

OPINION

Optimizing The Future With Mathematic For...



Abid Amin Naem

UNESCO proclaimed March 14 as International Day of Mathematics. Why and how? It would have been too much to expect such an institution to spontaneously recognize the impact of mathematics on our planet. Of course, such a decision required the mobilization of the mathematical community.

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An Overview Of Mustard Crop



Nimra Abbas

Mustard tolerates heat and drought, so in drier soil areas it is well suited to grow properly. With cereal crops for its young leaves or green manure and seeds it is often grown in crop rotation. The use of mustard in crop rotations is desirable due to its effect on residue conditions in the field, disease, weed, insect problems. Ideally, it is grown after a cereal crop. It is generally grown stubble in moist and dry areas and on stubble or summer fallow respectively.

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Reducing Methane Emissions In Paddy



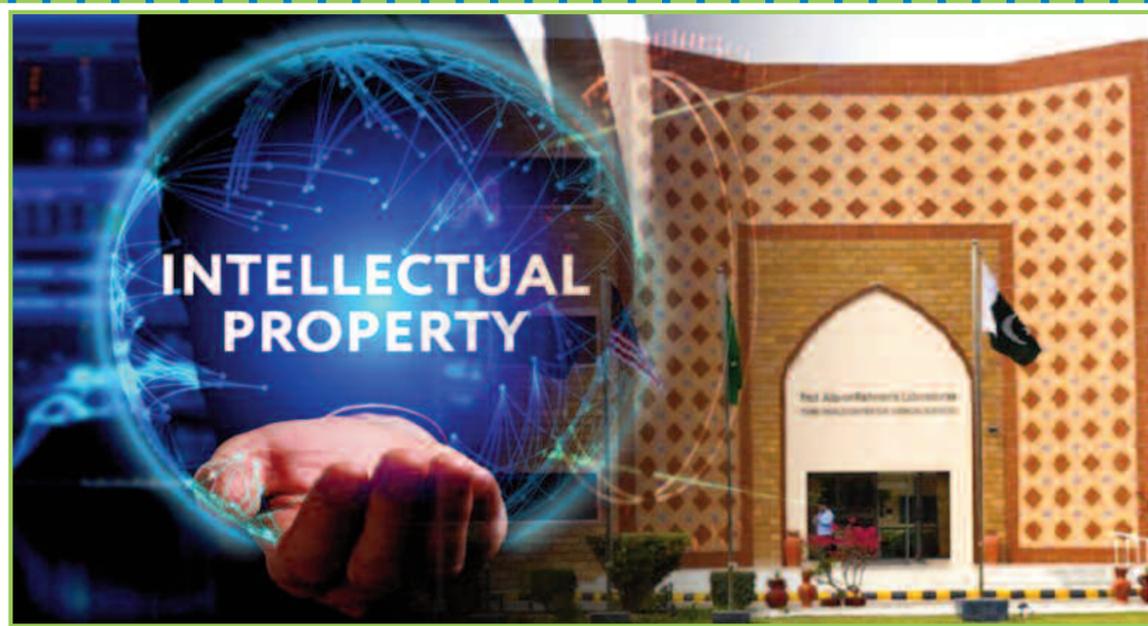
Ammara Saeed

Water Management Has Been Considered As One Of The Methods That Can Be Used To Decrease Methane Emissions From Flooded Rice Conditions.

"In the 21st century one of main issue in science is climate change. Rice is main source in agriculture in methane production." One of the main issues in science and technology in the 21st century is climate change which is due to numerous factors contributing to it. A long-lasting argument is on sources that are responsible for climate change. In the light of scientific researches, many man-made activities are contributing to greenhouse gas emissions including carbon dioxide, nitrous oxide and methane.

The agriculture sector is contributing 20% to greenhouse gases on a yearly basis contribution. Soil is considered to be a sink of these gases so to mitigate or reduce the emissions strategies are to be developed.

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IPO Signs Institutional Agreements For Biological Sciences KU

Pakistan Council of Research in Water Resources (PCRWR) Islamabad and PARC Islamabad would establish Technology and Innovation Support Centers (TISCs).

The Pakistan Intellectual Property Organization (IPO) signed institutional agreements with the International Center for Chemical and Biological Sciences at the University of Karachi (KU) on Wednesday.

According to the MoU for Chemical and Biological Sciences, the Pakistan Council of Research in Water Resources (PCRWR) Islamabad and the Pakistan Agriculture Research Centre (PARC) Islamabad would establish Technology and Innovation Support Centers

(TISCs), according to a press release issued here.

Chairman IPO Pakistan Farukh Amil, Director General IPO Pakistan Ms. Shazia Adnan, Executive Director IPO Pakistan Meesaq Arif, and respective heads of the host institutes attended the signing ceremony.

Innovation support centres (ISC) are organisations that provide a range of services and resources to support innovation and entrepreneurship in a specific region or industry. ISCs can take many forms, such as incubators, accelerators, or technology parks, and may be operated by universities, research institutions, governments, or private companies.

The services offered by ISCs vary widely but can include mentoring, training, access to funding, networking opportunities, and shared facilities. Some ISCs may also provide specialized support for specific stages of the innovation process, such as prototyping or commercialization.

The institutional agreements will aid in the enhancement of the host institutes' institutional capacity to effectively exploit the high-quality technical information available in the patent and scientific and technical literature databases.

The respective heads of the TISC host institutes praised the institutional agreements as a step forward in promoting inno-

vation and research at their institutions and promised closer collaboration with IPO-Pakistan in the agreements' effective implementation.

An institutional agreement is a legally binding agreement between two or more organizations that outlines the roles and responsibilities of each party involved in a particular project or activity. Institutional agreements can be used for a variety of purposes, including research collaborations, funding arrangements, and partnerships to achieve specific goals.

These agreements can establish the terms of the partnership, such as how resources will be shared, how intellectual property will be managed...[Read More](#)

Ceremony Held To Award Fellowship Opportunity To 165 PhD Scholars

HEC has distributed a total of 3,199 awards under IRSIP, with the goal of improving the quality of doctoral research.

The Higher Education Commission (HEC) held a ceremony today at the HEC Secretariat to award 165 Pakistani PhD scholars a six-month fellowship opportunity under the International Research Support Initiative Program (IRSIP). Pursuing PhD work in Pakistan is important for the individual, the academic institutions and the country as a whole.

