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# PUBLISHER'S MESSAGE

The shape-shifting robot that can switch between liquid and metal states to navigate tricky environments without compromising on strength took us by surprise, a breakthrough in robotics recently made by scientists.

Looking ahead to 2023, we can expect to see continued growth in the robotics industry in Southeast Asia, with increased investment and research. The region's governments and businesses is anticipated to continue to focus on developing robotics solutions for other sectors such as manufacturing, agriculture, and healthcare as well as exploring new areas like education, entertainment, and service robotics,

Malaysia has been actively promoting the development and adoption of robotics and the government has identified robotics and automation as key areas for investment and growth in the country's National Policy on Industry 4.0. Several initiatives and programs aimed at promoting robotics and automation, such as the National Robotics and Automation Programme (NRAP) and the Smart Automation Grant (SAG), which provide funding for businesses to adopt automation technologies have been implemented too.

The recent plan that we've seen by the government was to set up more Social Security Organization (Socso) National Neuro-Robotics and Cybernetics Rehabilitation Centers across the country. It is said that the center would provide high-quality recovery and rehabilitation services to workers.

On behalf of the editorial team, thank you for your massive support of Automate Asia Magazine. Stay in touch with us at [www.asiaautomate.com](http://www.asiaautomate.com) for more updates.

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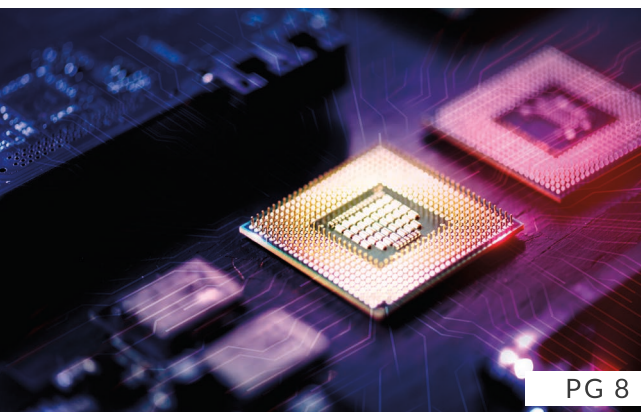
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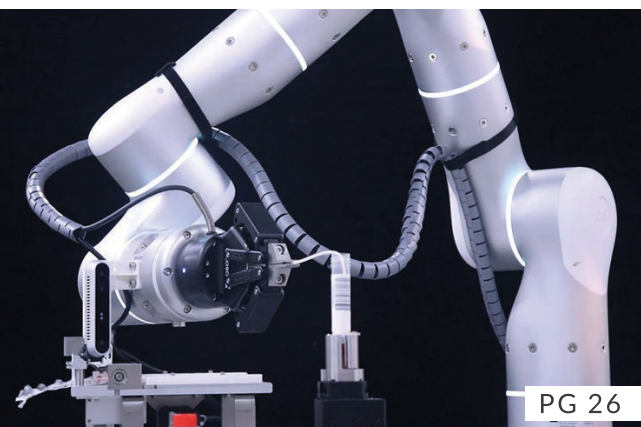
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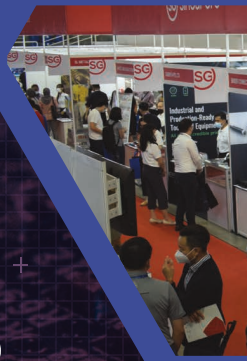
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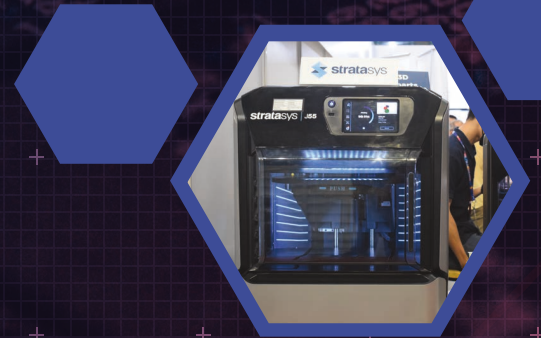


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# E&E Industry Still a Major Contributor to Malaysian Economy

**T**he electrical and electronics (E&E) industry will keep on playing a major contributor to the country's economy.

According to International Trade and Industry (MITI)'s deputy minister, Liew Chin Tong, the contributions from the E&E industry cover aspects including job creation, investment, exports and multiplier and spill-over impacts to the rest of the Malaysian economy.

"E&E has moved beyond just manufacturing, into higher-value and high-skilled activities like design and development and global business services. Malaysia is the regional and global headquarters/center for many of these

manufacturing and services activities, with many Malaysians holding global and regional leadership roles," he said at the inaugural MSIA 2022 E&E Survey at MIDA Sentral.

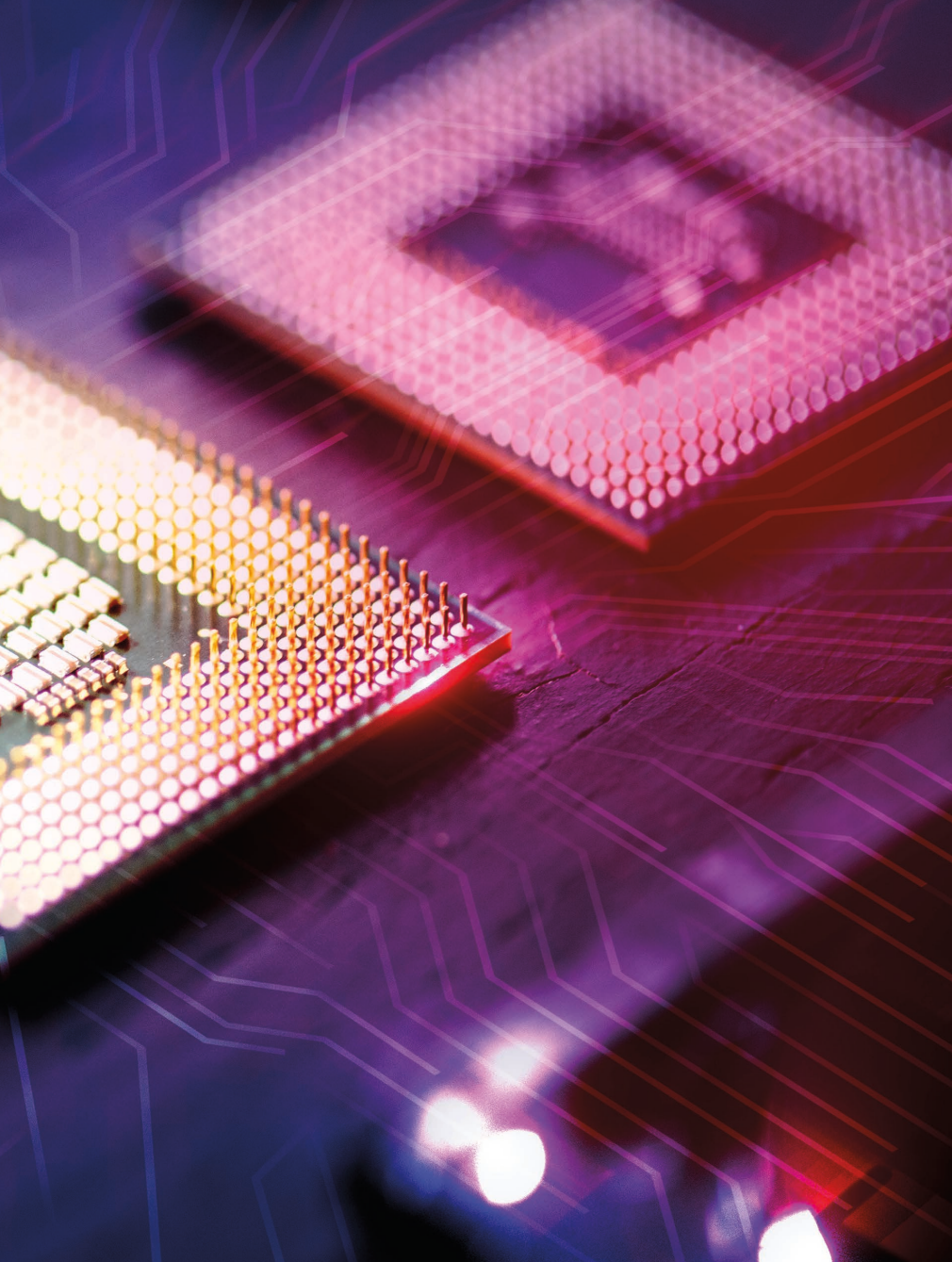
Despite the short-term global economic headwinds, the long-term outlook for semiconductors and electronics continues to be extremely bright. E&E companies remain focused on recruiting, retaining and developing talent, as well as on supply chain resilience, digitalization, Industry 4.0 and ESG initiatives.

Based on the survey, which was commissioned by MSIA and produced collaboratively with Deloitte Malaysia, the outlook for 2023 remains soft, with 50

per cent of the surveyed E&E companies expecting a decline in orders, while 25 per cent of the surveyed E&E companies are still expecting an increase in orders as some product categories will see continued growth while other categories will see a decline.

Sixty-five per cent of the surveyed E&E companies are still pushing ahead with planned capital expenditures and investments. This is important as Malaysia has already attracted E&E investments of RM186.2 billion since January 2020 (2020 – RM15.6 billion, 2021 – RM148.0 billion and from January to September 2022 – RM22.6 billion).





“This reflects the long-term prospects of the industry and businesses confidence in Malaysia as a location for semiconductors and electronics,” said Malaysia Semiconductor Industry Association (MSIA) president Datuk Seri Wong Siew Hai.

“The E&E sector is the golden goose of Malaysia. It must be constantly nurtured so that the industry remains relevant and competitive,” he said.

“For Malaysia to be globally competitive, Malaysia needs to focus on the ‘War for Talent’ through closer Government-Industry collaboration and closer Industry-Academia collaboration,” he said.

The Fourth Quarter 2022 Bulletin by Bank Negara reaffirmed that the realization of new and existing investment will be a key driver of growth for the Malaysian economy amid the challenging global environment.

“I would like to encourage more E&E companies to join MSIA, so that our collective voice is stronger through MSIA. Whilst semiconductors are a widely prized industry all over the world, we in MSIA equally prize something related to chips, which is data,” he said.

The MSIA 2022 E&E Survey captures the contributions of 93 MSIA members including semiconductors and electronics, from manufacturing to services, and provides an encompassing profile of the industry, investments, job creation, challenges, priorities and business outlook.



*Datuk Seri Wong Siew Ha (left) and Liew Chin Tong launching the MSIA 2022 E&E Survey.*

# INDUSTRY 4.0

## Call For Better System to Apply for IR 4.0-Related Funds, Grants

**T**he Federation of Malaysian Manufacturers (FMM) is calling on the government to establish a new system for industry players to apply for the funds, grants and incentives offered in relation to the Fourth Industrial Revolution (IR 4.0) initiative.

President Tan Sri Soh Thian Lai said this is to increase the efficiency and ensure more companies will participate and apply for the IR 4.0-related financial incentives.

“We believe that a more efficient system will also help to boost IR 4.0 implementation activities in Malaysia. The government can also improve on the current practices as it requires a long waiting time for companies to receive their funding.

“In addition, the government should look into establishing more human resource development program through collaborations involving universities,

government agencies and industry players to build a pool of semi-skilled and skilled workers who can meet the industry’s requirements and ensure a reliable workforce and future-ready talents to support IR 4.0 adoption,” he told Bernama.

Following the launch of the National Policy on Industry 4.0 (Industry4WRD) by the International Trade and Industry Ministry on Oct 31, 2018, IR 4.0 has gained momentum and acknowledgment by the industry in Malaysia.

As of December 2022, a total of 1,324 small and medium enterprises had participated in Miti’s Industry4WRD Readiness Assessment program.

According to Soh, one of the main challenges faced by industry players in adopting IR 4.0 is budgetary constraints. This is due to, among others, high investments in machine parts and infrastructures as well as costs of technical training.



He said amid the lack of necessary skills, talents and knowledge, the industry has to rely on professional experts and consultants to upskill the existing workforce and produce future talents who are able to support the technologies being implemented, including robotic systems, artificial intelligence, Internet of Things, cloud computing and system integration.

Soh said although the transformation process may take years, once a plan is implemented it will enable manufacturers to sensibly invest in advanced manufacturing technology capabilities over time to deliver return on investment benefits such as increased operational efficiency and reduced downtime.

“Besides financial challenges, there is also a lack of awareness on the need and

impact of IR 4.0 among industry players, especially the SMEs which are not keen to explore the opportunities to adopt it.

“Continuous improvement and innovation are crucial, especially in this era of digitization, and industry players in Malaysia need to be on par with other manufacturers globally to maintain their competitiveness. Thus, the adoption of IR 4.0 is very critical,” he said.

Malaysia, Soh said, has to catch up on many aspects in order to achieve a higher level of industrialization, including the transformation into a high-income economy.

According to him, Malaysia has lagged behind neighboring countries in terms of upgrading of operations (away from

labor-intensive activities), value-creation, productivity and innovative activities.

“As such, the FMM is strongly of the view that there must be a comprehensive approach in implementing policies, which involves not only reviewing the technology and technical initiatives but also the implementation process,” he said.

Soh said the approach needs to address several matters, including unclear lines of responsibility; lack of coordination in policy implementation and fragmented ownership of policies; comprehensive rolling out and implementation of policies; and close monitoring of implementation.

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# 5 Ways AI Can Help Your Startup

Startups are embracing artificial intelligence (AI) faster and faster, a revolutionary technology making waves in the technology sector. Startups can benefit much from AI, from cost reductions to higher customer satisfaction.

Furthermore, AI-driven personalized marketing can help firms reach the right audience with the right message at the right time. By analyzing customer data and behavior, artificial intelligence can identify the best moments and channels to reach customers, resulting in more effective marketing campaigns. As a result, the startup's conversion rate and sales may increase.

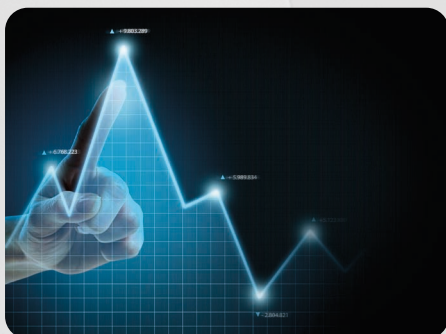
This article will look at five ways that AI might benefit your startup.



## 1. Branding and Marketing

Artificial intelligence can be integrated into web designing services, marketing, and SEO campaigns to improve performance while reducing costs. It can produce analytic reports for web designers to help optimize a site's performance.

It can be used to examine client data and develop targeted advertising strategies. This can boost marketing campaigns' efficacy and improve sales.



Additionally, AI-driven tailored marketing can assist startups in addressing the appropriate audience with the right message at the right time. For example, AI can determine the most efficient times and channels to approach customers by evaluating customer data and behavior, which results in more successful marketing efforts. This could boost the startup's conversion rate and increase sales.

## 2. Automation of Repetitive Tasks

One of AI's key advantages is its capacity to automate time-consuming and repetitive operations, freeing up workers' time to concentrate on more strategic endeavors. For startups, this can entail automating routine jobs like data entry or customer assistance so that staff

members can focus on development and innovation.

