Regd No. MC 104

FORTNIGHTLY
ENGINEERING REVIEW
The voice of engineers

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Vol. 50 No. 01 | January 1-15, 2025 | Ph:+92-21-32215961-2
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Government Unveils 'Uraan Pakistan' 5-Year Economic Transformation Plan

On the eve of the new year, the federal government announced its ambitious plans for Pakistan's economic future. The government aims to achieve sustainable GDP growth of 6% by 2028, create one million jobs annually, attract an additional $10 billion in private investment each year, and reach an export target of $60 billion by FY2028.

Prime Minister Shehbaz Sharif officially launched the National Economic Transformation Plan 2024-2029, named Uraan Pakistan: Homegrown National Economic Plan, on Tuesday. This five-year initiative is designed to tackle Pakistan's key economic challenges through a framework known as the "Five Es": Exports, E-Pakistan (digital growth), Equity and Empowerment, Environment, Food and Water Security, and Energy and Infrastructure.

Earlier in April, Prime Minister Shehbaz had emphasized the need for a comprehensive strategy to double exports. He urged the Ministry of Trade to develop an export strategy in collaboration with successful entrepreneurs and key stakeholders.

The unveiling ceremony, held in Islamabad, was attended by Finance Minister Muhammad Aurangzeb, Planning Minister Ahsan Iqbal, and Deputy Prime Minister Ishaq Dar.

In his address, PM Shehbaz commended the ministers for their presentations and acknowledged the challenges faced by the government in the past nine months. He noted that despite difficulties, the government had managed to achieve macroeconomic stability, although he emphasized that this was only the beginning of a long journey that would require hard work and sacrifice. He called for unity in the effort to revive Pakistan's economy.

The Prime Minister also addressed the government's decision to enter into another program with the International Monetary Fund (IMF), acknowledging the reasons behind it, such as the financial losses of state-owned enterprises, the circular deficit, and corruption. He stressed the need to make inputs cheaper, encourage investment, and remove import restrictions to foster competition and efficiency, ultimately boosting export-led growth. He added that exports were essential for earning foreign currency and that the plan focused heavily on achieving this goal.

Further, PM Shehbaz highlighted the need to promote the digital and technology sectors, especially artificial intelligence, and called for political harmony to move forward with the privatization of state-owned enterprises, referencing past setbacks such as the unsuccessful privatization of Pakistan International Airlines (PIA).

The Prime Minister set a goal of attracting $10 billion in annual foreign investment, acknowledging that this was a challenging target. However, he emphasized that local investment must be facilitated first to attract foreign investment.

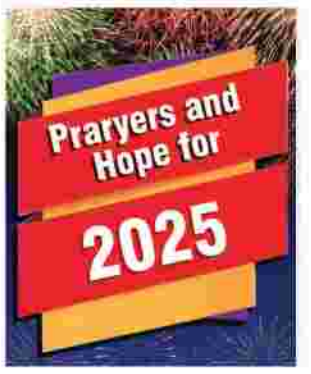
Foreign Minister Ishaq Dar echoed these sentiments, urging an end to petty politics for Pakistan to achieve progress. Reflecting on the nation's decline from the 24th to the 47th largest economy, Dar expressed optimism that Pakistan could still join the G-20 group of nations, stressing that the goal was achievable if the country remained focused.

Dar also noted the importance of collective ownership of the economic roadmap for long-term success.

Finance Minister Muhammad Aurangzeb outlined the key pillars of the plan. These include stimulating private investment to create jobs and improve living standards, boosting exports as a driver of productivity, and optimizing public finances for stability and sustainable growth. Aurangzeb emphasized that the implementation of these measures was crucial, not just the planning itself. He pointed out that while India made significant progress under the leadership of Manmohan Singh, Pakistan had not achieved comparable success over the same timeframe.

Aurangzeb also introduced a new tax policy unit, which will operate independently to focus on policy, while ensuring better tax collection and plugging tax leakages through data analytics. This move aims to accelerate privatization efforts and create continuity in tax policies.

The government's ambitious goals include achieving 6% annual GDP growth by 2028, generating one million new jobs each year, attracting $10 billion in annual private investment, and reaching $60 billion in exports by FY2028. Aurangzeb emphasized that while Pakistan has always known the policies it needs, the real challenge lies in implementing them, and this plan will be supported by a robust implementation framework.