Dr. Mukhtar Ahmed, Chairman of the Higher Education Commission, was the chief guest. HEC has distributed a total of 3,199 awards under IRSIP, with the goal of improving the quality of doctoral research, providing opportunities for scholars to train at advanced labs of prestigious institutes, and introducing Pakistani talent globally.

966 fellowships in Biological and Medical Sciences, 831 in Physical Sciences, 576 in Agriculture and Veterinary Sciences, 471 in Social Sciences, 269 in Engineering and Technology, and 86 in Management Sciences have been awarded.

Chairman HEC stated during the ceremony, "This project was conceived during the early years of HEC's establishment with the aim of giving dynamic research opportunities to students so they can make bright careers and serve the country."

He urged the students to take advantage of this opportunity because it comes with a lot of investment at a time when the country is suffering from a severe dollar shortage.

He asked them to remember Pakistan for its assistance...[Read More](#)

China-Pakistan Inks MoU To Cooperate On Ocean Space Planning



"We hope that in future, both sides will use ocean space planning cooperation as springboard for extensive mutual visits and exchanges, as well as joint training courses," Chen said.

and Marine Sciences (LUAWMS) have agreed to col-

laborate on ocean space planning.

This new relationship was recently formalised through a virtual signing ceremony. The MoU, according to Chen Wujun, Secretary General of NOTC, will be the key to launching coopera-

tion between the Center and Lasbela University in the marine field.

"We hope that in the future, both sides will use ocean space planning cooperation as a springboard for extensive mutual visits and exchanges, as well as joint training courses," Chen said. "We will also collaborate to develop relevant information systems and an observatory, as well as promote the establishment of a joint research center on ocean space planning between China and Pakistan." Dr. Dost Muhammad Baloch, Vice Chancellor of LUAWMS, expressed his hope that the signing of the MoU will contribute to the sustainable use of marine resources and improve...[Read More](#)

NEPRA Issues Notice For Reduced Fuel Charge Adjustments

FCA is based on global fuel prices and is passed on to consumer bills in accordance with NEPRA and the Government of Pakistan's rules and regulations.

NEPRA issued its decision on K-Petition Electric's request for reduced fuel charge adjustments (FCA) for the month of November 2022 after following due process. The approved reduction is PKR 7.4307 per unit and will be reflected in consumer bills in January 2023.

After review, FCAs are approved by NEPRA, which also specifies the month in which the charge appears on consumer bills.

FCA is based on global fuel prices and is passed on to consumer bills in accordance with

NEPRA and the Government of Pakistan's rules and regulations. The FCA for November is a lower charge, owing to a drop in international fuel prices.

When compared to September

2022, the price of power purchased from CPPA-G decreased by 37%. Similarly, the price of RLNG and furnace oil fell by 18% and 15%, respectively.

Fuel charge adjustments refer



Webinar Held To Raise Awareness About Cybersecurity's Importance

NEPRA Chairman Tauseef H. Farooqi stated that cybersecurity risk management is an ongoing process in which everyone in an organisation plays a role.

The National Electric Power Regulatory Authority (NEPRA) hosted a webinar on "Cybersecurity Roadmap: A Practitioner's Approach" on Wednesday with the goal of raising awareness about the importance of cybersecurity among power entities in the public and private sectors.

According to a statement issued here, the webinar was led and addressed by Chairman NEPRA, Tauseef H. Farooqi, who was followed by Nauman Mushtaq, Team Lead CRC Lab at Bahria University, and Mr. Sohail Hyder, Head of Cyber Security, M/s Supersecure.

The emphasis on the "importance of cybersecurity" in the private and public sectors highlights the growing concern about cyber attacks or breaches becoming more sophisticated and frequent as digitalization and internet connectivity increase.

A large number of power sector professionals, trade and business representatives, and NEPRA professionals attended the webinar.

In his keynote address, NEPRA Chairman Tauseef H. Farooqi stated that cybersecurity risk management is an ongoing process in which everyone in an organisation plays a role.

"We have to understand the impact of cyberattacks on power sector installations and their subsequent impact on our economy." He went on to say that in order to become a cyber-resilient organisation, we must align our cyber risk management with business needs and implement best practises.

Mr. Nauman Mushtaq and



Sohail Hyder provided participants with information on cybersecurity risk assessment methodologies and frameworks such as ISO 27001, Cyber Kill Chain, and MITRE-ATT&CK frameworks' processes, myths, and facts of operational technology (OT).

They also suggested short and long term roadmap for achieving the compliance of NEPRA IT/OT Cybersecurity Regulations.

As more and more organisations and individuals rely on digital systems and networks to conduct business, share information, and access services, the risk of cyberattacks and breaches has also increased.

Other malicious actors can use a variety of techniques, such as phishing scams, malware, and ransomware, to gain access to sensitive information and disrupt operations. The private sector and public...[Read More](#)



Balochistan Needs Climate Smart Agriculture To Ensure Food Security

Dr. Hanifur Rehman believes that the use of modern techniques, biotechnology practices, and GMOs will help increase per capita productivity in the agricultural sector.

Experts believe that climate-smart agriculture practices can help the Balochistan province ensure food security while also conserving water resources. They claim that focusing on Balochistan's less developed and underprivileged areas will help reduce migration from rural to urban areas.

Dr. Hanifur Rehman, Associate Professor in the Department of Environmental Sciences at the University of Turbat, believes that the use of modern techniques, biotechnology practices, and genetically modified organisms (GMOs) will help increase per capita productivity in the agricultural sector and ensure food security in Balochistan.

He believes that encouraging the use of high-efficiency irrigation systems (HEIS) such as drip, bubbler, sprinkler, rain guns, and centre pivot will aid in the efficient use of scarce water resources.

Dr. Hanif believes that a comprehensive water policy should be developed that addresses all aspects of water availability,

usage, transmission, recycling, and sewage treatment.

He believes the policy should have a time-bound goal that clearly identifies the development interventions needed across the province in the coming years. He claimed that due to a lack of water, most of Balochistan's lush green pastures have turned into barren lands over the last two decades.



He stated that the underground water level in Quetta, Pishin, Qilla Abdullah, Kalat, Mastung, Khuzdar, Loralai, and other districts of the province is rapidly depleting. Dr. Hanif believes that if artificial intelligence practices are implemented, a large portion of land in

Balochistan can be used for agriculture, allowing the province to deliver the same agricultural productivity as Punjab province.

Agriculture, water, and climate are all interconnected, according to Dr. Muhammad Aslam, Dean of the Faculty of Marine Sciences at Lasbela University. He claims that climate change has an impact on water availability and agricultural productivity.