Moreover, as AI systems can complete activities with high precision and repeatability, automation of tasks can result in greater accuracy and consistency. This can assist startups in avoiding mistakes and ensuring that duties are carried out to a uniform standard.

## 3. Improved Customer Service

AI-powered chatbots and virtual assistants can offer round-the-clock assistance to customers, addressing frequent queries and resolving straightforward problems. This can boost client happiness and sales for the startup by enhancing the customer experience.

AI-driven chatbots and virtual assistants can also gather important customer feedback and data that can be utilized to enhance goods and services. For example, startups may remain responsive to shifting client needs by using this information to pinpoint areas for improvement and guide product development decisions.

#### 4. Data Analysis

By evaluating massive volumes of data in real-time, AI may assist entrepreneurs in making data-driven decisions. Startups can benefit from this information on consumer behavior, market trends, and possible growth possibilities. In addition, startups can use this data to guide decision-making and promote growth.

AI can also improve the accuracy of data analysis, lowering the possibility

of drawing the wrong conclusions and delivering more trustworthy insights. Machine learning algorithms, for instance, can be used to find patterns and connections in data that human analysts would not see immediately.

#### 5. Predictive Maintenance

AI may be used to forecast when equipment will go down, enabling companies to do maintenance work before a failure takes place. This can boost productivity, cut expenses, and decrease downtime.

AI can be used for predictive maintenance to monitor equipment performance and spot possible concerns before they become serious. This can lower the likelihood of expensive equipment breakdowns and help startups save money

on upkeep. In addition, startups can gain important operational insights by integrating AI with the Internet of Things (IoT) sensors to provide real-time monitoring and analysis of equipment performance.

#### Conclusion

AI has the potential to aid companies in a variety of ways. Artificial intelligence (AI) can assist startups in driving growth, increasing efficiency, and eventually succeeding. Startups that embrace AI and implement it into their processes will have a clear advantage over the competition.

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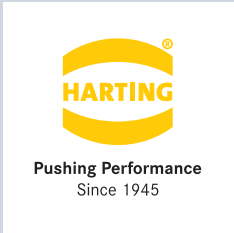
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# Pros and Cons of Using Artificial Intelligence

It is critical to comprehend potential advantages and disadvantages of employing AI in diverse scenarios as technology develops and becomes more widely used

The study of creating algorithms and computer programmes that can reason, learn, and carry out tasks that traditionally require human intelligence is known as artificial intelligence (AI), and it is an area that is expanding quickly.

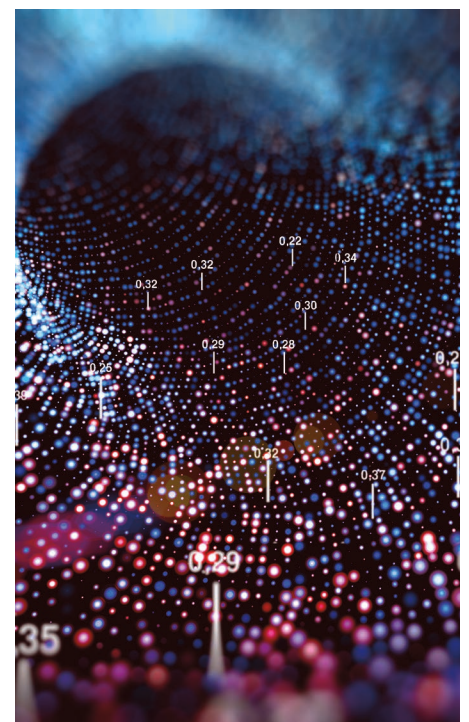
It is critical to **comprehend the potential** advantages and disadvantages of employing AI in diverse scenarios as the technology develops and becomes more widely used.

The following are some benefits and drawbacks of adopting artificial intelligence:

## Pros

### **Improved efficiency and productivity:**

One of the key advantages of employing AI is that it may assist businesses and individuals in automating tedious or time-consuming processes, freeing up valuable resources and time. For instance, **chatbots powered by AI** can answer customer care questions, and automated data analysis can quickly find patterns and insights that would be challenging or impossible for people to find.



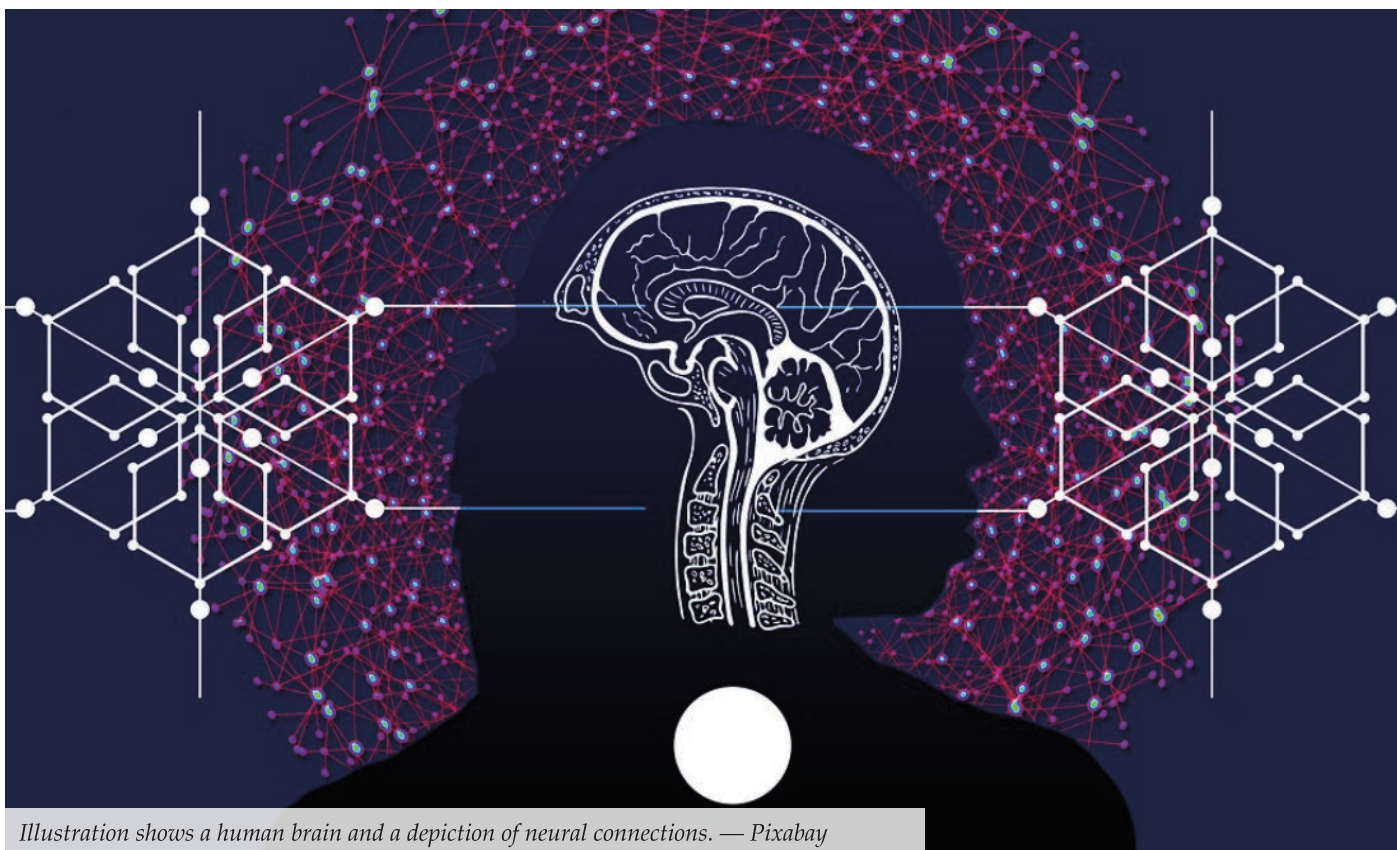


Illustration shows a human brain and a depiction of neural connections. — Pixabay

#### **Enhanced accuracy and precision:**

In many areas, from medical diagnostics to manufacturing procedures, AI may also increase accuracy and precision. Massive amounts of data may be analysed by AI-powered technologies, which can then spot patterns or abnormalities that would be hard or impossible for humans to notice. Better outcomes and decision-making may result from this.

#### **Personalisation and customisation:**

AI can assist companies and organisations in giving their customers more individualised and tailored experiences. For instance, chatbots can provide individualised support and help, while recommender systems driven by artificial intelligence can make product or service recommendations based on user interests and behaviour.

#### **Innovation and creativity:**

By automating jobs that were previously too difficult or time-consuming for people to complete, AI can also enable new

types of innovation and creativity. For instance, using customer comments and preferences, AI can create new works of art, music, or commercial designs.

#### **Cons**

##### **Potential for bias and discrimination:**

One of the biggest worries with AI is that it can reinforce and magnify societal prejudices and discrimination already in place. This may occur if AI algorithms mirror the prejudices and assumptions of their developers or if they were developed with biased or incomplete data. For instance, it has been demonstrated that facial recognition algorithms perform less accurately for people with darker skin tones, which can produce discriminating results.

##### **Lack of transparency and accountability:**

AI can be tough to comprehend and assess, making it challenging to hold companies or individuals responsible for its use. In areas like healthcare and

criminal justice, in particular, this may present ethical and legal issues.

##### **Potential job displacement:**

By automating employment and displacing workers, AI can potentially have a big economic impact. While AI might lead to job losses and necessitate extensive retraining and reskilling initiatives, it can also lead to job creation in some sectors.

##### **Dependence and vulnerability:**

Finally, there is concern that as our reliance on AI grows, we may become more susceptible to hacks and other types of technical failure. This necessitates continual awareness, investment in cybersecurity, and risk management since it may have severe effects on public safety and national security.

# Malaysia, Singapore Sign MoU on Data Protection, Cybersecurity and Digital Economy



Malaysia and Singapore signed a Memorandum of Understanding (MoU) on cooperation in the field of personal data protection, cybersecurity and digital economy.

The MoU was signed by Communications and Digital Minister Fahmi Fadzil and his Singapore counterpart Josephine Teo, duly witnessed by Prime Minister Datuk Seri Anwar Ibrahim and his counterpart Lee Hsien Loong at The Istana.

The Communications and Digital Ministry (KKD) said this was following the agreement by both countries on October 2018 to explore the cooperation in all three fields and the ministry had agreed to the proposal and the process of updating and incorporating the field of cooperation in the MoU had since begun.

It said among the areas of cooperation on personal data protection would be exchange of knowledge and expertise on best practices relating to personal data protection policies and regulations, education and capacity building programmes, and enforcement efforts as well as facilitation of mechanisms to promote cross-border data flows.

“The cooperation also includes development and implementation of the Asean Cross-Border Data Flow Mechanism under the Asean Framework on Digital Data Governance and exchange of information regarding potential or ongoing cross-border data protection or do-not-call incidents or investigations, involving persons or organisations,” it said in a statement today.

Additionally, the cooperation includes the development of joint initiatives between the participants to enable the industry to collaborate on data-driven innovation.

Meanwhile, Communications and Digital Ministry said the cooperation on cybersecurity includes exchange of knowledge and expertise on best practices, coordination and organization of cybersecurity capacity building activities and exchange of information on analyses, experiences and guidance regarding cyberattacks and cybersecurity incidents, concerns or threats.

“It also includes designation of an authorised national cybersecurity lead agency by each participant for the purpose of establishing an annual Malaysia-Singapore Cybersecurity Roundtable.”

On digital economy, the ministry noted that the agreement involves exchange of information on best practices, policies and regulations, including on digitalisation, interoperable standards, and new emerging technologies such as artificial intelligence and distributed ledger technology such as blockchain.

“Also included is the cooperation and collaboration on joint initiatives to promote and support the growth of electronic commerce, digital economy and the interoperability of standards, including but not limited to electronic signatures and authentication, electronic transferrable records and electronic invoicing frameworks,” it said.





Prime Minister Datuk Seri Anwar Ibrahim (left) and his counterpart from Singapore Lee Hsien Loong (right) witness Memorandum of Understanding on promoting Cooperation in Data, Cyber Security and Digital Economy signing ceremony between Malaysian Communications and Digital Minister Fahmi Fadzil (second, left) and his counterpart from Singapore, Josephine Teo (second, right) at the Istana today. -Bernama pic

Source: [www.nst.com.my](http://www.nst.com.my)

According to the ministry, an MoU in the field of information and communications cooperation between both governments was sealed and signed by Malaysia's Minister of Communications and Multimedia and Singapore's Minister of Communications and Information during the latter's visit to Malaysia on Feb 19, 2016.

"The MoU will come into effect after the date of signing and will remain in effect for a period of 5 + 5 years until Feb 2026, and specifically covers the cooperation in the field of media and information," it added.

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# Tiny IoT Devices Are Getting Their Own Special Encryption Algorithms

These cryptography algorithms are designed to protect ephemeral data transmitted between edge devices and sensors, not long-term secrets.

The US Department of Commerce's technical standards organization NIST has nominated the Ascon group of cryptographic algorithms for protecting small devices and information transmitted to and from IoT devices.

NIST will later this year publish the "lightweight cryptography" standard after picking the Ascon family for the task.

It selected the algorithms to protect a vast array of devices, sensors, and actuators. The algorithms are also designed for implanted medical devices, stress detectors inside roads and bridges, and keyless entry fobs for vehicles.

Many of these devices operate with low power that the "lightweight cryptography" needs to account for when protecting information on and transmitting from them.

"The world is moving toward using small devices for lots of tasks ranging from sensing to identification to machine control, and because these small devices have limited resources, they need security that has a compact implementation," said NIST computer scientist Kerry McKay in an announcement.

*"These algorithms should cover most devices that have these sorts of resource constraints."*



Image: AerialPerspective Images/Getty Images

NIST selected Ascon in 2019 as the primary candidate for lightweight authenticated encryption, so it's had lots of time to put it through tests. Ascon was developed in 2014 by a team of cryptographers from Graz University of Technology, Infineon Technologies, Lamar Security Research, and Radbound University.

McKay noted there are seven variants in the Ascon family. Two very important ones are authenticated encryption with associated data (AEAD) and hashing.

AEAD allows a message to be encrypted while leaving the header of a message and a device's IP address in plaintext. NIST points out that AEAD can be used in vehicle-to-vehicle communications. It can also prevent spoofing messages exchanged with radio frequency identification

(RFID) tags. Meanwhile, hashing could be used to check if a software update is valid and has been downloaded correctly.

NIST last July announced four candidates for post-quantum resistant encryption algorithms. However, within a month, one of the algorithms was undermined by researchers who were awarded \$50,000 via Microsoft's bug bounty. The algorithms are meant to protect data encrypted today that in future could be cracked by a powerful enough quantum computer.

McKay notes that post-quantum encryption is most important for "long-term secrets that need to be protected for years" whereas lightweight cryptography is more important for "ephemeral secrets".