The government's message was clear: achieving economic transformation requires collective effort, long-term commitment, and the successful execution of reforms that have long been overdue. - ERMD

Global Experts Collaborate at ICAMPE-2024 to Drive Innovation in Engineering

The 4th International Conference on Advanced Materials and Process Engineering (ICAMPE-2024), held on December 18-19 at NED University of Engineering and Technology, Karachi, concluded with remarkable success. The event, organized by the Department of Chemical Engineering, brought together leading researchers, academicians, and industry professionals to discuss groundbreaking advancements in materials science and sustainable development. The conference was organized in collaboration with the Institute of Engineers Pakistan (IEP), ASHRAE Pakistan Chapter, and the Higher Education Commission (HEC).

The conference opened with speeches by Mr. Nasir Hussain Shah (Energy Minister) and Prof. Dr. Sarosh Hashmat Lodi (Vice-Chancellor, NEDUET), who emphasized the importance of innovation and research in fostering an environment of growth and development for society.

The conference featured insightful keynote addresses from international experts, including Prof. Dr. Antonio Feteira (Sheffield Hallam University, UK), Dr. Salman Raza Naqvi (Karlstad University, Sweden), and Dr. Yasemin Tabak (TUBITAK, Turkey). The talks explored topics such as functional nanomaterials, sustainable energy solutions, and innovative approaches to engineering challenges. National speakers such as Prof. Dr. Naved Ramzan (UET Lahore), Dr. Younus (UET Peshawar), Dr. Mureed Hussain (COMSATS), and Dr. Aqeel Bazmi (COMSATS) highlighted the impact of national research on the international stage and its global recognition.

Participants were captivated by over a dozen technical sessions showcasing research on advancements in materials science, chemical engineering, environmental remediation, and nanostructured catalysts. Notable presentations included the application of recycled materials in industrial processes and strategies for optimizing energy storage in dielectric ceramics. Industry leaders, such as Mustafa Jaffar (CEO, Dynea Pakistan Ltd.), emphasized the importance of bridging the gap between academic research and industrial applications, particularly in the pursuit of sustainability. Representatives from Lotte Pakistan and other organizations also delivered insightful talks on technology, industry, and the role of young engineers.

The conference celebrated research excellence with the presentation of the Chairman IEP Medal for Best Paper. Certificates and mementos were awarded to outstanding contributors, fostering a spirit of innovation and collaboration among attendees.

Closing

In his closing remarks, Engr. Prof. Dr. Muhammad Tufail (Pro-Vice Chancellor) expressed pride in the university's role as a hub for engineering innovation. He highlighted the event's success in sparking meaningful dialogue and collaborative opportunities between academia and industry. The contributions of collaborators IEP, ASHRAE Pakistan, and HEC were pivotal in making the conference a success, with the media partner, Engineering Review, providing extensive coverage of the event. With participants leaving inspired by the wealth of knowledge shared, ICAMPE-2024 reaffirmed its place as a premier platform for fostering advancements in sustainable materials and processes. – Karachi: Report by Dr. Saad Nadeem, Assistant Professor, Chemical Engineering Department, NEDUET.

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Islamabad Seeks to Attract Foreign Investment with Quick Fixes for Rashakai SEZ Challenges

Federal Planning Minister Ahsan Iqbal has urged authorities to address the challenges related to land acquisition and power tariffs faced by China's Century Steel Group, the primary investor in the Rashakai Special Economic Zone (RSEZ) in northwest Pakistan. This call comes as Islamabad intensifies its efforts to attract foreign investment in key sectors to strengthen the economy.

The Rashakai SEZ, which spans 1,000 acres, is a flagship project under the China-Pakistan Economic Corridor (CPEC), a multi-billion-dollar initiative aimed at connecting Pakistan's Gwadar port with China's Xinjiang region. However, Century Steel Group has expressed growing frustration over delays in finalizing a land purchase agreement and securing a reliable power supply for its steel mills in the zone. This frustration has been voiced over the past couple of months.