According to him, only 6% of the land in Balochistan is cultivable due to a lack of water, and the root cause of water scarcity is mismanagement of water use in irrigation and the installation of an excessive number of solar tube wells.

"We failed to introduce mod-

ern practices in Balochistan due to a lack of research-based agriculture institutes," he explained. According to Dr. Aslam, the major issue that requires immediate attention for the province's future socioeconomic development is urbanisation.

Furthermore, he stated that in order to prevent migration from Balochistan's underprivileged areas, the government must actively support development programmes such as overall water security, energy sufficiency, infrastructure development, and agricultural development in order to provide the same opportunities available in urban areas.

According to Akbar Khan Khajjak, Research Officer at the Water Management and High-Efficiency Irrigation System in Quetta, there is a need to integrate policies governing water laws and flood disaster management in order to increase storage capacity, increase water productivity, and protect the country from devastating floods.

He claims that these steps will boost agricultural productivity and lead to long-term economic development. Balochistan has a total area of 347,190 km², accounting for 43.6% of Pakistan's total area, with a cultivated...[Read More](#)

Kissan Ittehad Urges Govt To Declare Agricultural Emergency



"In this dire situation, the government should declare an agricultural emergency in order to save the standing wheat crop," said PKI President Khalid Khokhar.

Pakistan's Kissan Ittehad demanded on Wednesday that the government declare an agricultural emergency in order to address the country's ongoing food crisis.

"It is unfortunate that farmers are forced to run from pillar to post to obtain urea fertilizer at an exorbitant rate of Rs3,000 per bag, and the common man is subjected to humiliation in his quest for a loaf for his family," PKI President Khalid Khokhar spoke at a press conference.

"In this dire situation, the government should declare an agricultural emergency in order to save the standing wheat crop." Because of unfavorable govern-

ment policies, Khokhar believes the country will need to import wheat in 2023.

"It is unfortunate that Pakistan will support farmers in other countries by buying wheat from them at high prices rather than encouraging wheat cultivation in the country," he said, adding that the government must act quickly to increase wheat production.

Due to a lack of raw materials for cotton, rice, and maize crops, a shortage of urea will have an impact on Pakistan's exports. According to Khokhar, Sindh announced a wheat support price of Rs4,000/maund, but no price was announced in Punjab or KPK. "Farmers did not maximize wheat sowing area because they did not know the support price, and the Punjab government must immediately announce Rs4,000 per maund as wheat support...[Read More](#)

Forest Department To Celebrate 2023 As Year For Wildlife Protection



Animal breeding resulted in an increase of 381 animals and birds in the Safari Zoo and 287 in the Lahore Zoo.

The Punjab Forest Department will commemorate 2023 as the year of abundant plantations and wildlife protection, with the goal of setting new goals for the province.

Punjab Forest Minister Syed Abbas Ali Shah made the announcement while chairing a performance meeting here on

Thursday. According to the minister, more than 102 million saplings were planted in 2022, with Bahawalpur having the highest plantation at 2 million saplings.

He stated that three development schemes totaling Rs 803 million were completed, including the expansion and renovation of Bhakkar Forest Park, Forest Academy, and Forest Complex.

Animal breeding, on the other

hand, resulted in an increase of 381 animals and birds in the Safari Zoo and 287 in the Lahore Zoo.

Abbas Shah stated that significant steps were taken in the last year to ensure the survival of plantations and wildlife. The minister praised the department's annual performance and directed officials to maintain the same level of performance in the coming year.

Planting trees and other vegetation can help to improve air and water quality, reduce soil erosion, and provide habitat for wildlife. Reforestation projects can also help to combat climate change by absorbing carbon dioxide from the atmosphere. In addition, plantations can also provide economic benefits through the production of timber, fruits, and other products.

Wildlife protection is important for maintaining biodiversity, preventing species extinction, and preserving the cultural and economic value...[Read More](#)

Islamabad's Air Pollution Remains High Despite Light Rain

According to the Pakistan Environmental Protection Agency's daily air quality report, the ratio of air pollutants was above permissible limits, and the air quality was unhealthy.

Since the start of the fall season, air pollution in Islamabad has remained high due to prolonged dry weather, increased vehicular traffic, garbage and wood burning, and other factors.

The air quality of the Federal Capital, Islamabad, was rated unhealthy on Wednesday, despite light rain, putting the health of vulnerable age groups such as children, women, and the elderly at risk of contracting respiratory ailments. According to the Pakistan Environmental Protection Agency's (Pak-EPA) daily air quality report, the ratio of air pollutants was above permissible limits, and the air quality was unhealthy. Under the Pakistan Environmental Protection Act 1997, the agency is responsible for ensuring environmental protection. PM_{2.5}, a hazardous air pollutant, remained above 62 micrograms per cubic metre...[Read More](#)

IWMB To Find Workable Solution To Amend ICT Regulations For Zone III



IWMB believes that if the government wants to establish more model villages or legalise illegal settlements in Zone III, it should add vacant land of the same size to national park.

The Islamabad Wildlife Management Board (IWMB), the body in charge of protecting Margalla Hills National Park, appears eager to find a workable solution to proposed amendments to the ICT Regulations for Zone III, which is part of the national park.

According to the details, the Capital Development Authority (CDA) is working hard to secure the services of the Survey of Pakistan in order to implement its previously prepared plan to amend Zone III ICT regulations with proper demarcation of its boundaries.

On the other hand, the IWMB believes that if the government wants to establish more model villages or legalise illegal settlements in Zone III, it should add vacant land of the same size to the national park with the goal of providing natural habitat to wildlife species, especially leopards...[Read More](#)

Wildlife Department Devises Project For Conservation Of Wildlife Via GIS

According to the forest department, work will be done throughout the year to protect wild birds in all of Punjab's forests and to breed all such birds whose species are declining.

The Department of Forests and Wildlife Preservation has developed a project for the breeding and conservation of wild birds, water birds, and wild animals, as well as their data collection and mapping via remote sensing and geographic information systems (GIS) in all government and private forests and national parks.

According to sources, it will be implemented as part of the 10 billion tree tsunami project. The extension of the 10 billion tree tsunami project until 2023 has also been approved.

According to sources, this project will collect data on all types of trees in forests, and millions of new trees will be planted during the spring plan-

tion campaign in February. A two-day officer training course has also been completed for the formal launch of this project, the sources added.

The training program for conservation of wildlife was attended by the department's network administrators, geographic information system developers, remote sensing



analysts, GIS analysts, and data entry operators.