The logo of Amazon is seen at the company logistics centre in Boves, France, August 8, 2018. REUTERS/Pascal Rossignol

## Amazon's Cloud Unit to Invest \$6 Billion In Malaysia by 2037

**A**mazon Web Services (AWS), the cloud computing division of Amazon.com Inc, said it plans to invest \$6 billion in Malaysia over the next 14 years to strengthen its cloud services infrastructure in the country.

This marks the company's latest move in its plan to build AWS Infrastructure Regions across southeast Asia.

The infrastructure hub will enable customers in the region to store data securely, the subsidiary said in a statement.

AWS' cloud platform offers more than 200 services, including storage, robotics and artificial intelligence.

Last year, AWS had announced a \$5 billion investment in Thailand.



# Single Pair Ethernet as Backbone for IoT Data Services

*HARTING support TRUMPF with Single Pair Ethernet for autonomous all-in-one laser centers*

As one of the world's largest suppliers of machine tools, TRUMPF is focusing on autonomous concepts in the future. The TruLaser Center 7030 model integrates all laser cutting processes in a single machine for the first time. In order for this to work autonomously and also correct errors, it is necessary to combine and evaluate all the necessary data. HARTING and specialized sensor manufacturers support Trumpf with intelligent camera sensors and smart single pair Ethernet infrastructure for connected services.

Customer needs in mechanical engineering are changing: batch size 1 is now the expected standard, flexibility is a top priority. Maximizing system availability is just as important as making service support even more predictive and calculable.

The TruLaser Center 7030 from TRUMPF handles the entire process - from the drawing to the sorted part: loading, cutting, removing, sorting, stacking. Ideally, it will do this completely autonomously in the future.

**The challenge: machine downtime due to accompanying processes**

Even on a completely tested machine, there will be problems sooner or later due to upstream and downstream processes in real operation at the customer. Manufacturers need all sensor, machine, system and camera data in order to find the causes of errors.

The first step towards this form of autonomy is to understand where unknown problems come from in real operation. This requires a lot of cameras to film the machine and detect the fault remotely. This monitoring often does not yet take place to that extent.

**The solution: seamless communication between field level and IoT services**

**Sensor manufacturers rethink sensor data**

In addition to TRUMPF's own sensors, specialized sensor manufacturers supply the appropriate camera technology. The experts are aware that they have to rethink sensor data: no longer in isolated process data, but in systems where the IoT world has to be supplied with high-quality data. The image data must be linked to all machine data for correct evaluation in real time. The infrastructure required for this must be able to withstand the data volumes, even for medium-sized customers.

**Cross-manufacturer data transfer in real time must be possible**

For real-time data availability, the extension of OPC UA to include Time-Sensitive Networking (TSN) is being developed as part of the OPC Field Level Communication Initiative. TSN takes over the control of priorities of the individual data packets and provides procedures for queue handling. Sensor

data thus become available at the required data rates - the field level can be integrated without hurdles.

**Single Pair Ethernet**

Being able to sell an autonomous machine economically involves sensor technology, infrastructure and also the necessary connectors and cabling.

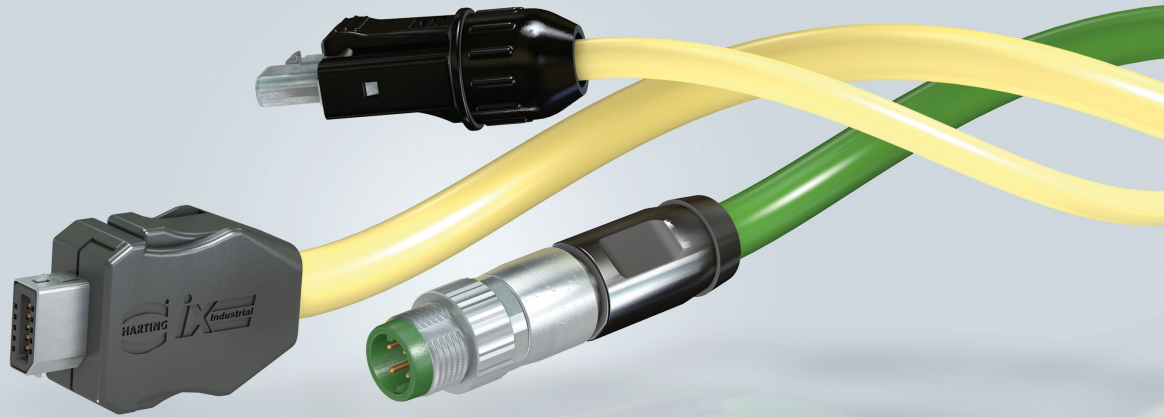
HARTING, a specialist in connection technology, offers Single Pair Ethernet (SPE) as a cabling solution. SPE is a robust and material-saving Ethernet cabling that is intended to replace the fieldbuses commonly used to date in the long term. The new industrial standard allows a data transmission rate of up to 1Gbit/s with only one pair of wires. SPE makes the barrier-free connection of devices up to the field level possible and for the first time allows the cost-effective use of Ethernet in the entire industrial automation. SPE is thus the necessary backbone for continuous networks from the sensor to the cloud.

**Industrial Ethernet Week 2 – 21-23 February 2023**

Many industrial companies today are facing the transition to the Industrial Internet of Things (IIoT). Design engineers, factory installers and other professionals are facing new challenges in their day-to-day business due to new technologies, new use cases and new business models. They need to keep up to date with trends and solutions to



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develop ideas and find next steps in the transformation for their own business.

As one of the key players in the global market for Industrial Ethernet connectivity solutions, HARTING aims to support precisely this target group with the INDUSTRIAL ETHERNET WEEK. Participants of the event will learn about ideas and perspectives from pioneers and thought leaders and get an update around technologies, solutions and trends.

#### About HARTING SEA:

Founded in 1945 in Minden, Germany, the HARTING Technology Group is one of the world's leading providers of industrial connection technology for the three lifelines of Data, Signal and Power and has 14 production plants and 44 sales companies. The company develops, manufactures, and sells the world's most

durable and reliable products and solutions for use in the fields of machinery, plant engineering, mining equipment, factory automation, railways, power generation and distribution as well as industrial electronics and telecommunication.

In the 2021/22 business year, some 6,500 employees generated sales of EUR 1,059 million. HARTING is committed to maintaining close proximity to markets and customers.

HARTING Singapore was set up in March 1998. In addition to the Headquarter and warehouse in Singapore, HARTING operates in Malaysia and has business partners in Thailand, Philippines, Indonesia, and Vietnam. HARTING's commitment to do business in SE Asia remains strong.

The well-known, customer-facing HARTING brand remains unchanged and steadfast in SE Asia and provides professional and customized service to our esteemed customers. HARTING holds extensive and in-depth competence in the fields of electrical, electronic and optical connections, transmission and network technology. HARTING Singapore draws on the group's strengths to develop customized solutions and products for energy and data transmission and networking, mechanical engineering, rail technology, wind energy, factory automation and the telecommunications sectors.



# Singapore Announces New 5G Projects in EV Manufacturing, River Cleaning

The new 5G applications will enhance workplace safety and allow workers to take on higher-value roles, says Senior Minister of State for Communications and Information Janil Puthuchery.

**S**ingapore will see three new applications of 5G technology this year, including two firsts in electric vehicle manufacturing and river cleaning, Senior Minister of State for Communications and Information Janil Puthuchery told Parliament.

Dr Puthuchery said that measurements by the Infocomm Media Development Authority (IMDA) confirmed that Singapore's first two 5G standalone networks have reached 95 per cent nationwide outdoor coverage, ahead of a 2025 target for nationwide coverage.

“With the rollout progressing well ahead of schedule, our focus is currently on supporting the industry to tap on 5G’s capabilities to enhance their operations and service offerings,” he said.

In one project, more than a hundred 5G-enabled robots are being deployed on the factory floor of the Hyundai Motor Group Innovation Centre in Singapore to transport materials to vehicle manufacturing cells.

The 5G technology will allow for real-time data transmission between the automated control system and the robots. It will reduce labor-intensive activity, enhance workers’ safety and allow them to take on higher-value roles, said Dr Puthuchery.

He added that Hyundai intends to hire robotics engineers, data analysts and process engineers for the manufacturing facility.

The Ministry of Communications and Information (MCI) described the partnership between the Infocomm Media Development Authority (IMDA) and Hyundai as “the world’s first 5G-enabled built-to-order electric vehicle factory”.

It added that the more agile manufacturing process will allow Hyundai to develop “Singapore’s very own built-to-order electric vehicles”. More details will be announced when the center is launched later in the year.

In another new project, 5G-enabled electric unmanned surface vessels will be used for river cleaning and inspection in a partnership between IMDA and Weston Robot.



Currently, river cleaning is done manually from petrol-fueled boats. Each boat produces as much as 20 tons of carbon a year and costs S\$6,000 to S\$12,000 a year to maintain.

The electric vessels can run autonomously and use video analytics to detect and clear rubbish outside of the pre-programmed paths. They will also

reduce carbon emissions by 80 per cent compared to the gasoline boats.

MCI said the electric unmanned vessels will improve workplace safety and reduce the need to work for long hours under the sun. A single operator at a command center will also be able to pilot multiple electric vessels.

Describing the project as a “first” in the Association of Southeast Asian Nations (ASEAN), MCI added that it will look to propel the use of electric vessels and video analytics technology for rubbish detection in Singapore and the region.

A third project will see IMDA work with Mind PointEye to develop 5G artificial intelligence-enabled sentry robots and patrolling vehicles for security surveillance. Security guards will be able to monitor locations remotely using video analytics that provide real-time push notifications of threats.

IMDA launched the S\$30 million 5G Innovation Program in 2021 to accelerate adoption and commercialization of enterprise 5G solutions. Seven 5G projects have received grants under the program, including the latest three.



*A 5G-enabled electric unmanned surface vessel for river cleaning and inspection.  
(Photo: Weston Robot)*

# Shanghai Industrial Robots Output Exceeds 75,000 In 2022, Scale to Reach 100 billion Yuan By 2025



**T**he annual output of industrial robots in Shanghai would have reached more than 75,000 units in 2022, a year-on-year increase of six percent, becoming an important pillar for intelligent manufacturing in the city, government officials said.

By 2025, Shanghai will build 10 industry-leading robot brands, 100 benchmark robot application scenarios, and expand the industry scale to 100 billion (\$14.76 billion) yuan, according to officials from Shanghai Municipal Commission of Economy and Informatization.

Over the next three years, Shanghai will focus on six key industries such as

automobiles and high-end equipment to promote the transformation of intelligent manufacturing of industrial enterprises.

The targets include building a total of 200 smart factories, increase application scenarios of industrial robots by 20,000 and industrial robot density by 100 units per 10,000 people.

“2022 saw booming development for Shanghai’s robot industry,” Tang Wenkan, official from the Shanghai Municipal Commission of Economy and Informatization said, adding that robots are fully integrating into Shanghai’s urban digital transformation and becoming residents’ work assistants and life partners.







A visitor interacts with a humanoid robot at the China 5G+ Industrial Internet Conference in Wuhan, Central China's Hubei Province on November 20, 2022. China has more than 4,000 "5G+industrial internet" projects in 10 key industries including electronic equipment manufacturing, iron and steel, and electric power. Photo: cnsphoto

According to the guideline for the robotics industry for the 14th Five-Year Plan period (2021-2025), China will strive to become a global hub for robotics innovation by 2025, putting together a group of leading enterprises with international competitiveness and forming several industrial clusters with an international influence.

Source: [www.globalltimes.cn](http://www.globalltimes.cn)

China's massive investment in industrial robotics has put the country in the top ranking of robot density, surpassing the US for the first time, according to the results from the World Robotics 2022 Report of the International Federation of Robotics (IFR) issued in December.

China is by far the fastest growing robot market in the world. The country has the highest number of annual installations, and since 2016 it has each year had the largest operational stock of robots, the report said.

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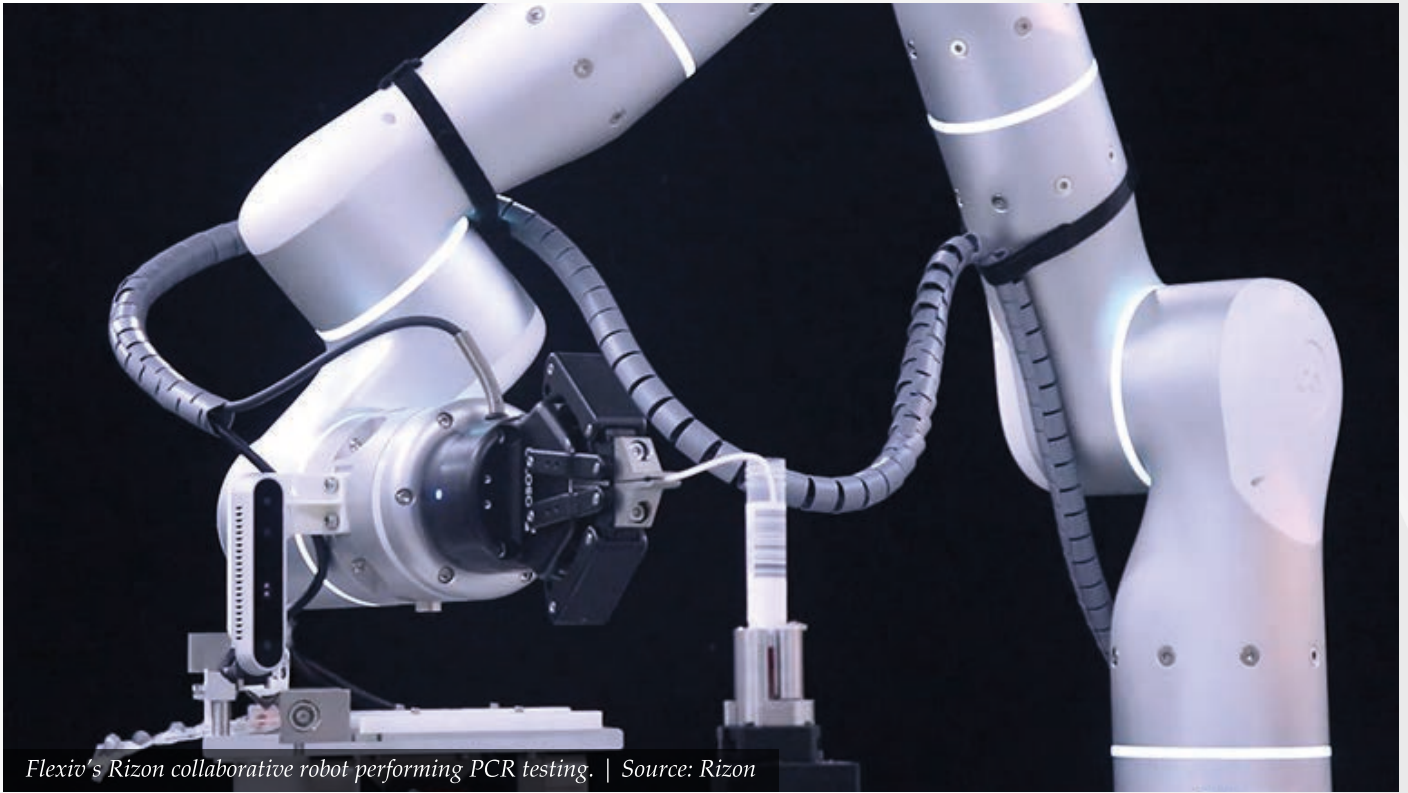
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# FLEXIV ADDS HANDPLUS ROBOTICS TO INTEGRATION NETWORK



*Flexiv's Rizon collaborative robot performing PCR testing. | Source: Rizon*

**F**lexiv announced a partnership with Handplus Robotics, a Singapore-based automation integration company.

A spin-out from Nanyang Technology University in Singapore, Handplus Robotics has an established distribution network within Singapore and Malaysia, which Flexiv hopes to leverage to expand its customer base. The company specializes in robotic pick and place applications for logistics, e-commerce fulfilment, warehousing, medical services and healthcare industries.

