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GET INSIGHTS ON AI UNDER 10 MINUTES

HEADLINE NEWS IN A FLASH

- The 'core' of data science:
McKinsey donates Kedro to Linux
- Nuclear quantum computing: It's coming
- Elon Musk's brain chip firm
Neuralink lines up clinical trials in humans
- An inside look at how one person
can control a swarm of 130 robots
- PCR tests for Covid could be replaced by an X-ray that gives results in minutes
- ETH Zurich reveals new robotic control approach

WHAT'S HOT

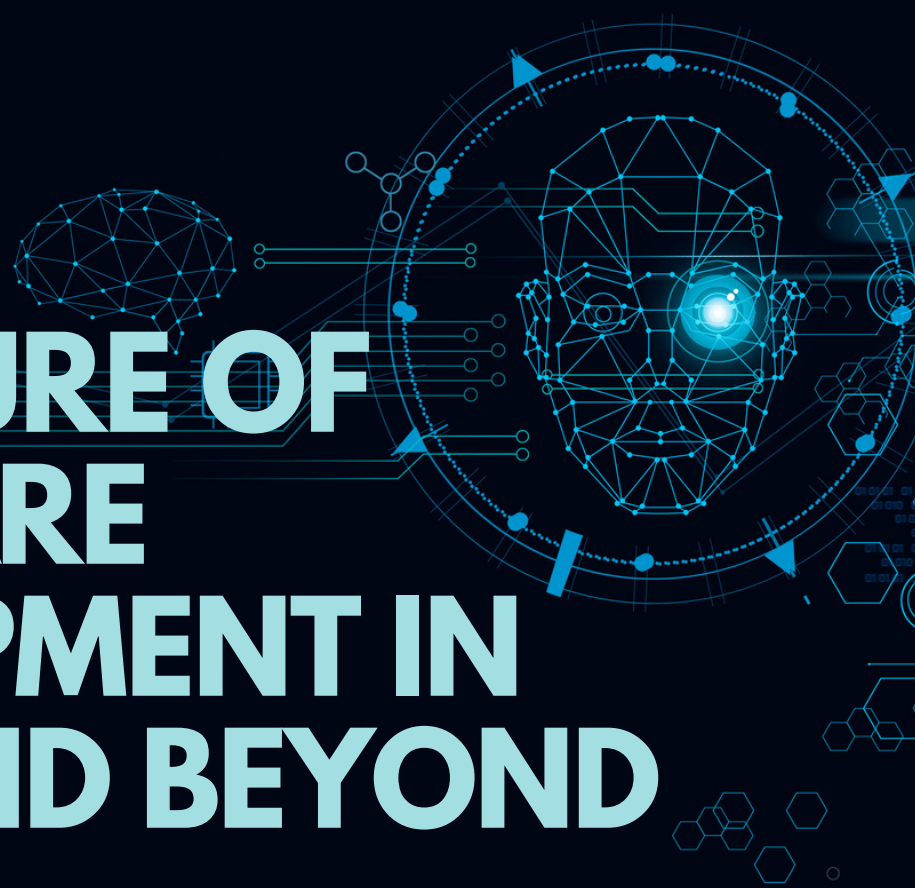
THE FUTURE OF SOFTWARE DEVELOPMENT IN 2022 AND BEYOND

SECTOR FOCUS

WHAT AI CANNOT DO

"WE NEED A NEW SOCIAL CONTRACT."





THE FUTURE OF SOFTWARE DEVELOPMENT IN 2022 AND BEYOND



As 2022 is now here, tech personnel and firms must take note of the new trends in the software productivity space and adjust accordingly to meet the growing expectations of the market.

The future is uncertain, and if we have learned anything from the past several months is the value of being prepared for the unexpected. There are key trends especially in the areas of remote working, cloud computing, artificial intelligence, cybersecurity and outsourcing that must be considered.

WORKING REMOTELY

The freedom and ability to operate from anywhere will be permanent in the future of software development. An article by Computer Weekly suggests that the Covid-19 pandemic accelerated the growth of remote work among developers, with a reduction of office working by 74% since the pandemic hit. Studies also suggest the growth of hybrid working — some work done remotely and others into the office — will be imminent. Firms are expected to accommodate remote working systems by 46% compared to before the global health crisis.