Representatives from the World Wide Fund for Nature—Pakistan also took part in the event. Green Pakistan Project Director Mudassar Hasan, among others, delivered lectures on the subject.

According to the forest department, work will be done throughout the year to protect

wild birds in all of Punjab's forests and to breed all such birds whose species are declining. The project will prohibit the hunting of wild animals, wild birds, and waterfowl, while fruit trees will be planted in the forests to provide food for them. In the forests, fish ponds will be released. Its objective is to ensure the breeding of waterfowl and their long and permanent stay in forests for food.

Under this project, offices will be monitored around the clock using CCTV cameras, and more trees will be planted in each forest to aid in the breeding of wild animals.

Every public and private forest, as well as the national park, will be fully densified, and Miyawaki forests will be planted in government forests. The number of national parks will also be increased, and the services of farmers and gardeners will also be obtained for this project.

Global Economy Focusing On Skill Based Employment: HEC



Béla Fazekas, Hungary's ambassador, stressed the importance of investing in skills-based education in addition to degree programs.

Béla Fazekas, Hungary's ambassador, stressed the importance of investing in skills-based education in addition to degree programs. Dr. Ahmed agreed that the global economy is increasingly shifting toward skill-based employment and proposed collaboration between skill-focused universities in Pakistan and Hungary to encourage skill investment. Béla Fazekas, Hungary's Ambassador in Islamabad, met with Higher Education Commission (HEC) Chairman Dr. Mukhtar Ahmed on Tuesday at the Commission Secretariat. Several opportunities for bilateral educational cooperation were discussed. Dr. Ahmed acknowledged the long-standing educational partnership between the two countries, including an offering of scholarships to Pakistani nationals since 2016. The ambassador informed the HEC chairman that the number of scholarships available each year will be increased...[Read More](#)

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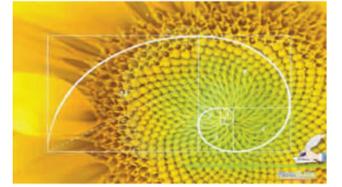
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Abid Amin Naeem

Present learning environment in schools and universities is content with programming students to execute complex mathematical operations, and evaluation honors students who can measure anything even though they do not grasp it. It is more like getting ready for a production than a knowledge-based economy



Optimizing The Future With Mathematics For A “Better World”-International Day Of Mathematics 2021

UNESCO proclaimed March 14 as International Day of Mathematics. Why and how? It would have been too much to expect such an institution to spontaneously recognize the impact of mathematics on our planet. Of course, such a decision required the mobilization of the mathematical community.

In fact, a network of organizations, starting with the IMU (International Mathematical Union) and leading mathematical societies, and many associations of women in mathematics, such as IMU-CWM, AWMA, EWM, AMU-CAWM, have been involved in the implementation of this proclamation. The why is clear, but the “how” of this decision had to be explored: such an important choice required an idea and someone who pushed this idea until it became a reality. A mathematician, of course, and a mathematical woman, no wonder. It took her more than two years of hard and constant work. In these strange times of the virus, the whole world talks about exponential functions, growth rates, simulations, without attention, with easy predictions, without the need for “error estimation”. There are few mathematicians who speak. But mathematicians will continue the search for a better analysis of epidemics, a more careful use of Big Data, a greater dissemination of proven scientific results, and to improve the average quality of the population’s mathematical knowledge, so as not to be left in the “hands” of artificial intelligence. Mathematics is a universal language that unlocks creativity by abstracting an issue

to uncover patterns that offer answers to the most relevant questions.

The ability to create and develop mathematical models of the real world is critical to Pakistan’s future competitiveness and growth. Mathematical truths tend to make a confusing universe more understandable and achievable, and they are connected to productivity and creativity at all levels of the economy. Mathematics can allow us alleviate traffic congestion in our communities, reduce costs in a comprehensive rail transportation network, prevent internet congestion, build creative optical lens designs, weigh the costs and benefits of environmental policy, and refine a small business strategy. Mathematics can build modern and improved Pakistani industries. It is now at the center of essential concerns concerning nature, life, and health. What function does genomic knowledge play in early life growth and health? How will medical image resolution be increased when file size is reduced? How can mathematics be used to build a more stable financial regulatory framework?

The more technologically sophisticated a society becomes, the more critical its need for mathematical thinking. Mathematics paves the way to greater economic diversity and opportunity. A smart economy relies on mathematical abilities, but you would never realize it. In general, mathematics is often misunderstood and unrecognizable in terms of school and undergraduate mathematics. This is where mathematics education has failed miserably. The most important contribution

that mathematics can make to Pakistan’s smart economy is to improve this. The remedy concerns approach as well as content. Mathematics as it is practiced, in research and professional occupations, requires thought, creativity, judgement, questioning and problem solving. An economy based on production lines does not necessitate these skills as a matter of practice, but an economy based on knowledge and invention does.

Present learning environment in schools and universities is content with programming students to execute complex mathematical operations, and evaluation honors students who can measure anything even though they do not grasp it. It is more like getting ready for a production than a knowledge-based economy. The mathematics discipline aims to improve the knowledge base of those who teach mathematics as a solution. However, “upskilling” teachers with “more of the same” will not have the mathematics that a smart Pakistan needs. In both the innovation economy and science, we need mathematics to be “taught more as it is done” by those who deal with it.

There is a cultural change that will affect the discipline, and it will need to be integrated into school and university processes. Without this, the general public’s understanding of the relationship between mathematics and the economy will remain distorted, and mathematics will be slowed in exerting its due impact and providing its benefits to a 21st-century Pakistan.

Biology is a good example of

applying mathematics in a realistic way. Despite the need for mathematically qualified experts at the science frontier, the sluggish acceptance of mathematics and statistics in university biology curricula stymies our progress. The lesson here is that we need to link mathematics and biology in our classrooms, two sciences that have historically been separated (despite Darwin’s observation). In the twenty-first century, mathematics is reaching the biosciences in the same manner as mathematics met physics in the previous century, and we must express this through the curriculum rather than depending on Brian Cox, Simon Singh, Facebook, and Twitter to do so.

Many of them shift easily between the two, and experience shows that mathematics multidisciplinary potential is inextricably related to the discipline’s well-being. A striking example is the use of 19th and 20th century differential geometry in 21st century computer graphics. This pointed observation is directed at the administrators of our universities! The word cloud below depicts several public, private, and academic organizations that are all vital to where we will be in 2025 and that hire or engage research-trained mathematicians and statisticians.

