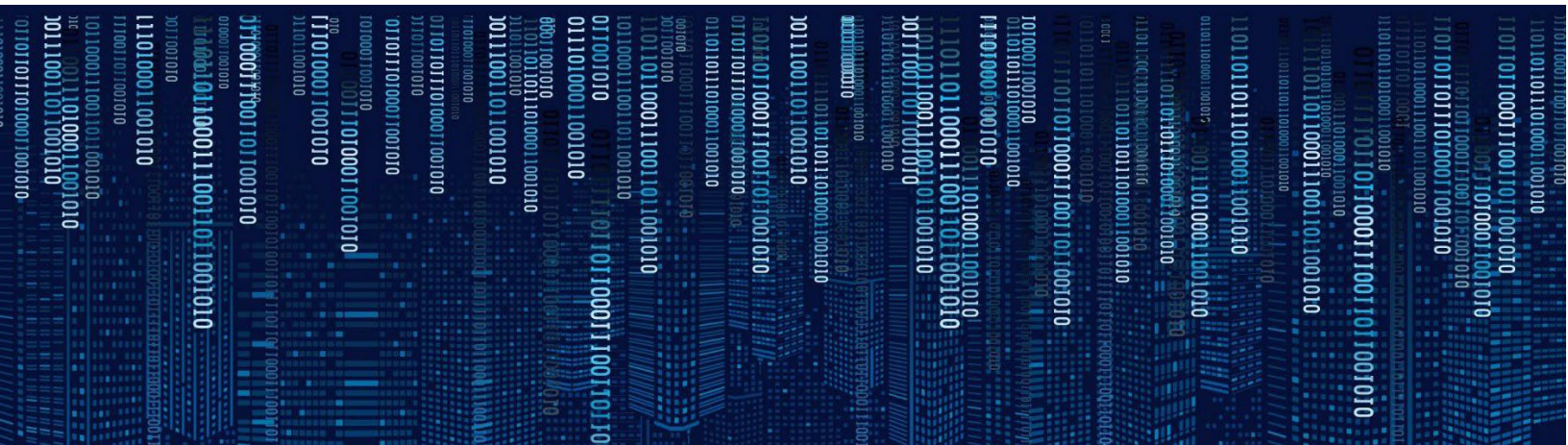

Introduction

As we emerge from our COVID cocoons, we face a new reality. In addition to surviving a pandemic, we've all experienced a time warp.

In many ways, the past two years slowed to a crawl as our daily activities became more limited, our lives more claustrophobic. Conversely, the pandemic accelerated the pace of technology adoption.

Beginning in 2020, companies that never considered deploying automated solutions were compelled to give them a try, whether to eliminate unnecessary person-to-person contact, reduce operating costs, or fill roles that workers were no longer willing to perform. In hindsight, many businesses now wonder why they didn't invest in them sooner. Management has discovered that robots and AI perform exceptionally well. Now there's no turning back.

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Life, post-pandemic, begins a new chapter in which smart technologies and robotics will play a starring role. They have the potential to deliver tremendous good and make our lives better in countless ways. Robots will eliminate the mundane aspect of many jobs and create new, more engaging jobs that deliver more value. They will provide the necessary services to accommodate a population that, by 2034, will have more Americans over the age of 65 than under the age of 18 for the first time in history.[1] Job training may become more skills-based and, if provided by employers, could reduce the number of young people buried in college debt. AI-driven operations will provide greater transparency into decision-making processes, allowing us to identify biases and empowering us to address them. These are all positives.

There are also worrisome challenges on the horizon. Experts agree that automation will eliminate more jobs than it will create. Repercussions will ricochet throughout the economy. How will we cope? What can we do to lessen the impact?

As the founder of a company deeply invested in the promise of autonomous robotics in the security sector and beyond, I believe it is the responsibility of business leaders to be

[1] https://www.census.gov/newsroom/press-releases/2018/cb18-41-population-projections.html

thinking about, talking about, and planning for the inevitable changes ahead. The decisions we're making now will have a broad, lasting impact, just like the decisions social media companies made (or failed to make) a decade ago have had unimagined benefits and consequences.