ARTIFICIAL INTELLIGENCE AND ASSOCIATED INNOVATIONS

The power of artificial intelligence (AI) will also be leveraged. 2022 will be an important year in the use of AI, especially in the software development space. Integrating AI into existing technologies will offer a meaningful platform for better decision-making, better outcomes, efficiency, automation and enhanced digital experience. The adoption of AI will be accompanied by cloud computing and Kubernetes. Kubernetes will allow developers and business enterprises in the software development industry to run their applications on a multi-cloud system. In general, cloud technologies will enable developers to scale up systems and incorporate chatbots and cognitive services.



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CROSS-PLATFORM DEVELOPMENT

Cross-platform development will be on the rise come 2022 and the years beyond. Because of the challenges associated with the development of “only for iOS”, “only for Android” or “only for Windows,” software development enterprises are increasingly exploring cross-platform development. With the help of innovative technologies, cross-platform development will be able to support different platforms with a single code base, thereby reducing the need for additional engineering resources. In other words, cross-development capabilities have a huge economic significance, saving developers a substantial amount of time and resources.

CYBERSECURITY

The future of the development of software will see a significant rise in the changing demands of cybersecurity. The progression into an intense digitally interconnected era means business enterprises can no longer ignore cybersecurity threats. Criminal activities in the virtual space are costing businesses up to \$6 trillion a year according to recent research. Therefore, software developers and customer software companies are forced to deviate from the traditional cyber protection measures such as firewalls and anti-virus software to rethink new ways of protection. Software development experts suggest the implementation of cybersecurity mesh during software development.

AUTOMATION

Repetitive tasks in software development will be automated. Thanks to AI, cloud computing, robotics and several other emerging technologies, automation will be an inevitable trend in the software development space. For instance, a significant number of software development enterprises are incorporating (with many others considering) robotic process automation (RPA) techniques for purposes of achieving higher efficiency. RPA innovation aims to address redundant and rotary tasks suited to machines instead of human labor. The biggest advantage of integrating RPA into software development is that it gives individual developers more time to focus more on the creative side of software development.

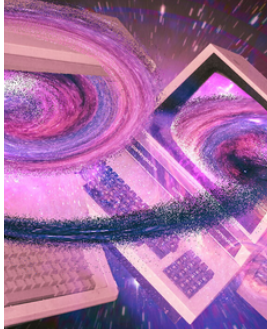
FAST INNOVATION AND PROTOTYPING

Another critical trend that will be observed in 2022 is fast innovation and prototyping. Software development is unpredictable, volatile and very competitive. Individuals and firms in this industry must constantly innovate or get wiped out from the industry. As such, as 2022 nears, software development firms will be forced to develop a culture of innovation by rewarding innovative employees accordingly and creating avenues for software development. Many firms are likely to follow this trend — those that will fail to do so, or limit innovation, will risk losing their competitive advantage.

FINAL THOUGHTS

Emerging trends indicate that the future of software development will undergo significant change. The wide array of new technologies and innovations has huge implications for the software development space. Software development firms cannot afford to pay attention to emerging trends. Companies that choose to invest time, finances and other resources to adjust to the expectations of the changing market are the ones that will achieve and maintain a sustainable competitive advantage./

SOURCE: ENTREPRENEUR



HEADLINE NEWS IN A FLASH

THE 'CORE' OF DATA SCIENCE: MCKINSEY DONATES KEDRO TO LINUX

Scottish-sounding management consultancy McKinsey has donated Kedro to the Linux Foundation. Build back in 2019, McKinsey launched Kedro as an open source software tool on GitHub for data scientists and data engineers. The Kedro community now has a user base drawn from some 200,000 monthly downloads and over 100 contributors. In terms of form and function, this technology is a library of code that can be used to create data and Machine Learning pipelines. Kedro will sit in the Linux Foundation's LF AI & Data area, a specialist umbrella foundation founded in 2018 to support and accelerate development and innovation in Artificial Intelligence (AI) and data by supporting and connecting technical open source projects./