In a world accustomed to change, mathematicians’ functions are becoming increasingly important, and they are multidisciplinary in nature – statisticians work with merchants to optimize and evaluate their reward schemes, and mathematicians work with banks to handle financial risk and hospi-

tal to manage emergency ward workflows.

We perform a critical role in the development of knowledge-based industries as well as the efficient activity of the natural and primary resource sectors. Unfortunately, we do not always communicate this effectively, especially with students and their parents, but we are making progress. This practical mathematics can be divided into two categories: support roles and lead roles. Support roles entail the application of current advanced mathematics, while lead roles entail active research. Mathematics, in my view, is once again a resource for the planet’s restoration. We have the requisite resources, academic rigor, professionalism, and language. To achieve tangible improvements, we simply need to expand our creativity a little further.

A great initiative took jointly by the Department of Mathematics, LUMS, COMSATS University, Islamabad and IBA Sukkur to celebrate the International Day of Mathematics 2021 in Pakistan. I am confident that this event will be a milestone for the awareness about the importance of mathematics for a better world. What about the next IDM? We must not hope to “go back”, as one of the main problems is what the normality had become, but we must aim to find new ways.

Let me conclude with a quote from Arundhati Roy, author of “The Algebra of Infinite Justice” among many other texts: ‘Another world is not only possible, but it is coming. On quiet days, I can hear his breath.



“As technology accumulates and people in more parts of the planet become interdependent, the hatred between them tends to decrease, for the simple reason that you can’t kill someone and trade with him too.”

—Steven Pinker
psychologist

The introduction of the IoT altered the parameters of numerous industries and sectors, including healthcare, vehicle tracking technology, smart homes, cities, and agriculture



Muhammad Amjid

Role Of Internet Of Things (IoT) In Precision Agriculture

Muhammad Alamgeer,
Muhammad Amjid,
Muhammad Sajid,
Muhammad Usama Ali
and Hassan Munir

Precision agriculture is an aspect of farm management that makes use of information technology to assure exceptional agricultural production and food security.

Assuming that the global population is projected to hit 9.7 billion by 2050, or 20.6% of the current population, food security is emerging as the greatest concern facing the entire world. It is estimated that by 2050, 68% of the earth’s population will migrate in cities, up from 54% in 2018, that will reduce the arable land area which is currently accessible. On the contrary, all of the lands on earth are not arable due to a number of constraint including soil quality, climate and great variations within the homogeneous land. Additionally, due to pollution, soil erosion, and land degradation, the rate at which arable land is diminishing outpaces the rate at which it is recovering. Pakistan is a predominantly agricultural nation, with

agriculture accounting for 38.5% of all jobs in the labor force and 19.5% of the nation’s GDP. Sadly, Pakistan’s agricultural output is declining, with a heavy emphasis on chemical fertilizers, pesticides and genetically modified organism (GMO) seeds. Although GMO crops have proven to be profitable for Pakistan, they are bad for biodiversity, particularly in the country where they account for 95% of yields from hybrid maize and Bt (Bacillus thuringiensis) cotton. The country is implementing several steps to ensure food security. The introduction of the IoT altered the parameters of numerous industries and sectors, including healthcare, vehicle tracking technology, smart homes, cities, and agriculture.

Uses of IoT in Precision Agriculture:

Without the technology of sensors, smart agriculture is not viable. Sensors are employed to collect and measure various environmental variables and factors that may have an impact on crop output. Accurate sensor data collection is key to the success of precision agriculture for managing crops and soils specifically. For accurate and site-specific autonomous activities, near-

ly all of the machinery and vehicles (such as the tractor, harvester, unmanned aerial vehicle, and sensor device) are fitted with remote sensing tools like the Geographic Information System (GIS) and the Global Positioning System (GPS). There are several different types of sensors used in precision agriculture, however mostly there are just two. The first is the use of remote sensing and intelligent multipurpose image sensors that could be built into unmanned aerial vehicles (UAV), railroads, and fixed position components. These sensors can perform a wide range of tasks, including soil and vegetation/crop mapping, crop phenology, crop height, yield estimation, fertilizer effect and biomass, plant water stress detection and drought conditions, pest identification and management, weed detection, and greenhouse monitoring, when combined with deep learning. The second kind of sensor is more frequently employed, tailored to their use case, and able to be placed all over the playing field. Airflow, soil moisture, electrochemical, capacitive humidity, position, mechanical, optical, and temperature sensors are the most widely used types of sen-

sors.

Use of UAVs in agriculture: UAVs are an evolving and independent technology that combines several other technological stacks, such as robotics, onboard computing, artificial intelligence (AI), information and communication technology (ICT), IoT, and batteries, in addition to the IoT ecosystem. The reason UAVs are so popular is because they bridge the gap between robots’ on-ground limitations due to uneven terrain, obstructions, and speed and the limitations of remote sensing imaging by satellites due to weather and cloud penetration. UAVs have several uses, but their primary role is monitoring, which includes soil and crop mapping and sampling, yield forecasting, weed identification, pest and disease detection, and assessing soil and crop stress. The second one is an application phase where fertilizer, insecticides, and herbicides are sprayed as well as seeds are sown. UAVs come in two primary varieties: fixed-wing and rotary-wing. Because of their long-range, high speed, altitude, and crash tolerance capabilities, fixed-wing UAVs are better suited to work across wide regions and more closely resemble airplanes in

terms of their flying characteristics. There are further categories for rotary-wing UAVs, such as the helicopter and multi-rotary type; typically, multirotor UAVs are termed according to the number of their rotaries, such as quadcopters, hexacopters, and octocopters. Despite their simplicity, UAVs have certain drawbacks as well. Low battery life and efficiency, payload, communication range, and short flight times are some of the technical constraints of UAVs. The typical flying time of fixed-wing UAVs is 5 hours, and they have a communication range of up to 100 kilometers. Researchers studying battery efficiency are attempting to create more effective hybrid batteries as well as battery management and optimization methods. Smart Agriculture methods To meet their needs, people have been working to increase food production for ages. To do this, they are implementing a variety of innovative agricultural practices. Advanced agricultural practices including vertical farming, hydroponics, and phenotyping considerably increase their effectiveness by adopting IoT and integrating it into them after the advent of IoT. UAVs, different kinds of sensors, and IoT-based

equipment are often utilized technologies and tools.