The following is food for thought. Chew slowly and thoroughly. There's a lot to digest!

An Altered Job Market Across the Board

Robots began replacing humans in manufacturing jobs more than 50 years ago. In the past decade, vast improvements in AI's functionality and affordability brought automation and robotic solutions to the service sector. Retail, healthcare, hospitality, food services, and many other business categories have re-imagined the role of technology within their business models. In some cases, the solutions include a mechanical or physical component – robots that autonomously clean floors, check price labels, provide lawn care, or deliver food and packages. Others are entirely software-based, like automated customer-support chatbots, voice recognition systems to take orders at restaurant drive-throughs, and virtual assistants that provide front-line support at call centers.

Automation is also encroaching on white-collar, professional, and creative jobs. "Robot Process Automation" (RPA) uses software to streamline operations and improve operating efficiency, performing an array of tasks traditionally performed by mid-level office workers. AI algorithms now outperform doctors, lawyers, and bankers at parts of their jobs, even though these professionals have advanced degrees and extensive, specialized training."[2] AI can perform highly accurate medical imaging analysis, search through mountains of documents for legal research, and help financial institutions detect fraudulent transactions while maintaining regulatory compliance. AI can augment human work in creative fields, such as generating multiple iterations of a package design, rendering complex architectural plans from basic concepts, and writing templated articles like real estate listings, obituaries, and sporting event coverage.

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[2] The Robots Are Coming for Phil in Accounting - The New York Times (nytimes.com)

Many companies shied away from automation before the pandemic, despite its clear benefits. It represented a dramatic paradigm shift that they feared might harm employee morale and provoke a backlash. The pandemic changed their perspective, forcing management to embrace whatever solutions could keep their entities afloat. In addition to cost savings, automation represented an ideal pathway to improve hygienic conditions, reduce up-close personal contact, and lower overall workplace occupancy levels.

Prior to COVID-19, McKinsey & Company predicted that by 2030, 37 million US workers would be replaced by automation. Recently, McKinsey increased its projection to 45 million. Globally, it estimates between 400 and 800 million individuals could be displaced by automation by 2030.[3]

For security guard services, the pandemic provided the needed catalyst for change, forcing the industry to acknowledge that its traditional, bottom-heavy, labor-intensive model wasn't working. Guard wages were climbing steadily, guard positions remained unfulfilled, turnover was exceptionally high, on-boarding and training were challenging, benefits were expensive, and then COVID and sick leave made scheduling an even greater nightmare. Plus, customers were dissatisfied with the quality of service they were receiving, if they could hire a guard service at all. Many were turning away business.

Robotic Assistance Devices (RAD) witnessed the industry's sudden shift in mindset firsthand. Pre-pandemic, most prospects viewed the company's AI-driven, autonomous security solutions as curiosities. In their minds, RAD's potential to disrupt the status quo – a frightening proposition back then – outweighed its technology's ability to deliver efficiency, performance, and value.

Today, the equation has flipped. The status quo is untenable, and security management is far more fearful of missing out on the transition to Autonomous Remote Services (ARS) that is underway. RAD is shipping its devices for use in airports, public parks, distribution centers, theme parks, offices, casinos, construction sites, auto dealerships, and more. Security professionals are still needed to manage and work with the technology, but the need for large forces of patrolling officers is greatly diminished. Given the difficulty of filling those jobs, isn't that a good thing?