“This partnership with Handplus will enable more end-users to take advantage of the opportunities afforded by adaptive robotic technology,” Owen Wu, Flexiv’s Senior Sales Manager for the Asia Pacific region, said in a release. “We have seen substantial growth over the past two years, and this strategic partnership with Handplus will enable us to expand our

market presence without compromising the service we provide to our clients. Working together, Flexiv and Handplus will enable customized smart solutions to be created, which will reduce the effects of labour bottlenecks and decrease the ROI period.”

Flexiv has been working to grow its distribution network over the last two years. For example, in November 2022, the company partnered with Sycodal, its first Canadian distributor. Sycodal has sole integrator rights for Flexiv robots for the entirety of Quebec as part of the distribution agreement.

In July 2022, Flexiv announced it closed a Series B+ funding round with an investment of nearly \$100 million. According to the company, the latest investment makes the company a unicorn startup.

Flexiv spun out of Stanford University in 2016. It was founded by Shiquan Wang, now the CEO, Xiyang Yeh, now the CTO, and Shuyun Chung, now the chief robotics scientist. In 2020, Flexiv brought in over \$100 million in a Series B round of funding, and it brought in \$22 million in Series A funding in 2019.

Flexiv launched its Rizon adaptive robot in April 2019, and today it offers three different Rizon models, the original Rizon 4, the Rizon 4s and the Rizon 10. The core features of these adaptive robots include high-precision and fast-response force-controlled technology throughout the arm.

# Singapore Robotics Company Lionsbot Lands \$17m In Series A Round

Startup develops cleaning robots for commercial applications

Singapore-based cleaning robot manufacturer LionsBot International has raised about \$17 million in a Series A funding round, according to recent filings with the city-state's regulator.

The startup's filings with the Accounting and Corporate Regulatory Authority (ACRA) showed that the latest funding round was backed by TransLink Capital, Supersteam Asia Pacific, Freny Firoze Irani and LionsBot's founders.

TransLink Capital, the lead investor, is a U.S. venture capital company that helps entrepreneurs expand in Asia. It invested \$7 million in the round, according to the filings.

LionsBot can raise up to \$20 million in the round, filings show.

The round includes fresh equity and the conversion of previously issued notes. The latest financing gives the company a pre-money valuation of \$80 million.

ACRA filings only reflect the equity funding received so far by a company. The overall funding round could be larger due to other components such as debt. DealStreetAsia has reached out to LionsBot for confirmation.

Founded in 2018 by Agatha Michelle Seow, Dylan Ng Terntzer and Rajesh Elara Mohan, LionsBot develops cleaning robots for commercial applications. Its main offering, LeoBot, is capable of vacuuming and scrubbing and is interactive.



*LionsBot's robots can clean large public areas and can be controlled remotely. (Source photo from LionsBot Facebook page)*

The robots can be programmed to clean large public areas and only require remote supervision, freeing up the cleaning workforce to carry out higher-value tasks such as supervisory duties and customer service.

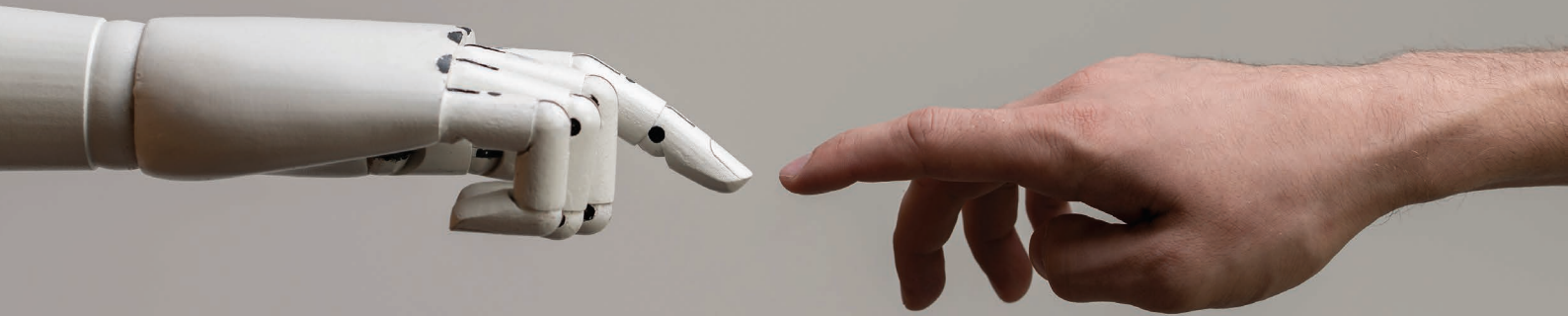
Some of the other features include obstacle avoidance, auto-docking capabilities, AI-enabled batteries and various cleaning modes. They come with soft bumpers and an emergency stop button, as well as clear lights and audio alerts to avoid colliding with people.

According to a report released by research company MarketsandMarkets, the global cleaning robot market is projected to grow from \$9.8 billion in 2022

to \$25.9 billion by 2027 at a compound annual growth rate of 21.5%.

Among the factors that could drive market growth are the increasing development of vacuum cleaners with self-charging capabilities, the compact size of the robots, and rapidly advancing smart home technology.

In Singapore, there are 605 robots installed per 10,000 employees in the manufacturing industry, the second-highest number globally after South Korea's 932, according to a 2021 report by the International Federation of Robotics.



# More National Neuro-Robotics and Cybernetics Rehab Centers Being Mulled Nationwide

The government is considering setting up more Social Security Organization (Socso) National Neuro-Robotics and Cybernetics Rehabilitation Centers across the country.

Human Resources Minister V. Sivakumar said he has discussed the matter with Socso, but such a center required a detailed plan as it involved a significant cost.

“Currently, the largest center is located in Perak. We have the plan (to expand to other states) and discussed the matter with Socso but we need to understand that this project requires a high cost and strategic planning.

“If possible, we want to have this rehabilitation center in every state. But due to its high cost, it is still in the planning stage,” he told reporters here after visiting the center at Bandar Meru Raya here.

The center would provide high-quality recovery and rehabilitation services to workers.

Sivakumar said the RM654 million state-of-the-art center would also be open to foreigners and this in turn would boost medical tourism in the country.

He said the project is currently in its second phase of construction, which is the superstructure and has seen an 11.86 per cent completion.

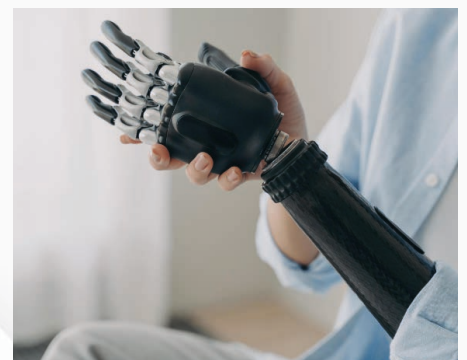
“The first phase of this project is developed on a land area of 15.56 hectares covering 11 blocks with a total gross floor area (GFA) of 929,909.22 square feet.

“The development of this rehabilitation center is targeted to be fully completed and will start operating at the end of 2024.

“It will become the best National Rehabilitation Centre in Malaysia and a hub for the largest neuro-robotic services not only in the Southeast Asian region but around the world,” he said.

He added that the center could accommodate 700 patients at a time and be equipped with the latest robotic technology facilities, such as neuro-robotics treatment and cybernetics from Japan.

On his visit to the project site, Sivakumar also visited the temporary labor quarters (TLQ) and was satisfied with the facilities provided.





Human Resources Minister V. Sivakumar (center) with Social Security Organization (Socso) chief executive Datuk Seri Dr Mohamed Azman Aziz Mohamed (left) during the press conference on the Socso National Neuro-Robotics and Cybernetics Rehabilitation Centers, in Ipoh. - NSTP/L. MANIMARAN

He suggested that it should become a standard in the provision of TLQ for foreign workers in Malaysia.

“The preparation of this TLQ complies with the standards and meets the requirements set by the Labor Department.

“The facilities provided at TLQ include an accommodation dormitory that can accommodate a maximum capacity of 644 workers, a cafeteria completes with cooking and washing dishes, a bath suitable for the capacity of the dormitory, and a prayer hall.”

Source: [www.nst.com.my](http://www.nst.com.my)

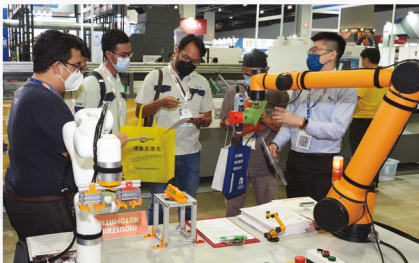
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# Contribution to Innovative Manufacturing

**M**iki Pulley was established in 1939 by Yoshiharu Miki as a comprehensive manufacturer of power transmission and control equipment. At the time of its founding, MIKI invented the belt-type continuously variable speed PULLEY and played a major role in technological innovation in Japan. Since then, we have continued to develop, manufacture, and sell speed control, position control, and rotation transmission devices.

Our products, represented by couplings, clutches, and brakes, are used in all kinds of industrial equipment, including machine tools, semiconductor manufacturing equipment, industrial robots, AGVs, medical equipment, and packaging machines. In addition, we have been actively expanding overseas business from early stage, promoting technical partnerships with top manufacturers in the United States, Germany, Italy, Switzerland, Sweden, etc., and continuing to expand our business domain.

## Various product lineup

Miki Pulley handles the following products.

**Speed control:** belt type continuously variable speed PULLEY, inverter, geared motor

**Position control:** electromagnetic clutch/brake, brake motor

**Rotation transmission equipment:** couplings, shaft-hub friction fasteners, torque limiters

## Coupling

Industrial machinery generally adopts many shaft-to-shaft connection structure, and our couplings play an important role there. Completely centering two different axes is a very difficult task. Maintaining centering becomes even more difficult due to deflection of the shaft by operation of the machine, thermal expansion of the shaft, distortion of the support base and bearing wear out after long-term use. Those problems can be solved by selecting the suitable coupling for the application.



There are many different types of couplings, Miki Pulley was one of the first to adopt a leaf spring type, and developed the SF (Servoflex Series) couplings that are ideal for high-precision control of servo & stepper motors. High-rigidity coupling SFC/SFS/SFF models ideal for NC lathes/machining centers/ chip mounters/linear actuators/scalar robots/electric discharge machines/semiconductor manufacturing equipment. SFM model for CNC machine main spindles that can handle a maximum speed of 24,000 rpm. We have a lineup of SFH models that are ideal for equipment that requires large torque, such as gantry machining centers, printing machines, testing machines, and wind power generators, and we boast the top share of adoption by machine tool manufacturers in Japan.

In addition, we have another choice for servo & stepper motor, STF model with high damping performance rubber

coupling. The newly developed laminated rubber element (HNBR) achieves high damping and low reaction force. Absorbs vibrations more quickly than the SF series, which uses metal for its elastic parts. Servo & stepper motors are capable of high-precision position and rotation control, but resonance may occur depending on the operating conditions. Resonance can be avoided in a wide range of operating speeds by electrical control, as well as by installing an STF coupling to realize stable high-speed control.

Even in the same drive system, the coupling selection depends on the required control method and application. Miki Pulley can offer more than 33 models that can be selected according to the type of motor and the mechanism of the driven side. You can select suitable one for your application. The torque range can be covered from 0.25 to 18,000Nm.

## Electromagnetic clutch/brake

In addition to couplings, clutches and brakes also play an important role in industrial machinery. Electromagnetic clutches and brakes control power and rotational motion using electromagnetic force generated by energizing coils. Clutches connect and disconnect power, and brakes control and hold rotational motion. Electromagnetically actuated type clutch/brake operates by energizing the coil, and non-excitingly actuated type brake operates with the force of a spring when the coil is de-energized, such as during a power outage. Moreover, we have an extensive lineup of products, including electromagnetic tooth clutches, brake motors, and unit products that combine those items. Particularly, non-excitation actuated brakes represented by the BX series is ideal product for various industrial robots and AGVs. Demand for those items is expected to increase further more in booming robot market.



### BXR-LE Series



### BXR-LE series (ultra-compact)

There are two types of robot stop control: servo motor control and physical control using electromagnetic brakes. Servo motor control can be divided into dynamic braking and regenerative braking, but both are intended for braking to stop the motion, and must be powered. Electrical control alone cannot keep the device in a stopped condition when there is no power. Therefore, a non-excitation type brake is required when the power shut down.

For example, when a collaborative robot detects an abnormal approach by a human worker, it is stopped by servo motor control and the servo lock is activated. If the abnormality continues and the power of the robot is turned off, the non-excitation brake will be activated. In addition, in an emergency when the power supply is shut down for some reason, the non-excited brake also works to stop the motion and keep same position of the equipment. In this way, the combination of servo motor control and BXR-LE can ensure safety and security.

Non-excitation brakes are necessary for the safety of robots, but they also need to be “downsized” and “energy-saving.”

Collaborative robots are moving closer to human workers, downsized is essential in order to secure a working environment. Furthermore, the demand for energy saving is increasing due to the social background of realizing a de-carbonized society.

The BXR-LE series achieves long-time operation of battery-powered equipment through its energy-saving design. Normally, an applied voltage of 24V is required to operate a non-excitation brake, but the BXR-LE lowers the voltage to 7V after 0.2s of 24V application, making it possible to greatly reduce power consumption during operation. In addition, the minimum thickness of the brake body is 14 mm, BXR-LE model is widely used in various type of robot system.

### New Thai office established

In July 2022, Miki Pulley (Thailand) was newly established. Furthermore, we have opened a representative office in Malaysia from January 2023. Southeast Asian countries are positioned as important production bases for electronics-related products and auto parts. With the establishment of an office in Thailand, which is the geographical center, it is now

possible to cover the entire Southeast Asian country. In addition, Malaysia and Singapore where the development of robots and cutting-edge technology focused on semiconductor manufacturing equipment, is also active. Miki Pulley's products and services will continue to evolve along with the growth of these markets.