Precision Agriculture: Precision agriculture is centered on the optimal use of natural resources by preserving the natural environment. Implementing precision agriculture entails four steps: characterizing the extent and scale of variability in soil and crop attributes, interpreting the significance and causes of variability, managing variability on a spatial and temporal scale, and monitoring the outcomes resulting from variability management practices, which could only be done efficiently through the Internet of Things.

Greenhouse Farm: Precision farming and greenhouse farming are comparable in some informal contexts and serve somewhat different purposes. The primary distinction is that greenhouse farming is carried out in an enclosed or remote area where environmental variables are regulated and monitored by sophisticated technologies. Despite the fact that farming through the greenhouse is not a new practice, the Internet of Things (IoT) has found uses for greenhouse practices including controlling temperature and humidity...READ MORE



Haleefa

Human activities has gradually changed one-third to one-half of the world's surface. In the next decade or century, it is expected that humans will seriously convert 50-90 percent of land into developing countries



How Do Humans Contribute Towards Loss Of Biodiversity?

Biodiversity is the variability of living organisms on Earth. Nature is very beautiful and beauty of nature is the result of organization of different species in different sequences depending upon their growth, climatic conditions, mode of nutrition and locomotion.

Plants and animals both are the essential components of biodiversity. It is the variety of living organisms growing in different ecological zones of the Earth. Humans and nature are connected from the beginning. Both are inter-connected and depending on one another. There is no distinct method to measure the overall impact of humans on biodiversity. Human population is increasing day by day therefore the daily life needs of humans are also increasing. To fulfill all that needs humans are totally dependent on their surrounding biotic and abiotic environment. To find out the total influence of the humans on a given environment, we must have the statistical report of productive land, water requirement and waste being generated by humanity.

With the passage of time, directly or indirectly, human activities have resulted in the loss of biodiversity. Some of the indirect human drivers are demographic, scientific and technological, economic, sociopolitical, and cultural and religious factors. Some of the direct human drivers are

changes in local land use and land cover, species introductions or removals, gene pool, population changes, external inputs, harvesting, air and water pollution, and climate change.

Human activities has gradually changed one-third to one-half of the world's surface. In the next decade or century, it is expected that humans will seriously convert 50-90 percent of land into developing countries. This is a because of rapid increase in human population and over consumption of natural resources by us. The increase in human population is one of the major problem and root cause for biodiversity loss. The worldwide human population as of July 2005, was at 6.4 billion. According to United Nations estimates, World population is 7.9 billion as of November, 2021 and Pakistan is 226,754,159 as of Monday, 15 November, 2021, and is continuously increasing day by day. The increase in human inhabitants causes a problem because to sustain the growth and for survival, humans are converting natural habitats into residential areas and into food producing fields. About 38 percent of land is used for agriculture purpose, out of which most of the land is non-farmable. In the developed countries there are rules about biodiversity and considered as direct relationship between the loss of forests to the increase in cropland may lead to decline in biodiversity.

Internationally, in every next second, almost half hectare of forest area is being converted into farmland. One of the potential dangers of decreasing the amount of natural habitats remaining is that species will no longer be present on earth. This directly affects agriculture because many of the species that are being destroyed for croplands may have been used for genetically enhancing crop products. In this manner, the increase in agricultural land actually harms our agricultural future.

Human activities are also responsible for climate change that is also a contribution towards the loss of biodiversity. This change in climate is because of increase in pollutants of air such as concentration of CO₂ in the atmosphere. The increase rate of CO₂ in atmosphere cause rise in temperature of land and oceans. The precipitation rates also changes in response to that. It also has impact on species diversity as species are also dependent on climatic and ecological factors for their growth and survival. Climate has great influence on several biological activities of species such as the time frame for the reproduction of species, the seasonal migrations of species, the duration of growing season, distribution of species in an area, density, frequency, population size, and rapid outbreak of some diseases or pest attacks. It is also evident that due to its higher magnitude and

fast rate, climate change in 21st century had much greater impact on biodiversity as compared to past 10,000 years. The rise in temperature of Earth cause global warming and due to which nature is facing losses of plant and animals species. About 80 percent of the biologically rich areas are suffering from this. Different species are becoming extinct day by day.

Biodiversity is an ecological and most critical issue that affects everyone and therefore each and every single person must have the knowledge of the ongoing processes. One should be aware of their effect

environment. Lack of knowledge is one of the basic reasons, because most of the people of our country are not highly educated so they don't know the terms like biodiversity. So awareness campaigns in this regard can be initiated for common man. Media can play its role in this regard and that could be highly appreciable and positive activity unlike other irrelevant news going on daily. Without knowing the circumstances we are damaging the biodiversity. The fear fact is this that biodiversity and our survival is directly related so if biodiver-

species are reported as endangered species or threatened species that are at the risk of extinction or may get extinct in near future. Keeping in view of the current scenario we must think about it that we are also a species and if biodiversity loss continues we will suffer as well. Therefore, it is important to educate people on living in equilibrium with the environment. It is also important to make sure that the government is making laws that will ensure biodiversity for the future and not focus on shortsighted eco-



on biodiversity. The basic knowledge regarding biodiversity must be given at basic level. People should aware of environmental issues and their responsibilities towards the

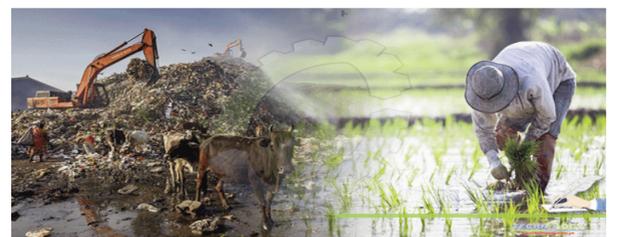
sity decreases eventually our chances of survival will be reduced as well. Several species of plants and animals are becoming extinct gradually. Many plant and animal

nomics. If humans become extinct, it will likely be a result of their own action or lack of education and positive attitude towards environment.



Ammara Saeed

Water Management Has Been Considered As One Of The Methods That Can Be Used To Decrease Methane Emissions From Flooded Rice Conditions. Due to periodic drainage oxidative conditions can be improved resulting in the promotion of root activity, increased soil bearing capability as it introducing oxygen into the soil and reducing methane production



Reducing Methane Emissions In Paddy

Water Management Has Been Considered As One Of The Methods That Can Be Used To Decrease Methane Emissions From Flooded Rice Conditions.