[3] https://www.mckinsey.com/featured-insights/future-of-work/jobs-lost-jobs-gained-what-the-future-of-work-will-mean-for-jobs-skills-and-wages

Customer Service that Touches More Lives

Most customers prefer dealing with well-trained, competent, and friendly human workers than with robots or autonomous solutions. A few years of lockdowns made us appreciate how much we value social interaction. A helpful salesperson, knowledgeable tech support troubleshooter, compassionate healthcare aid, and resourceful hotel concierge each improve the customer experience. Research backs this up. When asked if they would prefer to speak with an agent or use automation – *assuming the outcome and time were identical* – almost 2/3 of respondents prefer dealing with a human.[4]

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However, the current labor market makes that calculation moot. There aren't enough candidates to fill the ranks of available service positions, and there's no reason to think the situation is temporary. With companies understaffed and paying higher wages for poorer quality workers, automation does a better job in its ability to deliver the needed services and do so quickly, efficiently, and affordably. Unlike human workers, it's also readily available as new solutions continue to enter the market, and a machine won't quit in three months when a better opportunity comes along.

This dynamic is destined to accelerate. Our population will need more support services as we live longer and stagnate birth rates will lead to fewer younger people interested in performing these jobs. Fortunately, AI will continue to get better, more affordable, and more accessible. It will also allow businesses to provide services to more customers.

Eldercare is one of the most talked-about segments, where service robots will help fill the growing void of caregivers. Japan predicts a shortage of 1 million caregivers for its aging population by 2025.[5] Robots can pick up the slack. They can assist with simple physical tasks like serving food and basic grooming. They can support emotional needs by providing companionship, playing games, and eliciting social engagement. Robotic pets have proven to be highly successful at reducing agitation in dementia patients without requiring the care and attention that real pets do. Medical robots will not only

[4] https://www.genesys.com/blog/post/survey-uncovers-customer-preferences-for-automation-vs-agent-interactions
[5] https://www.businessinsider.com/japan-developing-carebots-for-elderly-care-2015-11

fill positions and deliver necessary support; they are expected to help keep the cost of elder care in check. Projections indicate the category will grow by 15.7% annually between 2022 and 2029.[6]

Workable Solutions

When it comes to security, RAD's RAD Light My Way™ solution is a perfect example of how technology promises to improve customer experience on a grand scale – in this case, on college and large commercial property campuses.

One of the most persistent fears among female students is walking on campus alone at night. Most schools offer some form of safety escort services. Students can call or text a number, and a security officer or trained volunteer will meet up with and accompany them to their car, dorm, or other destination. It's a great idea but difficult to execute at any scale. The Light My Way solution combines a "fleet" of AI-assisted robotic devices positioned in parking lots, along pathways, and adjacent to key buildings with a team of remote, trained security officers. When students are ready to venture outside, they push a button on their RAD Light My Way phone app. This action summons the attention of a live, remote guard escort who has access to all cameras, two-way communication systems, and other integrated technologies along the student's intended route. Lights brighten, customized LED messages scroll across the unit's screens, and the students can hear and speak to the officer from anywhere within the protected area. The officer "stays" with them until they safely reach their destination.

There are approximately 5,300 colleges and universities in the US. That translates to millions of students walking in the dark each night. Higher ed campuses are just one environment where Light My Way can deliver much-needed services to improve the customer experience. And the solution itself is just one of countless others that will soon exist in every industry that leverage innovative technology to raise the bar on delivering services the public needs and deserves.

More Interesting, Gratifying Work

Robots and automation perform best at routine, mundane tasks. As AI expands technology's ability to differentiate between and respond to various situations

[6] https://www.globenewswire.com/news-release/2022/02/21/2388542/0/en/Medical-Robots-Market-Annual-Growth-Rate-at-15-7-Industry-Analysis-Report-by-Size-and-Share-Recent-Development-and-outlook-by-2029.html

appropriately, those tasks are becoming more complex. However, developers, business leaders, and the public must think carefully about the limits to which we are willing to entrust judgment and discretion entirely to machines.

Philosopher Daniel Dennet writes that there are societal dangers in "overestimating the comprehension of our latest thinking tools, prematurely ceding authority to them far beyond their competence." He cautions that as we rely more on machines for labor, we must be very careful not to also cede the intellectual authority and expertise that those machines might replace. What happens when those machines break?[7] He argues that AI should supplement and enhance our human abilities – not replace them entirely.