Mr. Kenji Hayasaka



Mr. Calvin Lok

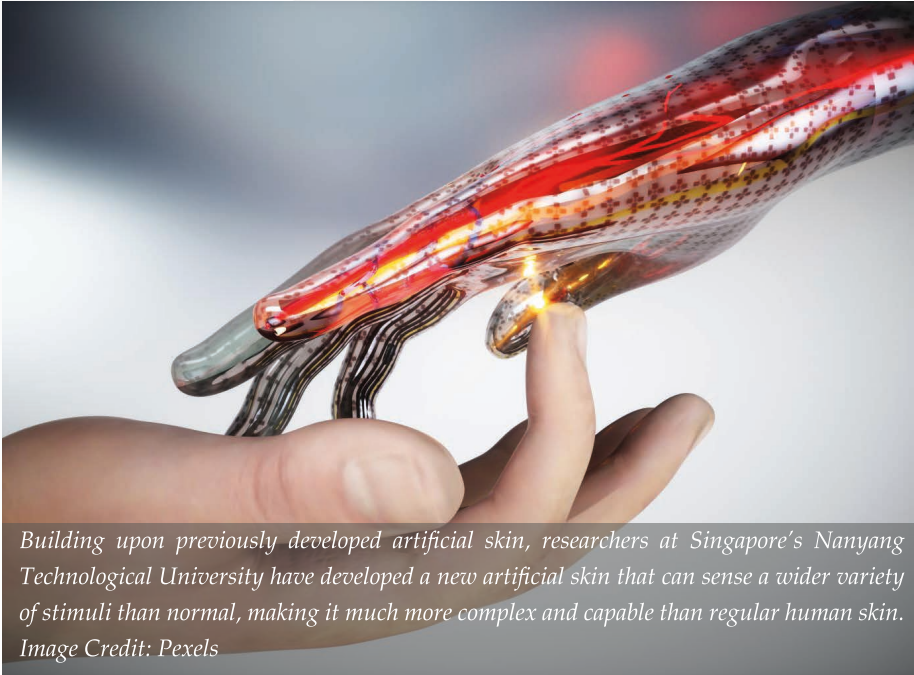
For more detailed information, please refer to the QR code below



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# Of Skin and Bones: Scientists Develop Artificial Skin for Robots That Can Feel Things Humans Can't



*Building upon previously developed artificial skin, researchers at Singapore's Nanyang Technological University have developed a new artificial skin that can sense a wider variety of stimuli than normal, making it much more complex and capable than regular human skin. Image Credit: Pexels*

**R**esearchers at Singapore's Nanyang Technological University have developed a new artificial skin for robots that can sense a wider variety of stimuli than normal skin, making it much more complex and capable than regular human skin.

A team of researchers and scientists at the Nanyang Technological University in Singapore are all set to make robots more capable than humans. The researchers claim that they have developed artificial skin which has more sensing capabilities than regular human skin and can respond to a wider variety of stimuli

The team from Nanyang Technological University have created what they are calling dual-responsive artificial skin. Instead of only detecting pressure that is

applied to it, the skin can also sense the object's approach. "We created artificial skin with sensing capabilities superior to human skin," said Yifan Wang, an assistant professor at Nanyang Technological University in Singapore.

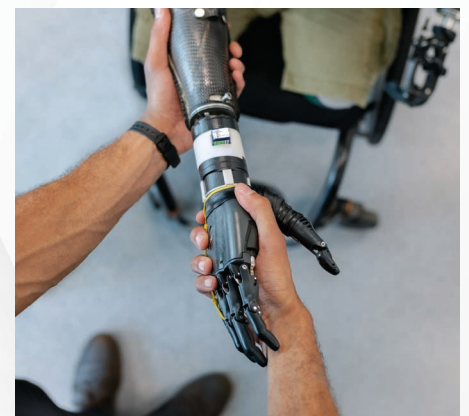
"Unlike human skin that senses most information from touching actions, this artificial skin also obtains rich cognitive information encoded in touchless or approaching operations. The work could lead to next-generation robotic perception technologies superior to existing tactile sensors" he added.

The new artificial skin has a lot of potential applications, but it will primarily be used for robotics, especially in second-generation electronics that are based on human-machine interfaces.

The newly developed artificial skin can also be a great fit for prostheses, offering amputees new ways of feeling and sensing objects.

The researchers have already run several tests, that highlight how it is similar, or better than actual, real, human skin. The most important test that the skin passed involved scrolling an electronic screen navigating using a digital and playing video games.

This isn't the first time that scientists have developed artificial skin. In 2022, scientists at CalTech or the California Institute of Technology developed a skin that could sense temperature, pressure, and whether something is toxic or not.



The skin developed by Nanyang Technological University is superior in a number of ways. The artificial skin was able to detect different signals from approaching targets, meaning it is possible for the skin to identify objects without being touched.

# Scientists Combine Conventional Robotics and Microfluidics

Robots are often equipped with moving arms, many times programmed and used to carry out a variety of tasks in factories. These types of robots have traditionally had little association with miniature systems that transport small amounts of liquid through fine capillaries. These systems, known as microfluidics or lab-on-a-chip, usually use external pumps to move liquid through the chips. However, they have traditionally proved difficult to automate, and the chips need to be custom-designed and manufactured to each specific application.

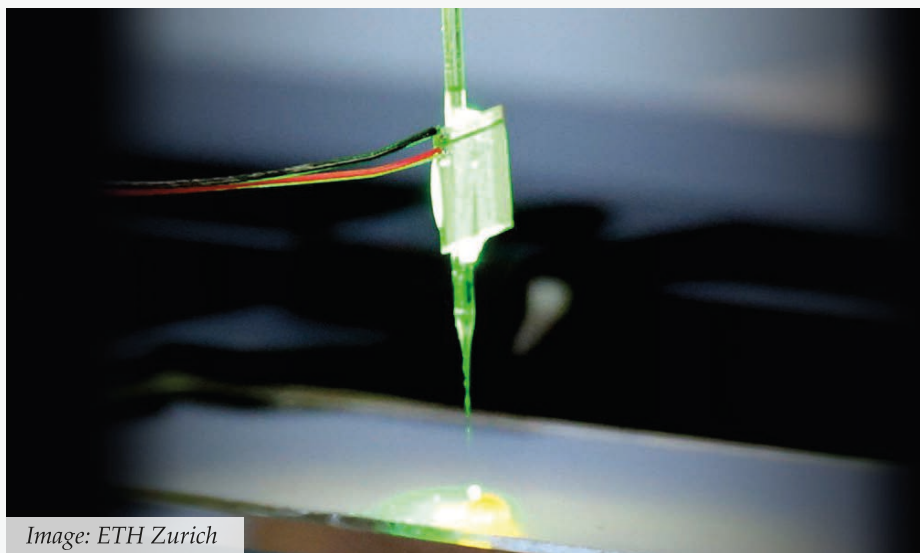


Image: ETH Zurich

But now, a team of researchers led by ETH Professor Daniel Ahmed are combining conventional robotics and microfluidics. The newly developed device uses ultrasound and can be attached to a robotic arm. It can also carry out a wide range of tasks in micro robotic and micro fluidic applications or used to automate these applications.

## New and Unique Device

The researchers have developed a unique device capable of creating three-dimensional vortex patterns in liquid through the use of oscillating glass needles powered by piezoelectric transducers – devices which are also found in loudspeakers, ultrasound imaging and

dental cleaning tools. By adjusting the frequency of these oscillations, they can precisely control their pattern formations.

The team used the device to demonstrate several applications, such as mixing tiny droplets of highly viscous liquids.

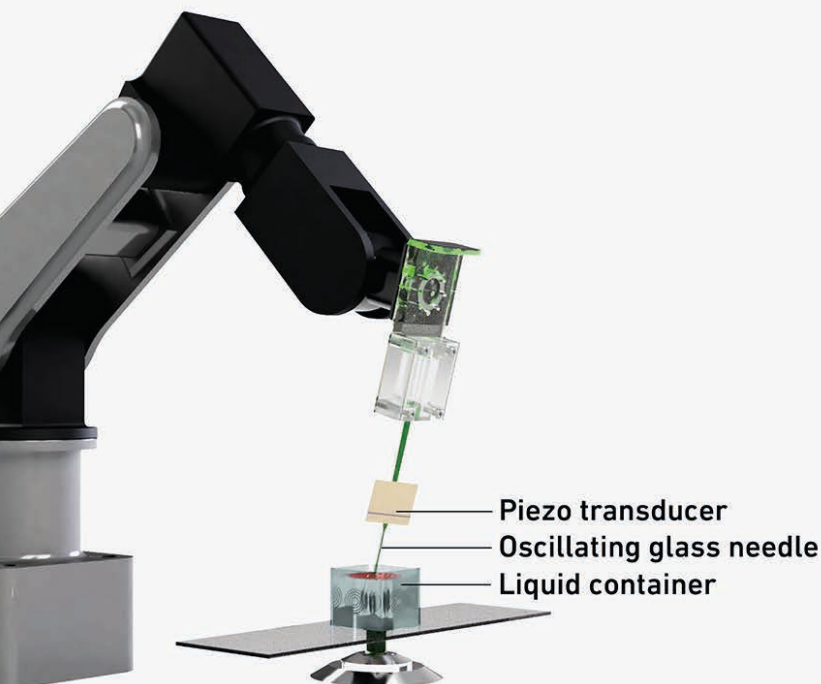
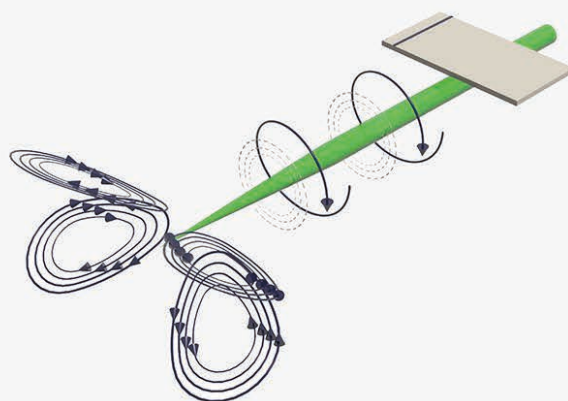
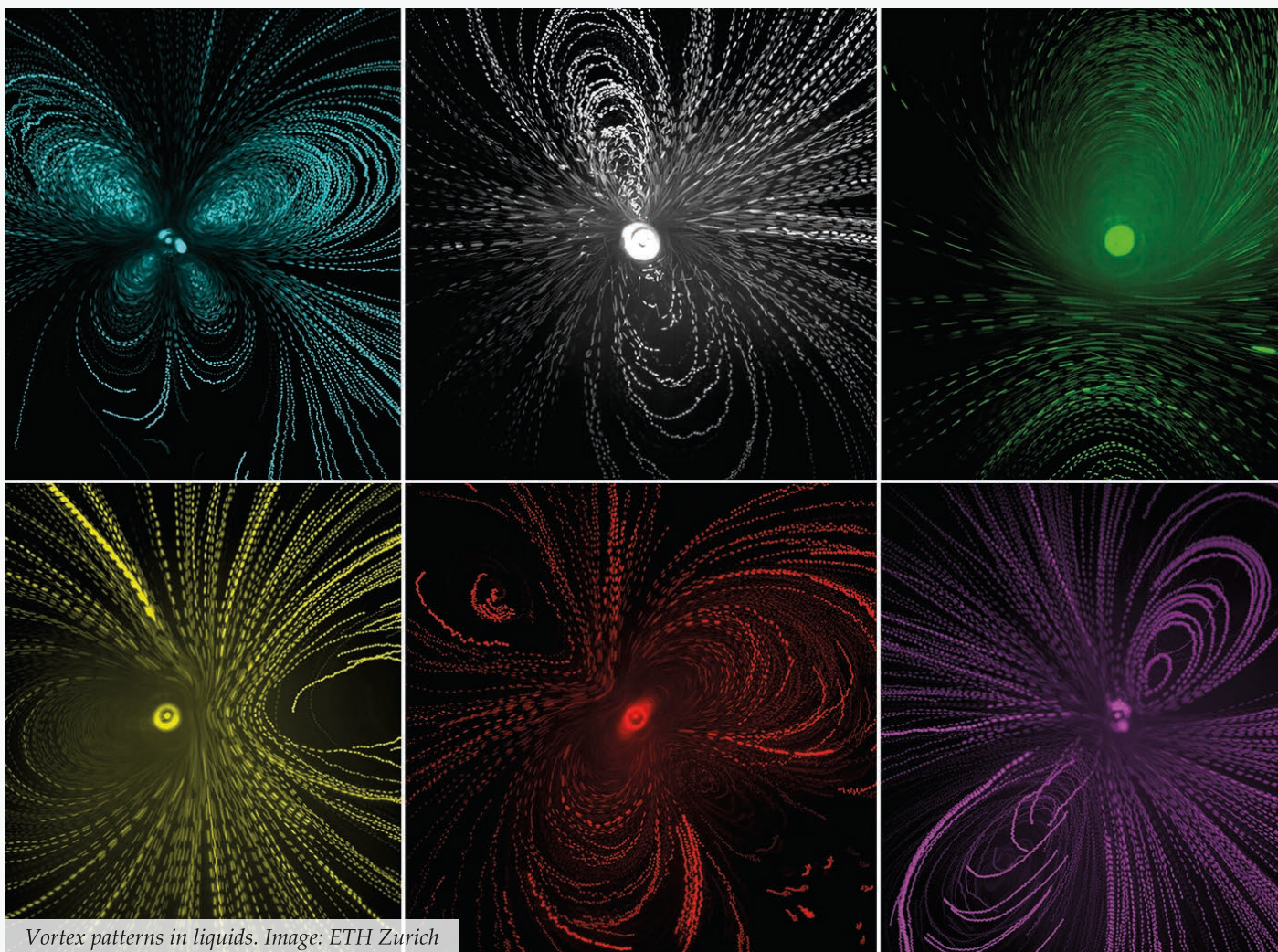


Image: ETH Zurich



Three-dimensional vortex patterns



Vortex patterns in liquids. Image: ETH Zurich

“The more viscous liquids are, the more difficult it is to mix them,” Ahmed says. “However, our method succeeds in doing this because it allows us to not only create a single vortex, but to also efficiently mix the liquids using a complex three-dimensional pattern composed of multiple strong vortices.”

By carefully manipulating vortices and positioning the oscillating glass needle near the channel wall, the scientists were also able to power their mini-channel system with astonishing efficiency.

By utilizing a robot-assisted acoustic device, they were able to efficiently capture fine particles in fluid. The size of each particle determined its reaction to sound waves, causing larger ones to accumulate around an oscillating glass

needle. Remarkably, this same technique was shown capable not only of trapping inert particulates but also entire fish embryos. With further development, the method could be used for capturing biological cells from within fluids as well.

“In the past, manipulating microscopic particles in three dimensions was always challenging. Our micro robotic arm makes it easy,” Ahmed says.

“Until now, advancements in large, conventional robotics and microfluidic applications have been made separately,” Ahmed continues. “Our work helps to bring the two approaches together.

As we progress forward, microfluidic systems of the future could come close to rivaling that of today’s advanced

robotic technology. By programming a single device with multiple tasks such as mixing and pumping liquids and trapping particles, Ahmed foresees us ushering in an age where custom-developed chips are no longer necessary for each application. Building upon this concept further is the idea to connect various glass needles together into intricate vortex patterns – pushing our capabilities beyond what was imaginable before.

Ahmed envisions an array of potential uses for micro robotic arms beyond the realm of laboratory analysis—anything from object sorting and DNA manipulation to additive manufacturing techniques like 3D printing. With these developments, we can revolutionize biotechnology as we know it.