"In the 21st century one of main issue in science is climate change. Rice is main source in agriculture in methane production." One of the main issues in science and technology in the 21st century is climate change which is due to numerous factors contributing to it. A long-lasting argument is on sources that are responsible for climate change. In the light of scientific researches, many man-made activities are contributing to greenhouse gas emissions including carbon dioxide, nitrous oxide and methane.

The agriculture sector is contributing 20% to greenhouse gases on a yearly basis contribution. Soil is considered to be a sink of these gases so to mitigate or reduce the emissions strategies are to be developed. In global warming, methane has 25 times more capability than carbon dioxide because it absorbs more heat. Methane is one of the major causing global

warming as its concentration is increasing by 1.8 ppm over 300 years.

Sources of methane emission from Agriculture
Rice field
Crop residues burning



Livestock rearing
Manure management
In global food, security rice is playing a vital role. It is being grown in 114 countries around the globe in diverse climates and ecosystems. Rice is the staple food for half of the people and demand is projected to be increased by 28% up to the year 2050. Wetland rice agriculture is an important source of methane emission and is contributing 20-

26% to global climate change.

Three key functions are to be related to methane emissions in rice which includes:

Aerenchyma in rice causes methane to escape into the air
It also provides the substrate

for methane productions by methanogens

Oxidation of methane in the rhizosphere by supporting oxygen counter-transport through aerenchyma system
STRATEGIES TO METHANE EMISSIONS IN PADDY
Soil Additives

Soil amendments such as sulphate containing amendments including ammonium sulphate fertilizer and gypsum could be

an effective option to reduce methane emission from the rice field.

This approach however can not reduce up to 100% but it is often recommended in such conditions. the mechanism

behind this is due to the presence of sulphate both methaneproducing bacteria known as methanogens and sulphate reducing bacteria will compete

for the same substrate which is hydrogen+ carbon dioxide or acetate used by Methanogens for methane productions and will lead to a reduction to methane emissions. Sulphate reducing bacteria is more com-

petent than methanogens so this competition will lead to the reduction of methane emission from paddy.

Another soil additive that could be used is nitrification inhibitors including acetylene and nitrapyrin known to have the potential of inhibiting nitrifiers, methanogens and methane oxidizers. Controlling methane emission by controlling straws in addition to rice flooded condition is also an approach. As decomposition of these straw produces methane. By making sure that straw does not decay in the flooded condition the growth of methanogens could be discouraged. The addition of organic amendments will enhance aeration in the soil so it is also advised to add with continuous removal of weeds from rice flooded conditions as weeds are investigated to be the source of methane production.

Endophytic Bacteria
Endophytic microorganisms such as methanotrophs have been found promising in mitigating methane production in crops other than rice. This is due to the ability of methanotrophs to metabolize methane by biological oxidation.

Water Management

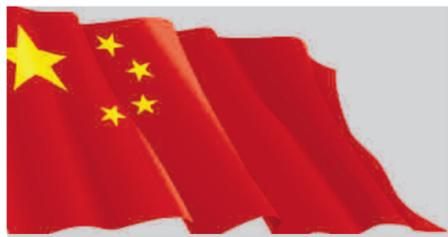
Water Management Has Been Considered As One Of The Methods That Can Be Used To Decrease Methane Emissions From Flooded Rice Conditions. Due to periodic drainage oxidative conditions can be improved resulting in the promotion of root activity, increased soil bearing capability as it introducing oxygen into the soil and reducing methane production.

Breeding Approaches
Rice varieties obtained by breeding for best quantities with low methane production is also a mitigation option. In general,

it could be said that the more days the rice crop remain in flooding condition the more will be methane production so by shifting to short-duration varieties from long-duration varieties the methane emissions could ultimately be reduced up to 25%.

Conclusion This article summarizes all the possible ways of production and escape of methane into atmosphere contributing to climate change.

The production of methane is contributing to global warming which is warming the climate. In Agriculture rice is considered main source and can be reduced by various strategies.



China's Deepfake Tech Aims To Prevent Misuse Of Technology

The regulations stressed the responsibilities of deepfake providers as well as their users, to include prohibiting illegal acts by using the technology.

China's first-ever set of provisions to regulate the use of deepfake tech officially take effect on Tuesday, with the aim to prevent the misuse of this technology while adapting to the rapid development of artificial intelligence (AI) industry.

Introduced jointly by the Cyberspace Administration of China, the Ministry of Industry and Information Tech and the Ministry of Public Security, the regulations stress that synthetic videos and photos made using deep synthesis tech, commonly known as "deepfake," must be "clearly labeled" in order to prevent public confusion.

The regulations stressed the responsibilities of deepfake providers as well as their users, to include prohibiting illegal

acts by using the tech, setting up a review system and identifying user information.

"The specialized regulation issued by China for deep synthesis services has and will continue to have a far-reaching impact on the healthy development of internet information services," said Meng Dan, director of the Institute of Information Engineering, Chinese Academy of Sciences.

Deepfake technologies have made rapid leaps in recent years where techniques including speech synthesis, face-changing, and even digital humans can be a dream come true thanks to that. Simply by downloading a face-changing APP, users can easily replace the face of a famous actor with their own in an image or even an entire scene from a movie in just a few seconds.

However, "from now on, just like advertisements in China,

people will see a small label in the corner of these videos and images, which is a good thing to avoid confusion and crime. This shows that China is doing its best to keep up with the incredible development of the internet and the AI industry," Ding Daoshi, a veteran analyst in the AI sector, told media.

Other than deepfake, AI art and AI robots are also covered in the new regulations.

Lots of problems have occurred before when it comes to face-changing technology. In 2019, ZAO, an AI face-changing application, went viral after people began to upload photos of themselves as the protagonist of various films.

However, three days after the app was released, the company behind ZAO was investigated by the Ministry of Industry and Information Technology for allegedly collecting facial data contrary to laws and regula-

tions and the app was taken down.

In addition to such apps, many research institutes and companies are also conducting research on deep synthesis technology. In early 2022, a team from the University of Science and Technology of China were awarded for their deepfake video generation methods at the China Artificial Intelligence Competition.

In response to concerns that the new regulations may dampen the rapid expansion experienced by the AI market, experts say that the regulations will not hinder the progress of China's technology industries. "What China's top cyberspace regulators are doing now is to restrain bad behavior and to prevent criminal acts. Only by stopping the wrongdoings can those good companies seek further development and avoid unnecessary disputes...[Read More](#)

Zhejiang Province Organizes Special Teams To Fight COVID Infections



During the upcoming Spring Festival, Zhejiang will pay special attention to children, the elderly, and people with underlying diseases, according to Li.