Think about how many young people have never mastered the ability to read a map or visualize directions. Instead, they rely on the turn-by-turn instructions provided by their phone's GPS, applying little or no effort to mentally process their route. If, through lack of use, humans eventually lose basic skills and processing abilities that allow us to create the technology that we have come to depend on, we will find ourselves more vulnerable as a society and a species.

Assuming we heed Dennet's advice, jobs for human workers will continue to exist, but they will become inherently more challenging and satisfying. Robots might be better at stocking shelves and affixing price tags, but humans have the unique ability to understand how to curate a store's product selection, design creative window displays, and negotiate pricing with vendors. AI may be more accurate at identifying early cancers in an imaging scan, but let's hope doctors remain involved in determining and delivering treatment. Young law associates would prefer to spend time drafting arguments and observing litigation than sifting through documents – a tedious and time-consuming task that AI can handle.

The Security Industry

Within the security industry, where reliance on automation and AI has been growing for over a decade, technology has empowered in-house security teams to do more with less. Access control systems push out alerts to administrators when a door is left propped open and initiate a lockdown when a threat is detected. Video management systems automatically link video clips to corresponding access control events and

[7] https://philosophybreak.com/articles/what-happens-when-machines-become-smarter-than-people/

identify anomalous behaviors and situations that may require human attention. License plate recognition systems identify and admit authorized vehicles to a property while alerting authorities of the arrival of a black-listed vehicle. Technology provides security staff with enhanced situational awareness and remote management tools, allowing them to better use resources, operate more proactively, and respond more quickly and effectively.

The guarding industry is finally embracing a similar paradigm with Autonomous Remote Services (ARS). By deploying interactive, cross-functional security robot devices powered by intelligent, self-learning software, ARS enables guard companies to re-balance the way they utilize machine and human resources. For example, machines can perform routine monitoring, health screening, and ID verification. RAD's ROSA™, a Responsive Observation Security Agent serves as a virtual guard and highly effective crime deterrent. Equipped with cameras, LED messaging, loudspeakers, sirens, and flashing lights, it detects and autonomously encourages trespassers, loiterers, and vagrants to leave the premises immediately. Humans seamlessly intervene, via remote connection, as soon as an exceptional event requires their attention and response.

Unlike old-school guards, who spend 99% of their time idle and on autopilot, ARS personnel spend *all their time* dealing with the 1% of security situations that genuinely benefit from human judgment and expertise. These positions are far more interesting, pay more, and attract a higher caliber candidate. Better salaries are possible through economies of scale, *not* through higher pricing passed on to customers. In fact, the cost of guard services goes down because fewer guards can monitor many more sites simultaneously. As guard companies improve the quality and affordability of their services, they increase their marketability to a broader client base. The solution is good for guard companies, good for their workers, good for their customers, and a boon to society, as a larger segment of the population benefits from enhanced security services.

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A New Path to Education and Employment

More interesting, challenging jobs that leverage and manage technology require specific skillsets obtained through education. What they often *do not* require is a four-year

college degree. However, our job market continues to use a BA degree as a screening device, with HR managers categorically disqualifying the resumes of applicants who lack one. It's a loss for everyone. Young people are starting their careers burdened in debt, earning a degree they possibly do not need to be successful. Meanwhile, employers struggle to find workers with skills that match their needs, skills that are often not taught in any college curriculum but are learned in the field or on the job.

For example, 45% of people who are currently computer system administrators hold a bachelor's degree, but 75% of job postings for an entry-level position with that title list a BA as a requirement.[8] Clearly, many succeed in this role without the degree, but there's a disconnect between perception and reality when the HR department defines who it's looking for. A significant percentage of potential candidates will not even apply for these jobs, regardless of their computer skills, simply because they lack that diploma.

Zoë Baird is President of the Markle Foundation, an advocate for policies that will create good jobs in the digital economy based upon a skills-based labor market. In a podcast from McKinsey Global Institute called *The New World of Work*[9], she says, "If you take an employer and enable them to identify the skills they need in a job rather than looking for the bachelor's degree, that opens up a much larger pool of potential applicants with potentially more targeted skills to fill those jobs and makes more people eligible for the jobs that exist. There are six million unfilled jobs in this country."