# Scientists Create Shapeshifting Humanoid Robot That Can Liquefy and Reform

Scientists have made a breakthrough in robotics: a shapeshifting robot that can switch between liquid and metal states to navigate tricky environments without compromising on strength.

Because they can be both soft and hard, the small, sea cucumber-inspired robots can overcome the limitations of robots that are only one or the other, and thus have the potential to provide greater utility in areas such as electronics assembly and even medical applications.

Researchers made the robots navigate obstacle courses, remove or deliver objects to a model of the human stomach, and even liquefy to escape a cage before reforming back into its original humanoid shape.

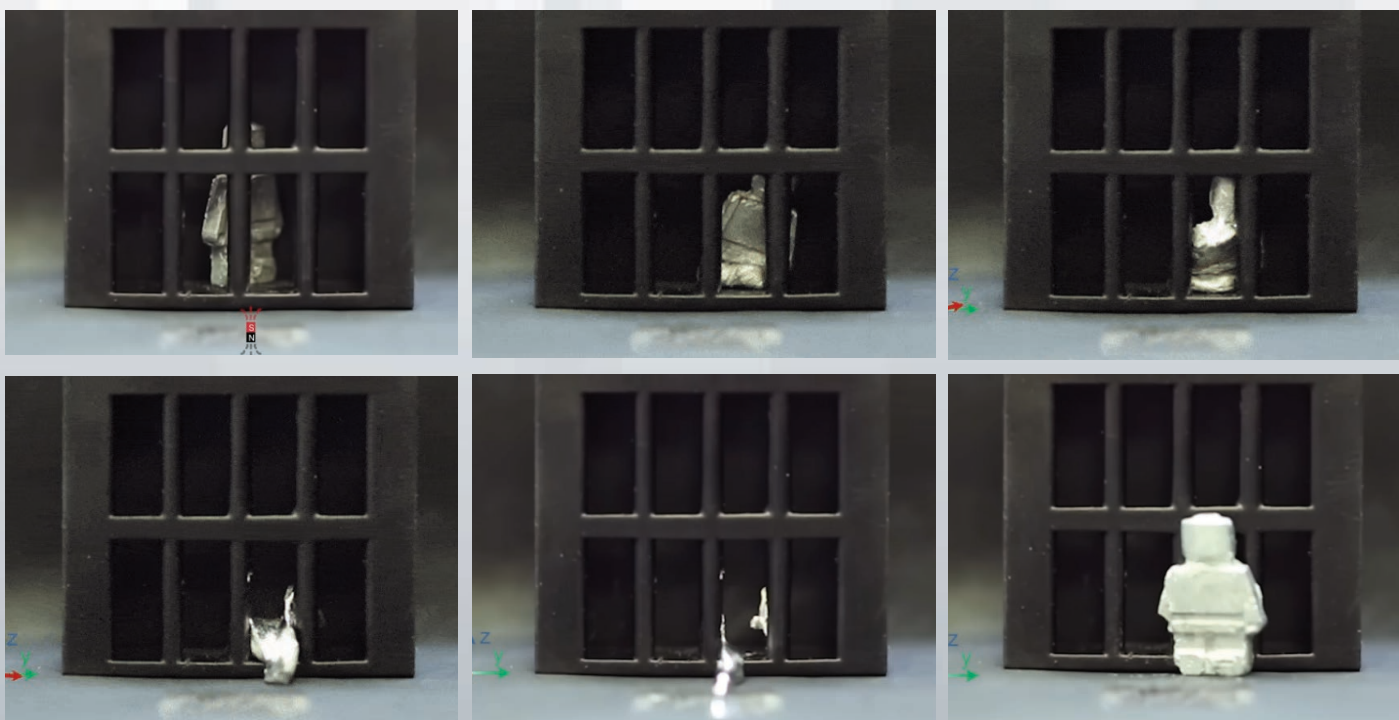
“Giving robots the ability to switch between liquid and solid states endows them with more functionality,” says engineer Chengfeng Pan of The Chinese University of Hong Kong in China.

There are many potential uses for small robots that can get around places too small or convoluted for humans to manage with typical tools, from finicky repair work to targeted drug delivery. But hard materials aren't the best for navigating confined spaces or tight angles, while soft, more flexible robots tend to be weak and more difficult to control.

To find a compromise, a team of researchers led by Pan and his colleague, Qingyuan Wang of Sun Yat-sen University in China, turned to nature as a source of inspiration. Animals such as sea

cucumbers can alter the stiffness of their tissues to improve load capacity and limit physical damage, while octopuses can alter the rigidity of their arms for camouflage, object manipulation, and locomotion.

To design a robot that can do something similar, the researchers needed a non-toxic material that can easily shift between soft and rigid states in ambient temperature. They turned to gallium, a soft metal that has a melting point of 29.76 degrees Celsius (85.57 degrees Fahrenheit) at standard pressure – just a few degrees below the average human body temperature. You can melt gallium just by holding it in your hand.



*The robot escaping its own cage. (Wang et al., Matter, 2023)*



*Timelapse showing the robot's daring jail escape. (Wang et al., Matter, 2023)*

The researchers embedded a gallium matrix with magnetic particles, creating what they call a “magnetoactive solid-liquid phase transitional machine”.

“The magnetic particles here have two roles,” says mechanical engineer Carmel Majidi of Carnegie Mellon University, one of the senior authors on the team’s paper.

“One is that they make the material responsive to an alternating magnetic field, so you can, through induction, heat up the material and cause the phase change. But the magnetic particles also give the robots mobility and the ability to move in response to the magnetic field.”

After testing to see whether the transition from solid to liquid was reversible (it was), the researchers ran their little robots through a gamut of tests. The robots could leap over small moats, climb over obstacles, and even split up to perform cooperative tasks moving objects around before recombining and resolidifying.

They even had a little humanoid version – shaped like a Lego figure – melt to escape a little prison cell, seeping through the bars and re-forming on the other side in homage to a scene from the movie *Terminator 2*.

Next, the team investigated practical applications. They created a model of a human stomach, and had the robot engulf and remove a small object contained within it – a useful way, one imagines, to extract swallowed batteries, for example – and then perform the reverse operation, delivering an object the way the team hopes it might deliver drugs.

For circuit repair, the robots could navigate to and melt onto circuits to act as a conductor and a solder; and even act as a fastener, oozing into threaded screw sockets and solidifying, performing the function of a screw without someone needing to fix it in place.

For real-world applications, the phase-transitional machine would need some tweaking. For example, because the human body is higher than the melting point of pure gallium, a robot designed for biomedical purposes could have a gallium-based alloy matrix that would raise the melting point while maintaining functionality.

That, the researchers say, is yet to be investigated in detail.

“Future work should further explore how these robots could be used within a biomedical context,” Majidi says.

“What we’re showing are just one-off demonstrations, proofs of concept, but much more study will be required to delve into how this could actually be used for drug delivery or for removing foreign objects.”



# Beyond the Hype, Here's How 5G Will Herald A New Era Of Innovative Growth for Malaysia

Why is 5G critical and timely for Malaysia?

What are the factors that will help leaders plot the right course to fully benefit from 5G as a key growth catalyst?

Various industry commentators have hailed 5G as a true game changer, one that will transform the way we live and do business. Cloud robotics and autonomous vehicles aside, much of the hype around 5G has centered on mobile connectivity for consumers, with the promise of lightning-fast network speeds at ultra-low latency.

Across the world, wireless carriers are racing to roll out 5G, pitching it as the technology that will change lives. Certainly, the 5G hype machine has gone into overdrive. But is the excitement warranted? How will 5G change our world?

## Powering through the hype

What is 5G, really, and what's so special about it? Simply put, it is a new global standard for cellular technology that is significantly faster, more reliable and more energy-efficient than its 4G iteration. It means users can receive and send information quicker and support multiple devices connected to the network simultaneously.

5G is an accelerator and enabler of transformation at speed. This revolutionary advancement goes beyond just allowing mobile users to enjoy uninterrupted live-streaming services. 5G's greater potential lies in industrial use cases, with applications in various industry verticals such as manufacturing, oil and gas, healthcare, education, utilities, media and broadcast, and the public sector.

Beyond just speed, 5G's hyperconnectivity delivers massive connectivity power at

virtually no lag. This can spell greater efficiencies in how industrial solutions are delivered, by powering data-hungry applications such as the Internet of Things (IoT) and enabling innovations using augmented reality and virtual reality (AR/VR), artificial intelligence (AI), machine learning, machine vision, remote applications and the metaverse.

Meanwhile, 5G continues to evolve. Of the three core 5G service areas, it is the enhanced mobile broadband (eMBB) that the general public is most familiar with. The remaining two are mMTC (massive machine-type communications), which is used to connect large numbers of devices, and URLLC (ultra-reliable low latency communications), which supports mission-critical applications that require network reliability and low latency. Slice products for these remaining areas are expected to be ready next year, with live testing of these key technologies already underway.



### Success stories in the making

The main advantage of 4G's successor is the transformation and competitive edge it can offer businesses. In the field of healthcare, 5G gives service providers the potential to perform tasks that, until now, may seem like a scene out of a sci-fi film. For instance, physicians can provide remote physical therapy via AR/VR, while paramedics in an ambulance who are rushing a patient to the hospital can relay real-time information to waiting medical staff.

In 2019, a doctor in the Chinese city of Sanya used 5G-enabled camera systems and remotely operated equipment to perform remote brain surgery on a Parkinson's patient some 3,050km away in Beijing. This would have been impossible previously because of the video lag and remote-control delay under the 4G network.

Meanwhile, in the retail industry, 5G can be used for consumer predictive analytics, enabling retailers to analyse information gathered from consumers and make personalized recommendations. The technology can also be used to potentially generate higher sales by enabling shoppers — and casual browsers — to determine the correct size and fit by trying on products in virtual dressing rooms.

Many retailers are already utilizing IoT and AI technologies to provide more immersive and engaging experiences to their customers. Adidas embeds near-field communication (NFC) chips in some of its products, enabling shoppers with an NFC-enabled phone to tap it for detailed product information and to see reviews. The next level of iteration, the company said, could be a shoe that sends information to a consumer without the need for an NFC reader or a cable by utilizing 5G technology.

### Power of private 5G

Leaders will realize that not all organizations can choose to rely on public 5G networks. Companies with distinct parameters and operating in specific locations that require dedicated 5G connectivity will gravitate towards private networks, which also provide heightened security and addresses privacy concerns. These include, but are not limited to, companies in operation and production-critical industries such as oil and gas, manufacturing and logistics.

Petco Park, a baseball stadium in downtown San Diego, California, recently installed private 5G infrastructure to provide a touchless and more convenient experience for fans. The implementation of the network enables staff to effortlessly process contactless concessions, ticketing, and food, beverage and merchandise transactions via their iPads and point-of-sales (POS) devices.

While private 5G does require a high initial investment, organizations can confidently anticipate a clear and positive benefit-cost ratio in a long-term business arrangement. Studies have suggested that 5G could provide benefits that add up to more than four times the initial cost of implementing the technology.



### Advancing Digital Malaysia

As always, the power to differentiate and deliver a better customer experience will depend on the innovative approach taken by each operator when building its 5G connectivity platform and solutions.

As a prime enabler of a digital Malaysia, Telekom Malaysia (TM) has taken up the flag to become a human-centered TechCo, providing digital solutions aimed at enhancing the quality of life for communities, businesses and the government. This also applies to 5G initiatives by TM One, TM's enterprise and government sector business solutions arm.

TM One has a unique part to play in unlocking opportunities for its customers, leveraging its experience in next-gen digital services and smart solutions and enabling 5G connectivity for various industry verticals. Boasting an extensive portfolio comprising data centers and cloud services, cybersecurity, connectivity, business services and smart solutions, it has a clear edge over other telecommunications providers.

TM One is already working with several organizations to deploy smart solutions powered by 5G. In Putrajaya, Ipoh and Kulai, it has collaborated with local authorities to set up smart surveillance systems that monitor public areas and automatically analyses live footage to detect and alert users of untoward incidents in real time.

Such initiatives have also helped to reduce traffic congestion and enhance the overall traffic management and analytics with its smart traffic lights system in Cyberjaya, Ipoh and Kuala Selangor, leading to reduced carbon emissions in these locations. In Kuala Lumpur, it offers its smart parking solution, which



allows drivers to check the availability of parking space and book it in real time. It also promotes the use of public transport by informing motorists of park-and-ride facilities.

TM One is actively encouraging industry to tap the potential of 5G by collaborating with leading technology and smart solutions partners in an innovation ecosystem. The TM One's 5G Sphere was recently launched to propel enterprise innovation and transformation.

5G's advance is inevitable, and leaders are stepping up to consider how they will embrace this latest growth catalyst. With TM One's extensive track record as a leading and trusted digital solutions partner of Malaysia's enterprise and government sectors, these leaders can rest assured that they are ready for a 5G future.

When launching TM, one's 5G Sphere, TM One Executive Vice-President Shazurawati Abd Karim explained that TM One is ready to partner with organizations to boost growth and innovation across verticals such as smart cities, healthcare, education, manufacturing, logistics and transport, oil and gas, and banking, financial services and insurance (BFSI).

"Beyond just speed, 5G's hyperconnectivity means massive connection power at virtually no lag, that can help transform how industrial solutions are delivered. Organizations can use 5G to harness data at the edge and transform their operation and business agility, leaping forward to the next level."