Source: *computerweekly*

NUCLEAR QUANTUM COMPUTING: IT'S COMING

A trio of separate research teams from three different continents published individual papers indicating similar quantum computing breakthroughs last week. All three were funded in part by the US Army and each paper appears to be a slam dunk for the future of quantum computing. The first two teams, one from Tokyo and one from Los Angeles, went about the issue in a similar way while the Australian team decided to take a different approach. The result is that each team was able to build a distinct, silicon-based, two-qubit quantum computing system capable of operating with greater than 99% accuracy. Right now, scalability is the single largest hurdle standing in the technology's way. . All three teams are trying to put qubits on a silicon chip. What we found most interesting however, is the mind-boggling way in which the Australian team managed to create a pair of nearly errorless qubits: they went nuclear./

Source: *thenextweb*

ELON MUSK'S BRAIN CHIP FIRM NEURALINK LINES UP CLINICAL TRIALS IN HUMANS

Musk, who co-founded Neuralink in 2016, has promised that the technology "will enable someone with paralysis to use a smartphone with their mind faster than someone using thumbs". The Silicon Valley company, which has already successfully implanted artificial intelligence microchips in the brains of a macaque monkey named Pager and a pig named Gertrude, is now recruiting for a "clinical trial director" to run tests of the technology in humans. "We hope to have this in our first humans, which will be people that have severe spinal cord injuries like tetraplegics, quadriplegics, next year, pending FDA [Food and Drug Administration] approval," he told the Wall Street Journal's CEO Council summit./

Source: *theguardian*

AN INSIDE LOOK AT HOW ONE PERSON CAN CONTROL A SWARM OF 130 ROBOTS

Last November, at Fort Campbell, Tennessee, half a mile from the Kentucky border, a single human directed a swarm of 130 robots. The swarm, including uncrewed planes, quadcopters, and ground vehicles, scouted the mock buildings of the Cassidy Range Complex, creating and sharing information visible not just to the human operator but to other people on the same network. The exercise was part of DARPA's OFFensive Swarm-Enabled Tactics (OFFSET) program. If the experiment can be replicated outside the controlled settings of a test environment, it suggests that managing swarms in war could be as easy as point and click for operators in the field. For the person directing the swarm, the entire array of robots appeared as a virtual reality strategy game, mapped onto the real world. /

Source: *popsci*

PCR TESTS FOR COVID COULD BE REPLACED BY AN X-RAY THAT GIVES RESULTS IN MINUTES

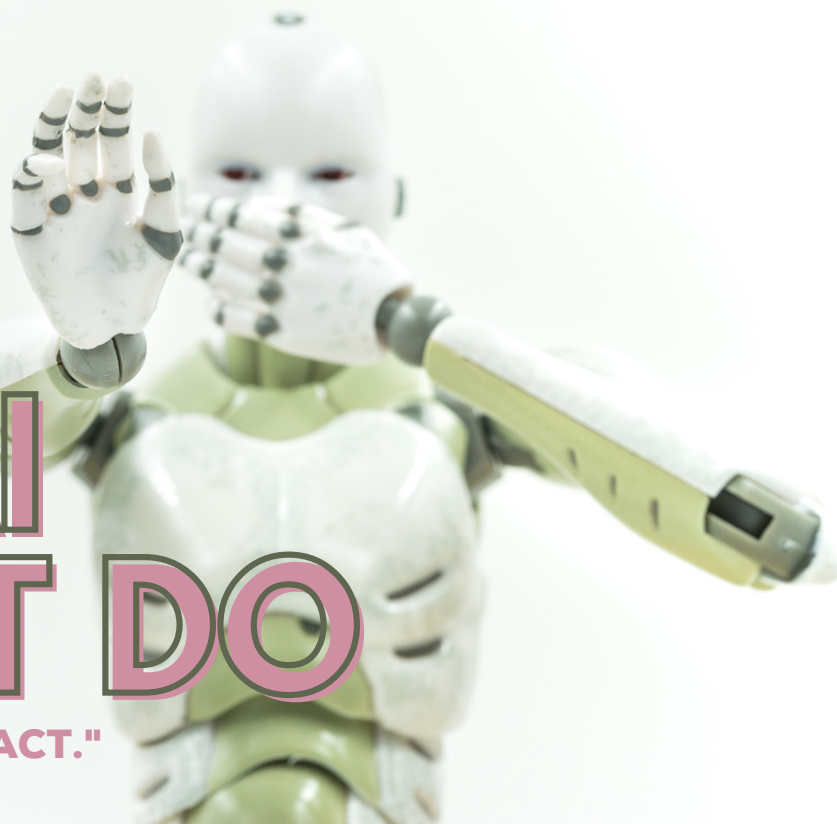
Scientists say Covid PCR tests could be replaced with an almost-instant test that uses X-rays. Researchers say that the new artificial intelligence (AI) technology has an accuracy of 98% and could provide results within minutes. A team from the University of West of Scotland (UWS) is behind the project, which is led by Professor Naeem Ramzan. The team includes Gabriel Okolo and Dr Stamos Katsigiannis. In his latest update, Professor Ramzan said: "There has long been a need for a quick and reliable tool that can detect Covid-19, and this has become even more true with the upswing of the Omicron variant. "Several countries are unable to carry out large numbers of covid tests because of limited diagnosis tools, but this technique utilises easily accessible technology to quickly detect the virus./