In the same podcast, she adds, "The potential for creating businesses that enable people to compete based on skills rather than the increase of the use of the bachelor's degree is tremendous … I think that employers are very interested in training their workforce. We need to think about skills. We need to get to a modular disaggregated network environment where people can pick up skills in one sector and demonstrate in another that the skills they have are valuable to fill those jobs."

Art Bilger, founder, and CEO of WorkingNation, penned an op-ed for CNN in which he says about the current labor shortage, "The genie is out of the bottle. Companies are not going to go back to the old ways of doing business. Today's jobs, and the jobs of the future, require strong, sometimes new skills. Many key stakeholders are doing their part, coming together to eliminate barriers to upskilling and helping jobseekers along

[8] The New World of Work Podcast | McKinsey Global Institute | McKinsey & Company
[9] The New World of Work Podcast | McKinsey Global Institute | McKinsey & Company

the path to a good-paying job and career. These are encouraging developments, but there is so much more than needs to be done, and done quickly, to ensure our workforce is ready for the jobs employers need to get done."[10]

Business leaders: Are you listening?

Greater Transparency Leading to a More Equitable Society

Compared to the other topics we've just addressed; this one gets the least attention but has some of the most sweeping implications. If done right, AI can eliminate the underlying prejudices about gender, race, and other attributes that lead to unfair outcomes in decision-making processes. If done poorly, it can build upon those biases and bake them further into our institutions. Fortunately, AI offers a level of transparency that human decision-making lacks. If outcomes delivered by AI are consistently questionable, we can look to the code for why this is happening and make adjustments.

Humans are inherently biased, although often, they do not realize it. A landmark 2003 study conducted at Chicago's Booth School of Business showed that when pairs of resumes were sent out, identical in all respects except for the applicants' names, those with white-sounding names received 50% more calls for interviews. A follow-up study conducted in 2021 found that distinctly black names still held a disadvantage.[11]

Using AI, which can be programmed to disregard an applicant's name, gender, age, zip code, or other factors that are irrelevant to their qualifications, could help HR departments engage in fairer hiring practices and lead to greater workforce diversity. Another study demonstrates that a machine learning model could have vastly improved New York City's stop-and-frisk policy, recovering 90 percent of the weapons by conducting 58 percent of the searches among a more racially balanced population.[12] Clearly, there is a role for AI in improving the fairness of many practices,

Clearly, there is a role for AI in improving the fairness of many practices, from hiring to college admissions, to lending practices, to bail and sentencing decisions.

[10] https://www.cnbc.com/2021/07/21/op-ed-theres-another-reason-for-the-labor-shortage.html
[11] https://www.bloomberg.com/news/articles/2021-07-29/job-applicants-with-black-names-still-less-likely-to-get-the-interview
[12] https://projecteuclid.org/journals/annals-of-applied-statistics/volume-10/issue-1/Precinct-or-prejudice-Understanding-racial-disparities-in-New-York-Citys/10.1214/15-AOAS897.full

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However, there is a danger that as we move toward self-learning models, biases that have existed in the past populate the datasets that machines use to detect patterns and ultimately make decisions. Let's go back to the resume analysis example.

In 2015, Amazon scrapped an experimental hiring tool that used AI to identify top talent among candidates seeking jobs in the company's software development and technical roles.[13] The self-learning tool was intended to be gender-blind and race-blind. However, because the model used the profiles of employees hired over the past ten years to create a template for ranking the desirability of new applicants' resumes, women were inadvertently discriminated against. The model database was primarily comprised of white males who dominated the tech industry at the time. Therefore, candidates who earned their degree at an all-women's college received "fewer points" because the existing pool of software developers had not attended those schools. Candidates who held leadership positions in their sororities were less favored than candidates who led their fraternities. A program launched with the best of intentions instead ended up reinforcing the discriminatory practices it was seeking to eliminate.