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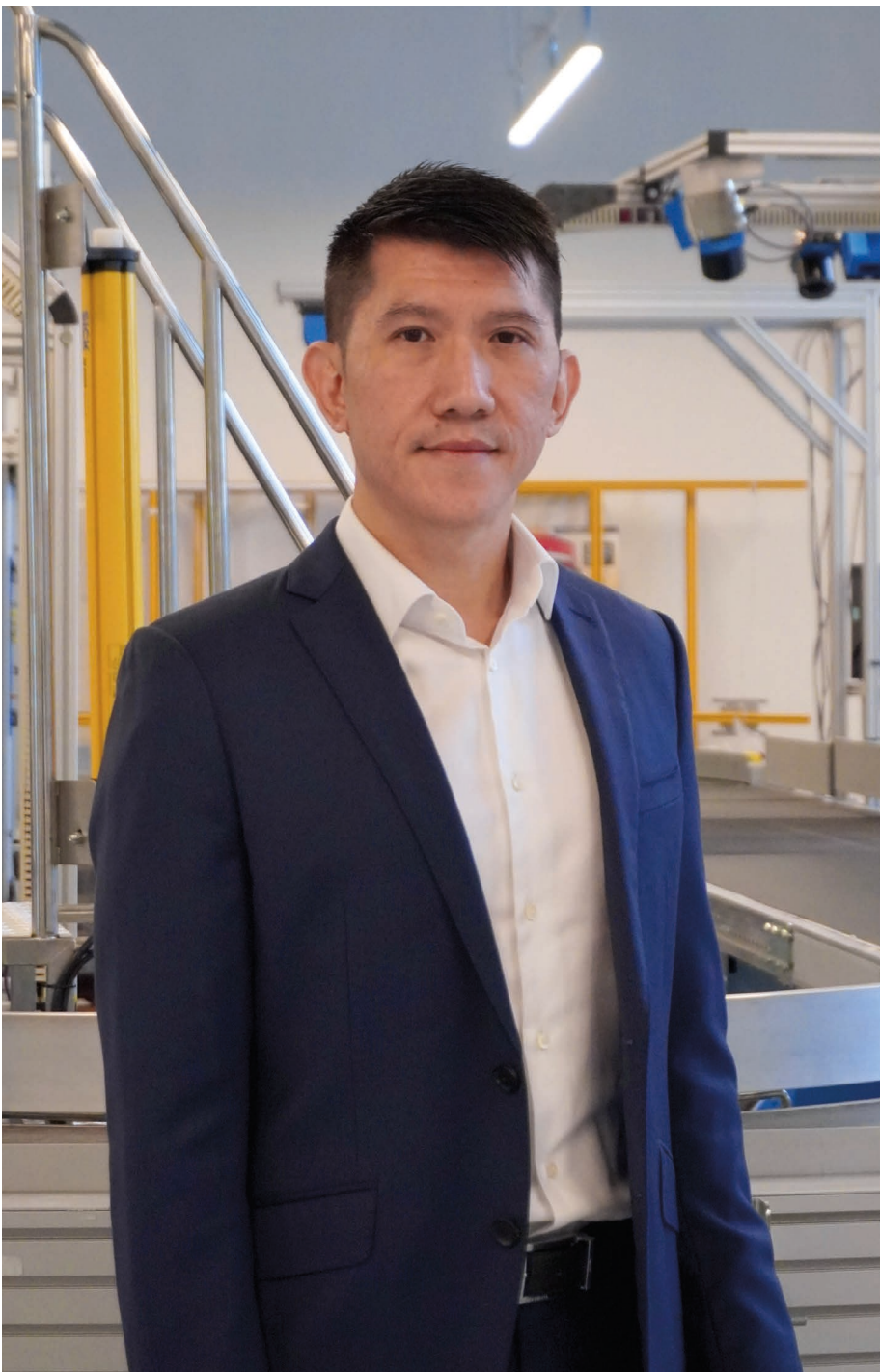
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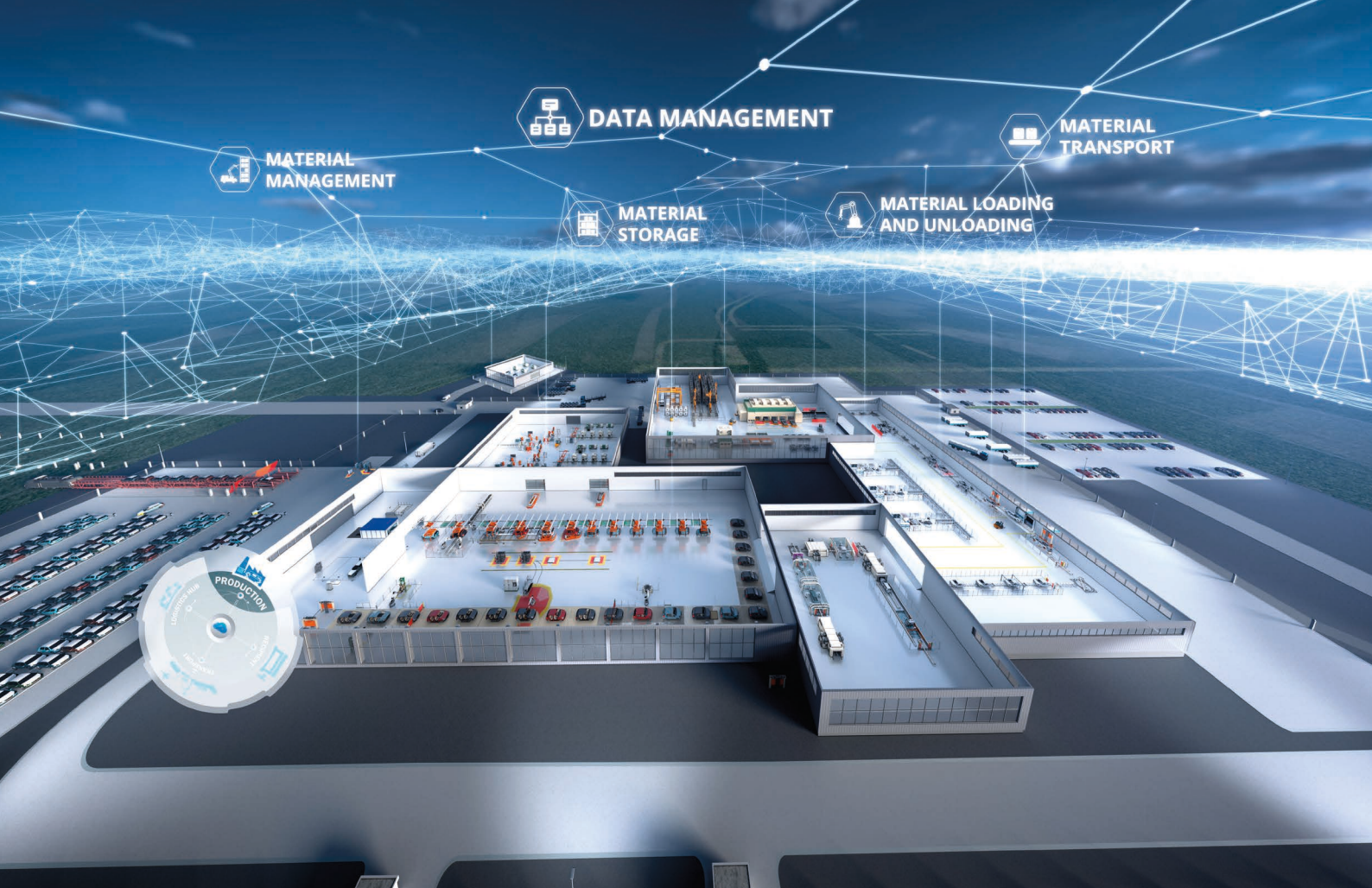


# Minimizing Negative Effects on The Environment with SICK's Intelligent Sensors



**Michael Goh**  
Managing Director  
SICK Southeast Asia

Michael Goh is the Managing Director at SICK Sensor Intelligence in Southeast Asia, a global sensor provider and market leader of intelligent sensor solutions for industrial applications. He is responsible for driving the sales and service operations in Southeast Asia, focusing on areas of process, factory, and logistics automation as well as Industry 4.0.



**1. SICK is a well-known technology and market leader, providing sensor intelligence and application solution to keep the industry moving. What are SICK's background and achievements?**

SICK is one of the world's leading suppliers of sensors and sensor solutions for industrial applications. The company, founded in 1946 by Dr. Erwin Sick, is a technology and market leader with a global presence – with over 50 subsidiaries, associated companies, and sales offices worldwide, achieving Group sales of about EUR 1.7 bn. during the 2020 fiscal year.

Today, we have more than 11,000 SICK employees worldwide, and all of us are constantly innovating and developing market sensor solutions for more sustainable businesses: Energy-efficient production and process control, timely logistical activities, improved accident prevention, and advanced solutions for the energy transition, among other

things. Protecting the environment and people, securing stable jobs through long-term economic success, and making a contribution to society have been SICK's sustainability philosophy since the company was founded. Everyone encounters SICK sensors almost daily. Our sensors ensure safe, efficient, and clean processes in the background while tailoring our solutions with the peoples' requirements and process needs in mind. As our sensors develop and evolve over the years, data collected by sensors become increasingly important as they offer new growth potentials and permutations as a system solution, to help advance the current smart digital age and advance

with the digitalization era, supplementary to the core business of sensor safety and production. SICK's digital solutions – with serial products, systems, and services – are trailblazers for digitalization and Industry 4.0.

The SICK Singapore headquarters had just relocated to a high-tech park in the North of Singapore last year, in accommodation to our continuous growth - to facilitate and host our partners and customers better with a bigger space, and our new Experience Center. It is an exciting time for SICK Southeast Asia, as we are looking to expand our Malaysia KL office next!





**2. What are the differences between a smart sensor and an intelligent sensor? Why does SICK opt for the latter?**

A smart sensor is just a sensor that can generate and receive data from the environment, going beyond traditional switching signals or measured process parameters. But Intelligent sensors can carry out several intrinsically intelligent functions automatically, such as the ability to self-test, self-validate, self-adapt, and

self-identify, based on their surroundings and circumstances. A smart sensor may have advanced features, but it may not have conditional functions which make it “intelligent.”

We combine our decades of experience and knowledge from being in the sensor market, with reliable software architecture, taking the functions and abilities of a smart sensor one step further into an intelligent sensor. Because we believe that an intelligent sensor will optimize

production and control networks using complex algorithms, despite the challenges of processing ever-increasing volumes of data. We chose to build intelligent sensors because we believe that intelligence is the way to go.

**3. Share with us how intelligent sensor works and how it helps the production and logistics systems in smart factories.**

Central to the smart factory is the technology that makes data collection possible. These include the intelligent sensors, motors, and robotics present on production and assembly lines that the smart factory puts to use. Intelligent sensors make it possible to monitor specific processes throughout the factory, increasing the capability to be aware of what’s happening in smart factories on multiple levels at any given time. Making sensors more intelligent means the sensors are now able to record real-time operational statuses, turn those into

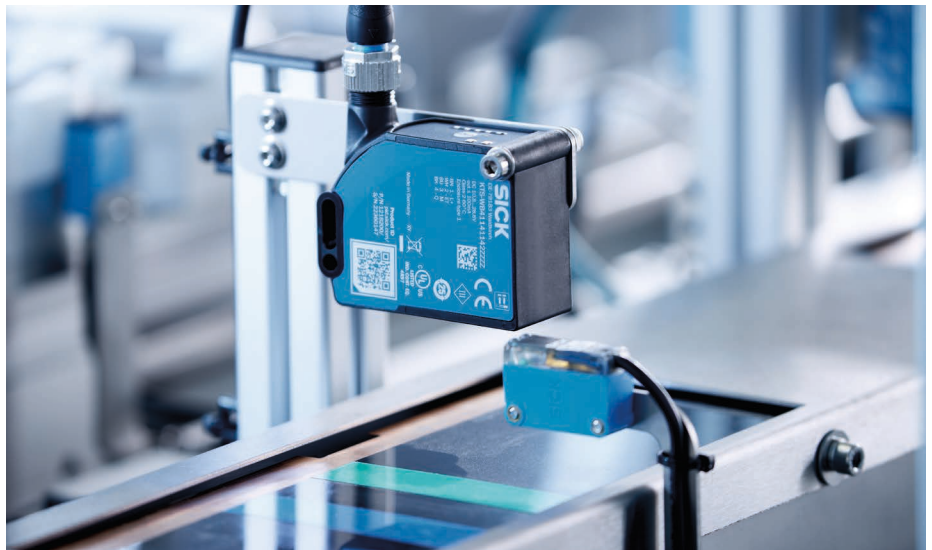


digital data, organize and process them, and share the most optimal data or action automatically with the production or logistics process systems controller. The degree of digitization, intelligence, and networking is set to increase continually in production and logistics systems until these systems can eventually control and optimize themselves autonomously. For example, vibration sensing can provide warnings when motors, bearings, or other equipment need to undergo maintenance. With these types of subtle warnings, they become alerts for preventative maintenance or other actions that head off larger production problems if left unattended.

**4. How does SICK's intelligent sensor help companies in achieving their environmental goals and minimize negative effects on the environment?**

Sensors play a huge part in the positive impact of technology on the environment as they often play a vital role in the monitoring and reduction of harmful activities. A stable environment is what allows economic success in the long run and the economy is a subset of its environment. Committed to ecological sustainability at SICK, we move towards green sustainability, producing intelligent sensor technology to be used across a wide range of applications, tackling challenges to protect the climate, and mitigating environmental concerns. As the sensors were built and the company was founded with safety and protection as its initial goal, it naturally expanded to the safety and protection of the environment, as our founder was a pioneer in environmental measurement technology.

Today, we have sensors and systems that help companies to achieve their sustainability goals as well, by providing them with emission monitoring solutions and services. We develop CO2 measuring devices for combustion and process



plants, monitoring products for waste incineration plants, power, steel, and cement plants, oil, and gas industry applications, as well as for chemical and petrochemical plants, to help SICK customers reduce their greenhouse gas emissions. Together, these solutions make an important contribution to multi-industries to help them and protect our environment.

**5. How does the idea of sustainability come forward? In your view, how can intelligent sensors help contribute to sustainability in a long run?**

In an era of digitization, we are surrounded by innovative technologies that are already changing our reality as we know it. Currently, many companies are under pressure to reduce their emissions

and carbon footprints. Some industries are tackling these challenges while improving efficiency and reducing costs. Yet many companies need advice and prompts on where and how to start to move towards sustainability.

Since data collection and emission monitoring are the first steps for achieving sustainability, SICK and our intelligent sensors are best suited to guide them towards a sustainable future, as consistent monitoring of energy consumption with intelligent sensors helps to identify patterns and ways of optimizing it through varying other factors in production.

After all, if we cannot measure something, how do we improve it?

# MIDA Continues to Drive SMEs to Adopt IR4.0



*Pix for representational purpose only/PEXELSPix*

**T**he Malaysian economy is facing the challenge of a rapidly changing industrial landscape due to the emergence of Industry 4.0.

Industry 4.0, also known as the Fourth Industrial Revolution (IR4.0 or 4IR), calls for a shift in how industries operate, focusing on increased automation and data exchange in manufacturing technologies.

This changing industrial landscape presents opportunities for Malaysian industries, especially small and medium enterprises (SMEs), to invest in and adopt new technologies and processes in order to become more competitive and efficient.

## IR4.0 to boost the economy

SMEs' contribution to the country's exports accounted for only 12 per cent in 2021 compared with the target of 25 per cent in the 12th Malaysia Plan (12MP), while their contribution to the nation's gross domestic product stood at 37 per cent in 2021 versus the 45 per cent target in the 12MP.

Hence, there is a need to encourage SMEs to embrace IR4.0 to maximize their potential and make a bigger contribution to the country's export value and eventually become the engine of economic growth, according to the Malaysian Investment Development Authority

(MIDA) executive director of investment policy advocacy (manufacturing) Mansi Muhammad.

"In terms of operating and labor costs, we have an incredible opportunity to leverage IR4.0 and the latest technology to stay competitive with our regional friends such as Vietnam, Indonesia and Thailand.

"By investing in the latest machines and adopting technology, SMEs can increase their productivity and remain competitive in the global market. Let us take advantage of this incredible opportunity for growth and success," she told Bernama.



To ensure that Malaysia gets the optimum benefits from IR4.0, Masni said the government had launched the National 4IR Policy in July 2021, in anticipation of emerging developments as well as to provide guidance and promote coherence in achieving the 4IR agenda.

The 4IR policy complements the Malaysia Digital Economy Blueprint (MyDIGITAL) in driving the digital economy development agenda.

### Financial support facility for SMEs

As part of the coordinated IR4.0 strategy, the Ministry of International Trade and Industry has appointed MIDA as the implementing agency for the financial support facility known as Industry4WRD Intervention Fund.