Zhejiang Province has organized thousands of special teams to distribute daily necessities and medical supplies to residents in rural areas to combat the recent surge in COVID-19 infections.

During a recent news conference, Li Qiang, an official with the Zhejiang provincial party committee's organization department, stated that over 10,000 teams had been assembled. More than 300,000 social workers, Party members and community cadres, delivery workers, volunteers, and others make up the teams.

In addition to assisting with groceries and sending medical supplies to children, people with underlying diseases, people with limited mobility, and those receiving home-based treatment in Zhejiang's rural areas, the teams provide other services to residents, particularly seniors, such as home care and companionship, according to Li.

During the upcoming Spring Festival, Zhejiang will pay special attention to children, the elderly, and people with underlying diseases, according to Li, and will seek to ensure the supply of daily necessities as well as meet people's needs for medication and medical treatment. Over 80,000 villages and communities in the province have so far established special teams to cover their geographical grids. Members of the teams are assigned to assist residents in dealing with problems in each grid...[Read More](#)

China Efforts To Ensure Supply Of Vegetables Amid Cold Wave



Ministry of Agriculture and Rural Affairs urged departments at all levels to prioritise preparations for the impact of the cold wave.

As a cold wave is expected to hit most of the country, China will increase efforts to ensure stable production and supply of vegetables as well as prevent weather-related losses.

In a circular issued on Wednesday, the Ministry of Agriculture and Rural Affairs urged departments at all levels to prioritise preparations for the impact of the cold wave as the

Spring Festival holiday approaches and vegetable consumption enters its peak season.

The ministry emphasised the importance of stepping up precautions against the cold wave and closely monitoring weather changes.

Farmers in northern regions should focus on solar greenhouse maintenance and reinforcement, as well as snow clearing, while those in the Yangtze River basin and southern China should improve greenhouse heat preservation, according to the circular...[Read More](#)

Chinese Satellite Internet Service Capable To Compete Starlink

Elon Musk's Starlink satellite internet service is a massive undertaking, with over 3,000 satellites in orbit providing internet access to customers all over the world.

Elon Musk's Starlink satellite internet service is a massive undertaking, with over 3,000 satellites in orbit providing internet access to customers all over the world. However, in recent months, a Chinese competitor has emerged, backed by Beijing, with ambitions that extend far beyond China's borders.



After years of stalled plans, China's satellite internet vision became clear in 2021 when Bao Weimin, a director of China Aerospace Science and Technology Corporation (CASC), confirmed that efforts were being centralised under an entity known as "Guo Wang," or the national network.

Despite the fact that a few proposals had previously been floated by private and state-backed Chinese companies for internet beaming from satellites in low-Earth orbit—the zone occupied by Starlink—no large-scale effort materialized.

The International Telecommunication Union then received a filing that made everything clear. The request, which sought approval for nearly 13,000 satellites on behalf of a Chinese company called "GW," revealed the Chinese space industry's global vision for a global broadband satellite internet network.

Despite the plans for a Chinese satellite internet service large enough to compete with Starlink, four industry experts told Rest of the World that, unlike Starlink, China's global satellite...[Read More](#)

Video Link Meeting Held To Discuss Medical Treatment In China



"I don't see a significant difference between the variant circulating in China and those circulating elsewhere," said Leo Poon Lit-man of the University of

Hong Kong. According to the National Health Commission (NHC), Chinese health authorities and the World Health Organization

(WHO) met via video link on Wednesday to further discuss the latest situation in epidemic prevention and control and medical treatment in China, the latest move to strengthen technical communication on the epidemic.

According to the commission, the two sides discussed medical treatment, virus mutation monitoring, and vaccination strategies, and agreed to maintain communication between experts on technical issues in China. The meeting was attended by health officials and experts, including traditional Chinese medicine (TCM) specialists. At a previous press conference...[Read More](#)

Beijing Intends To Create New Wave Of High Quality Development In 2023



Beijing is targeting new momentum in higher-level reform and opening up, science and technological innovation, and high-quality development in 2023.

Beijing is targeting new momentum in higher-level reform and opening up, science and technological innovation, and high-quality development in 2023, according to Yin Yong, the acting mayor of Beijing, in an interview with Xinhua.

"The city will seize the opportunity presented by the construction of the Integrated

National Demonstration Zone for Opening Up the Services Sector and the China (Beijing) Pilot Free Trade Zone, introduce a 2.0 construction plan for the demonstration zone, promote iterative upgrading of the country's business environment, and construct a high-level institutional bridgehead for opening up," Yin said. Beijing will focus on serving China's opening-up and development better, and continue holding the China International Fair for Trade in Services, the Zhongguancun Forum...[Read More](#)

China's All In One App Weixin Reveals Plan For Industrial Digitalization

According to report presented at this year's Open Class Pro, the volume of online transactions in several fields within the Weixin ecosystem has increased for two years in a row.

China's all-in-one app Weixin has revealed its 2023 strategy for assisting industries in recovering through the use of digital tools. Reporter Xu Hua went online to the annual event to see what the platform could bring as China opens its borders to tourists and businesses.

It's an app that tech titans like Elon Musk and Mark Zuckerberg are interested in. With billions of active users each month, the Weixin app allows users to text, pay, shop, network, livestream, and search for services. And now, the platform's bold future plan will centre on capitalising on new opportunities in industrial digitalization.

LU HAO, Tencent's General Manager of Retail Industry, WeCom Team Weixin Business Group "Tencent, which has provided this digital tool, will always stand by each enterprise in all walks of life to promote digital transformation and assist all enterprises in achieving larger business goals."

According to a report presented at this year's Open Class Pro, the volume of online transactions in several fields within the Weixin ecosystem has increased for two years in a row.

CMO BAI ZHIWEI, Tongcheng & Elong "Since the outbreak of the epidemic three years ago, society has rapidly carried out a round of iteration. The public is increasingly shifting from offline to online to make bookings, and the channels are more diversified than before."

Weixin's Internet hospital mini-programs are one example. Every day, medical institutions in China provide over 25 million

consultations to Weixin app users. Given this, industry leaders are now forming long-term visions.

Director of Guangdong Second Provincial General Hospital, Qu Hongying "In the future, the metaverse hospital will be an important direction for exploration of smart hospitals." "The metaverse can be used in many aspects of medicine, including treatment, surgery, and training."

Shenzhen's XU HUA "Experts say with China's easing of COVID restrictions, recovery across all walks of life will pick up pace earlier...[Read More](#)