Researchers at the University of Chicago and Harvard argue that "under the right circumstances, algorithms can be more transparent than human decision-making, and even can be used to develop a more equitable society."[14] However, we must be careful to consider our history of bias when building AI. The fairness of outcomes, as defined by society, should be used as a metric to determine whether AI is doing its job effectively. When it fails to meet this standard, it is the responsibility of humans to make changes to the underlying assumptions and data that drive the software's decision-making.

We face grave danger as a society if we ever reach a point where we unconditionally accept that because AI has determined a set of outcomes, they are therefore righteous. Machines cannot become moral arbiters. That's our job.

[13] https://www.reuters.com/article/us-amazon-com-jobs-automation-insight/amazon-scraps-secret-ai-recruiting-tool-that-showed-bias-against-women-idUSKCN1MK08G

[14] https://www.chicagobooth.edu/review/how-making-algorithms-transparent-can-promote-equity

Moving Forward

We're jumping headfirst into a new reality, one in which robots impact most facets of our lives. What should business leaders, investors, policymakers, and technology developers be doing to guarantee a soft landing?

I recommend four things: Innovate, Moderate, Educate, and Celebrate.

Innovate: AI and robotics offer unique opportunities to rethink paradigms. Let's stop thinking about how things have always been done and focus on our desired results. In the security guard industry, we're seeing autonomous solutions that neither look nor act like human security officers but deliver superior results. In the industrial sector, watch a YouTube video of the Ocado automated warehouse in southeast London, where thousands of robots are revolutionizing grocery warehouse operations. The solution looks nothing like the self-driving forklifts or robotic arms you might expect. These are robots being robots instead of mimicking humans; it's innovation on steroids and a true inspiration for thinking "outside the box."

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Moderate: Just because we can invent an autonomous technology to do something doesn't mean we should. Do we really want security robots brandishing weapons? I think not.

As AI becomes embedded into many more solutions, we must remain cognizant that just as robots bring value to the table, so do humans. The ideal solutions balance what each does best to achieve synergies and harmony. If creating and implementing autonomous solutions is driven solely by a desire for efficiency and lower operating expenses, to the exclusion of all other considerations, we may face far greater societal costs down the road.

Educate: As our economy morphs in response to the growing role of autonomous systems, employers must do their part to cultivate the skills of workers. Better on-the-job training can unleash the potential of unrealized talent. Educational institutions must offer more skills-based training and practical associates degrees that prepare workers for jobs in the digital economy. Guidance counselors must be aware of the evolving labor market and steer students toward careers that will continue to offer opportunities.

Policymakers must find ways to make education more affordable and attainable for a larger swath of the public, including older workers who want to develop new skills. There will still be value in a four-year liberal arts degree, but students should no longer view it as a necessary hurdle they must jump before moving into a satisfying, well-paying career. Unless we make these changes, the gap between unfilled jobs and unemployed workers will only expand.

Celebrate: This is an exciting time to be alive! Never before has technology offered so much promise. For those involved in developing autonomous solutions, let's do all we can to celebrate the moment: become more vocal evangelists, more visible thought-leaders, and more passionate advocates for the great things our respective industries are doing. The public needs to hear this! Change is scary, but minds can be opened when we replace fear of the unknown with enthusiasm over possibilities.

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Born and raised in Canada but working in the US since 1995, he is an active voice in the security and robotics industries. His experience is multi-faceted in that he started and ran his own security integration company early in his career, then becoming one of California's premier integrators, Mr. Reinharz was part of a team that successfully sold an integrator to a global security firm for $42 million and has held various other security industry roles. Mr. Reinharz speaks on panels at ISC East and West, ASIS, GSX and others.

Mr. Reinharz credits almost two years of work performed with the LAPD combined with the fundamentals of the book on AI he wrote when he was 19 years old as the basis for many of the technological innovations he has launched. Mr. Reinharz' professional interests include the application of AI in the 4th Industrial Revolution, the new economy, NFTs and finance.

For more information, visit aitx.ai, radsecurity.com, or stevereinharz.com