Source: *walesonline*

ETH ZURICH REVEALS NEW ROBOTIC CONTROL APPROACH

Led by ETH Zurich robotics professor Marco Hutter, the team's machine learning technology, based on a neural network, allows the robot to combine its visual perception of the environment with its sense of touch (proprioception) for the first time, based on direct leg contact. Overcoming obstacles such as slippery ground, high steps and forest trails, the quadrupedal robot from ETH Zurich's Robotic Systems Lab navigated the 120 vertical metres 'effortlessly' in a 31 minute hike, the team said – four minutes faster than the estimated duration for human hikers – with no falls or missteps./

Source: *theengineer*



WHAT AI CANNOT DO

"WE NEED A NEW SOCIAL CONTRACT."



- AI is poised to displace millions of jobs, both blue-collar and white-collar.
- However, there are skills that AI cannot master: strategy, creativity, empathy-based social skills, and dexterity.
- We need a new social contract that emphasizes the importance of proper education and collaboration with AI.

These are the three capabilities where I see AI falling short, and that AI will likely still struggle to master even in 2041:

CREATIVITY

AI cannot create, conceptualize, or plan strategically. While AI is great at optimizing for a narrow objective, it is unable to choose its own goals or to think creatively. Nor can AI think across domains or apply common sense.

EMPATHY

AI cannot feel or interact with feelings like empathy and compassion. Therefore, AI cannot make another person feel understood and cared for. Even if AI improves in this area, it will be extremely difficult to get the technology to a place where humans feel comfortable interacting with robots in situations that call for care and empathy, or what we might call "human-touch services."

DEXTERITY

AI and robotics cannot accomplish complex physical work that requires dexterity or precise hand-eye coordination. AI can't deal with unknown and unstructured spaces, especially ones that it hasn't observed.

The following is an excerpt adapted from AI 2041 by Kai-Fu Lee and Chen Qiufan. Copyright © 2021 by Kai-Fu Lee. All rights reserved. No part of this excerpt may be reproduced or reprinted without permission in writing from the publisher.

What does all this mean for the future of jobs?

Jobs that are asocial and routine, such as telemarketers or insurance adjusters, are likely to be taken over in their entirety.

For jobs that are highly social but routine, humans and AI would work together, each contributing expertise.

For example, in the future classroom, AI could take care of grading routine homework and exams, and even offering standardized lessons and individualized drills, while the human teacher would focus on being an empathetic mentor who teaches learning by doing, supervises group projects that develop emotional intelligence, and provides personalized coaching.

For jobs that are creative but asocial, human creativity will be amplified by AI tools.

For example, a scientist can use AI tools to accelerate the speed of drug discovery. Finally, the jobs that require both creativity and social skills, such as strategy-heavy executive roles, are the ones where humans will shine.

While it's clear that there are a lot of lines of work that AI will struggle to master — and thus would be safer for workers to pursue for their careers — these alone won't prevent a disaster for the legions of workers displaced from roles that will be easier for AI. **So what else can we do to help fulfill the basic human desire for a meaningful livelihood?**

RELEARN, RECALIBRATE, RENAISSANCE

To create more jobs and improve the readiness of workers for the transformation on the horizon, I propose the 3 Rs — relearn, recalibrate, and renaissance — as part of a gargantuan effort to deal with the central issue of our time: the AI economic revolution.