The fund will provide eligible SMEs with a grant of up to RM500,000 on a matching basis (70:30), based on eligible expenditures.

A maximum of 30 per cent of the matching amount (out of 70 per cent of the total grant) will be awarded upfront to the companies, and the remaining grant will be reimbursable.

Masni said 281 SMEs were approved to receive the financial support facility from 2020 until 2022, with a total grant value of RM101.4 million.

Out of the total, 82 SMEs were approved for the fund in 2020, 111 in 2021 and 88 in 2022.

Additionally, there is an incentive known as the Automation Capital Allowance (Automation CA), which encourages manufacturing and services companies to adopt automation and enhance their productivity through investment in automated machinery and equipment.

## COVER STORY

For this incentive, the government is providing an Automation CA of 200 per cent on the first RM4 million expenditures incurred for labour-intensive industries and 200 per cent on the first RM2 million expenditures for other industries, including services.

### Strategic programs to empower SMEs in IR4.0

MIDA has also formulated strategic programs to continue facilitating the establishment and expansion of multinational corporations (MNCs), large local companies (LLCs), and mid-tier companies in Malaysia.

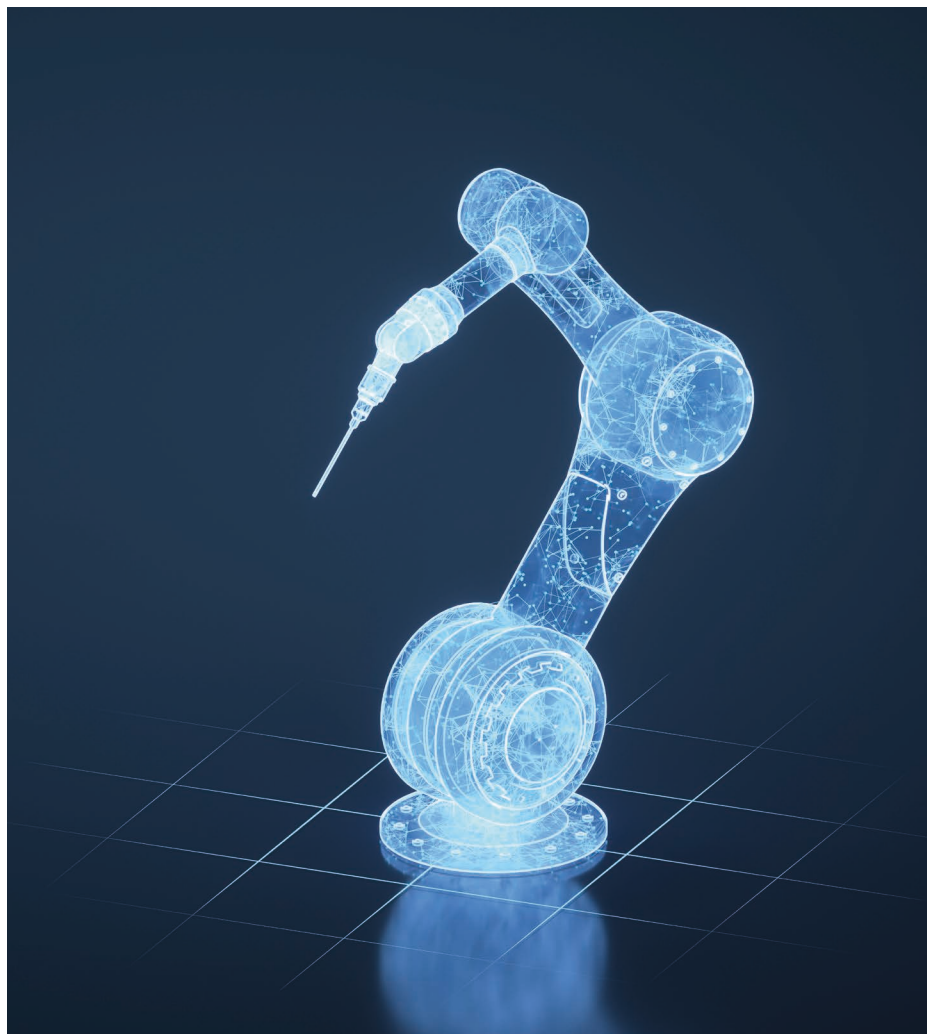
Equipped with a structured and completed ecosystem in various industries, Masni said MIDA promotes strategic collaborations between domestic companies with MNCs and LLCs to become part of the local supply chains with technological capabilities.

“The MIDA-Perodua Digital Transformation Ecosystem Program launched in 2020 has been essential in driving forward the capabilities of local automotive players in Malaysia.

“This initiative has enabled local players to remain competitive and keep pace with the ever-evolving automotive industry.

“Through a series of facilitation sessions, all vendors have started their digitalization journey, which takes three years to complete the (IR4.0) projects,” she said.

Additionally, Masni said MIDA has collaborated with Malaysia Digital Economy Corporation (MDEC) since last year for the setting up of the Digital Investment Office (DIO) to coordinate and facilitate all digital investments in Malaysia, in line with the government’s aim to attract RM70 billion investments in digitalization by 2025.





“The setting up of the DIO is timely and in accordance with the evolution of the global investment landscape towards digitalization and IR4.0, creating unique and exciting value propositions for digital projects.

“The clusters of digital enablers including data center infrastructure, artificial intelligence, cloud computing, and big data analytics expand opportunities for support services, skilled jobs and productivity upskilling among both large and small business communities,” she added.

### Outlook

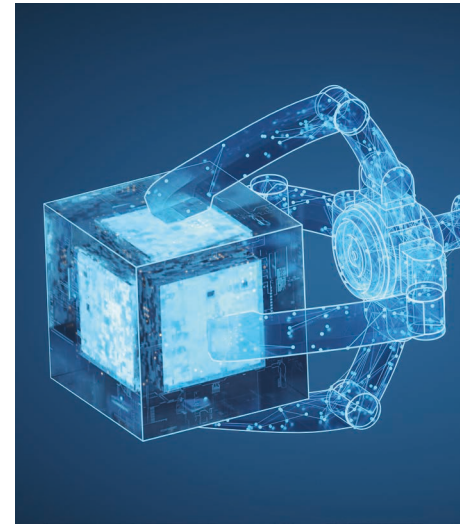
Masni said MIDA has put forward new proposals to the government, mainly to increase the adoption of technology and

automation among domestic companies, especially SMEs.

“In terms of industrial development, the focus is on making sure that the SMEs adopt technology, reduce reliance on foreign workers and increase productivity.”

As the country advances, she said the SMEs should leverage and take advantage of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership which was ratified by the government last year.

“Whenever we sign free trade agreements, there are benefits whereby we can enter other markets, expand our trades and export more, but it is undeniable that SMEs face specific challenges due to increasing competition, while some may not be adequately prepared.



“Hence, we need to improve our competitiveness which goes back to the adoption of technology, innovation, as well as research and development to expand their capabilities and increase performance,” she said.

Source: [www.thesundaily.my](http://www.thesundaily.my)



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# Cyber Security Asia 2023: Managing Cyber Risk in a Threat Based World

Cyber Security Asia 2023; one of Malaysia's top Cyber Security conference held annually in Kuala Lumpur launches today. The 2-day event is held on this coming 19-20 June 2023 at Sheraton Imperial Hotel Kuala Lumpur with the theme "Managing Cyber Risk in a Threat Based World". CSA2023 gathers a host of international and local speakers and delegation coming together on one platform for in-depth talks, and exclusive networking opportunities. It is a platform for the development of partnerships and strategies and highlights the latest technologies that are ensuring the safety and security of government, industry and individuals.

Cyber Security continues to be a top concern in Malaysia and many countries worldwide. Many organizations are vulnerable to cyber threats like malware, phishing and ransomware, as they do not have proper cybersecurity measures in place.

In the past year alone, Malaysia had suffered, according to the Malaysia Cyber Security Strategy 2020-2024 report, the country may face economic losses of up to RM51 billion due to cyber threats. In such a vulnerable environment, curated detection and response tools, strategic plans and cybersecurity awareness initiatives are needed to prevent this from happening multiple cyberattacks.

CSA2023 speakers and technology providers are from around the world – each with their own expertise are bringing



Renowned Security Hacker Dyma Budorin from HACKEN UKRAINE, shared insights on Web3 Security and Business Risk at CSA2022 Kuala Lumpur.



Renowned Security Hacker Dyma Budorin from HACKEN UKRAINE, shared insights on Web3 Security and Business Risk at CSA2022 Kuala Lumpur.

solutions and new ideas to combat cyber threat in organizations this coming 19-20 June 2023. **Chris Hadnagy** is one of the world's foremost authorities on social engineering. He is a global security expert and master hacker, specializes in understanding how malicious attackers exploit human communication and trust to obtain access to information and

resources through manipulation and deceit.

According to Chris – "the ultimate goal is to secure companies by educating them on the methods used by attackers, identifying vulnerabilities, and mitigating issues through appropriate levels of awareness and security".



Cyber Security experts from Darktrace, UNSW, Xcitium USA, Crest, Everbridge Inc and Forcepoint discussed and debated on Critical Infrastructure Security – Is Change Our Greatest Ally or just a Painful Exercise?

Delegates from Malaysia and its neighboring countries will have the opportunity to hear from a wide variety of industry experts such as Dato Dr. Amirudin Abdul Wahab of Cybersecurity Malaysia, Jay Hira of MakeCyberSimple, Fatemah Alharbi of Taibah University, Saudi Arabia, Chirag Joshi of NSW Department of CS, Daryl Pereira of Google Cloud, Paul O' Rouke of BCG Australia, Saltanat Mashirova of Honeywell, Dr. Erdal Ozkaya of Xcitium USA, Ricke Bouke of CyberSec People, Abbas Kudrati of Microsoft and many more.



Renowned Security Hacker Dyma Budorin from HACKEN UKRAINE, shared insights on Web3 Security and Business Risk at CSA2022 Kuala Lumpur.

CSA2023 together with MySecurity Media will host the Top Women in Security ASEAN Region awards, which are part of a global campaign by the Women In Security & Resilience Alliance (WISECRA). This initiative is open to all ASEAN members' countries and follows successful awards in 2022, which was launched in Singapore, Malaysia and Philippines.



Security experts from Malaysia, Philippines, Vietnam and Australia discussed Leadership Vision for Security & Risk Management Leaders during the recent CSA2022.

Nominations generally include women holding senior security roles including CISO, Global Head of Cyber Threat Prevention, Operation Director, Senior Business Director, Executive Director – Information & Cyber Security Risk, Security Lead – Cybersecurity GRC and Threat Exposure Management lead.

Nominees (other than for Open Category Awards) must be women with more than three years of experience in the security industry, be that in cybersecurity, electronics, physical, protective and risk management roles. Open Category Awards are open to all.

For more information on CSA2023-, refer to [www.cybersecurityasia.tech](http://www.cybersecurityasia.tech).

CSA2023 looks forward in welcoming Malaysian and Asian delegation to this event.

# Scientists Develop E-Skin For ‘Soft Robots’

For the first time, “soft robots” now have a level of physical self-awareness comparable to that of humans and other animals due to stretchy e-skin

## Do we stand a better chance of granting robots a true sense of touch?

Electronic skin is being developed by scientists in the hopes that it may help with surgical procedures and perhaps benefit those who have movement problems. For the first time, “soft robots” now have a **level of physical self-awareness** comparable to that of humans and other animals due to stretchy e-skin.

The method, according to researchers at the University of Edinburgh, could result in additional advancements in soft robotics by allowing objects to precisely detect their movements in the most delicate environments. The University of Hong Kong was also a participant in the study, which was published in the journal *Nature Machine Intelligence*.

Soft robots with e-skin, which scientists create using flexible materials rather than metal or hard plastics, could be used for a variety of tasks, including prosthetic limbs, surgical equipment, and gadgets that investigate dangerous places while remaining highly flexible.

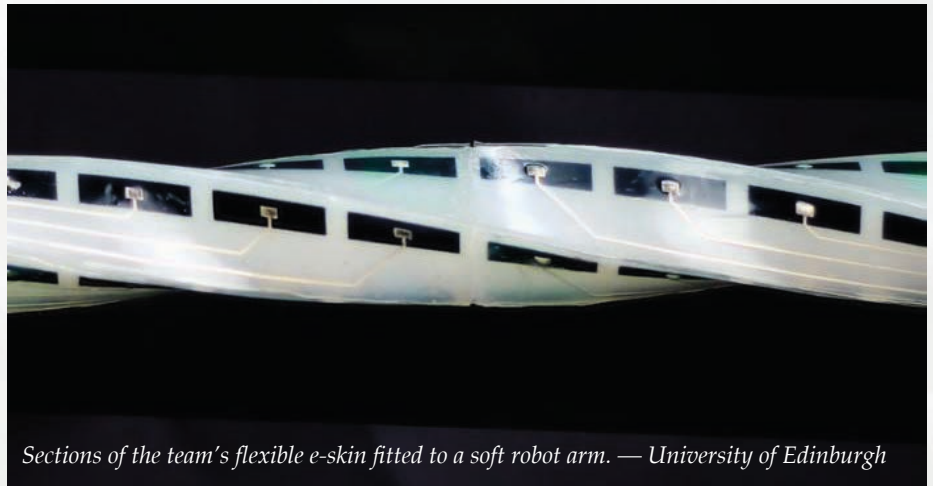
Soft robots struggle to comprehend their own motion, shape, and interactions with their surroundings without e-skin. This creates a significant obstacle in the development of the sensory systems required for robots to perform precise jobs and interact securely with humans.



*(Representational) Electronic skin is being developed by scientists in the hopes that it may help with surgical procedures and perhaps benefit those who have movement problems. — Unsplash*

The research team is the first to create a solution that gives soft robots extremely precise, real-time sensing capabilities, reported *Study Finds*. A flexible e-skin that is only one millimeter thick and is made of a thin layer of silicone that is embedded with wires and sensitive detectors was developed by researchers.

Scientists were able to provide soft robots with the ability to quickly feel their motions and deformations with millimeter accuracy in three dimensions, in real-time, using the e-skin as well as artificial intelligence. The scientists put this e-skin to the test by attaching it to a flexible robot arm, and they discovered that the technology was capable of sensing a variety of intricate bending, stretching, and twisting movements throughout the entire device.



Sections of the team's flexible e-skin fitted to a soft robot arm. — University of Edinburgh

“The perceptive senses endowed to robotic devices by this new technology are similar to those of people and animals. This new level of physical self-awareness represents a step change in the sensing capabilities of soft robots,” said Dr Yunjie Yang from Edinburgh’s School of Engineering in a university release.

Study co-leader Dr Francesco Giorgio-Serchi, also of the School of Engineering added that this technology can help robots realize their own existence by making them perceive their shape and movements.

Source: [www.thenews.com](http://www.thenews.com)



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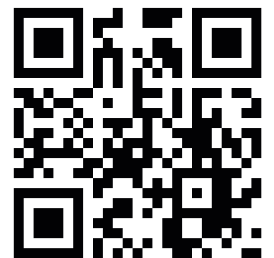
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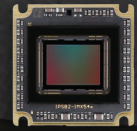
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