People in endangered jobs should be warned well in advance and encouraged to learn new skills. The good news is that, as discussed, there are skills that AI cannot master: strategy, creativity, empathy-based social skills, and dexterity. In addition, new AI tools will require human operators. We can help people acquire these new skills and prepare for this new world of work.

Vocational schools need to redesign their curricula to promote courses for such sustainable jobs.

Governments could take the lead and provide incentives and subsidies for these courses, rather than blindly pursue broad-brush economic measures, such as universal basic income. Corporations could also provide programs like Amazon's Career Choice program, under which Amazon pays up to \$48,000 for any employee to earn a degree in high-demand fields such as aircraft mechanics, computer-aided design, and nursing.

Pandemic or no pandemic, the importance and number of human-centric service jobs, such as nursing, will also increase as wealth and life span increase. Society has consistently devalued such vital human-centric service roles both in terms of how they are perceived and how much they are compensated, and we need to address this oversight.

In addition to relearning skills, we need to recalibrate what today's jobs look like with the help of AI, moving toward a human-AI symbiosis.

The most prevalent and basic symbioses will be found in software AI tools. Software powers a human-PC interdependence, which has already revolutionized office work. Software AI tools can devise alternatives, optimize outcomes, or perform routine work for white-collar professionals in many fields. Specific AI tools will be customized for each profession and application — for example, AI-based molecule generation for pharmaceuticals, advertising planning for marketing, or fact-checking for journalism.

A deeper interdependence between AI optimizations and “human touch” will reinvent many jobs and create new ones. AI will take care of routine tasks in tandem with humans, who will carry out the ones that require warmth and compassion. For example, the future doctor will still be the primary point of contact trusted by the patient but will rely on AI diagnostic tools to determine the best treatment. This will redirect the doctor's role to that of a compassionate caregiver, giving them more time with their patients.

Just as the mobile Internet led to roles like the Uber driver, the coming of AI will create jobs we cannot even conceive of yet.

Finally, with the right training and the right tools, we can expect an AI-led renaissance that will enable and celebrate creativity, compassion, and humanity. From the 14th to the 17th centuries, wealthy Italian cities and merchants funded the Renaissance, which saw a flowering of artistic and scientific output. We have reason to anticipate that AI will be the catalyst for a new renaissance centered around human expression and creativity. As with the Italian Renaissance, people will follow their passions, creativity, and talents once they have more freedom and time.

Painters, sculptors, and photographers will use AI tools to compose, experiment with, and refine artwork. Novelists, journalists, and poets will use new technologies for research and composition. Scientists will use AI tools to accelerate drug discovery. An AI renaissance will reinvent education, giving teachers AI tools to help each student find their own passions and talents. Education will encourage curiosity, critical thinking, and creativity. It will promote learning by doing and group activities that enhance students' emotional intelligence — and that bring them face-to-face with one another, and not just a screen.

A NEW SOCIAL CONTRACT

Turning some of the ideas above into reality would be an unprecedented undertaking for humanity. One thing is clear: We will need to retrain a massive number of displaced workers. We need to raise an astronomical amount of money to fund this transition. We need to reinvent education to produce creative, social, and multidisciplinary graduates. We need to redefine the work ethic of society, entitlements for citizens, responsibilities for corporations, and the role of governments. In short, we need a new social contract.

Fortunately, we do not need to create this from scratch. Many elements already exist in different countries.

Take, for example, the “gifted and talented” education programs in Korea, primary education in Scandinavia, university innovations (like massive open online courses, or MOOCs, and Minerva Schools) in the United States, the culture of craftsmanship in Switzerland, service excellence in Japan, the vibrant tradition of volunteering in Canada, caring for elders in China, and “gross national happiness” from Bhutan. We need to share our experiences and plot a way forward globally, where new technologies are balanced by new socioeconomic institutions.

Where will we find the courage and audacity to take on this gargantuan task?

We are the generation that will inherit the unprecedented wealth from AI, so we must also bear the responsibility of rewriting the social contract and reorienting our economies to promote human flourishing. And if that is not enough, think about our posterity — AI will liberate us from routine work, give us an opportunity to follow our hearts, and push us into thinking more deeply about what really makes us human./

Source: bigthink





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3 LEVELS



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