Minister Iqbal recently met with Century Steel Group officials to discuss these issues. During the meeting, Iqbal instructed Pakistan's Board of Investment (BoI), the Power Division, and the Federal Board of Revenue (FBR) to swiftly address the problems hindering the development of the industrial zone. According to the Associated Press of Pakistan (APP), Iqbal specifically directed the Khyber Pakhtunkhwa Economic Zones Development and Management Company (KPEZDMC) to finalize land prices for the company as soon as possible.

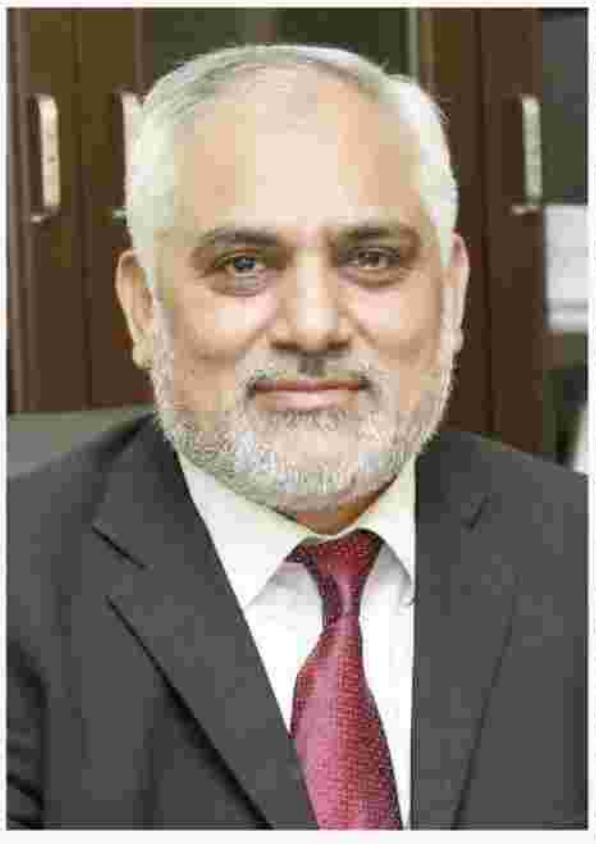
KPEZDMC officials explained that Century Steel had requested discounted land rates. A consultant for Century Steel highlighted that, in China, land is often provided for free in SEZs, urging Pakistan to consider similar incentives.

In response to concerns about power tariffs, Iqbal instructed relevant authorities to ensure that power distribution in the RSEZ is fairly priced and that the zone receives electricity at rates similar to those of regular consumers. Additionally, he asked the FBR to conduct a consumption survey in the region to accurately estimate power demand in the area.

Pakistan is actively seeking investment from China and other regional partners, particularly from the Middle East, as it strives to reduce its dependence on foreign aid and stabilize its economy. Last year, the country narrowly avoided a sovereign default by securing a $3 billion bailout from the International Monetary Fund (IMF). Since then, Pakistan has made some economic improvements, and Finance Minister Muhammad Aurangzeb has emphasized the importance of long-term financial reforms and international investment for continued economic stability. -- ERMD

Engr. Haider Ali Khan Elected President of Pakistan Engineers Forum

Members of Pakistan Engineers Forum (PEF) all over the country have elected Engr Haider Ali Khan as President of PEF for the term 2024-2027.



Engr Khan, a seasoned engineer and educator, brings a wealth of experience to the role.

About Engr Haider Ali Khan

Engr Khan held the position of President of PEF Central Punjab and contested for the seat of Vice Chairman of PEC (Punjab) in the recently held elections on August 18, 2024. His impressive track record includes being elected as a member of the PEC governing body in 2007, 2015, and 2018. He also previously served as President PEF for one term before Engineer Al Kazim Mansoor took office in 2020.

Background and Experience

Hailing from Kasur, Engr Khan studied at Govt. College Lahore and the University of Engineering and Technology Lahore, where he earned his BSc in Civil Engineering in 1990. He began his career working on projects in Saudi Aramco and later held construction management roles at ICI Pakistan Limited and Babcock & Wilcox Limited. Engr Khan has been engaged in technical and engineering education, serving as Founder Principal of the College of Engineering at Lahore Leads University since 2011.

Election Details

The Central Executive Council of PEF nominated Engr Abdul Saboor Zaman (Karachi), Engr Haider Ali Khan (Lahore), and Engr Muhammad Naeem (Peshawar) as candidates for the upcoming term. Members of PEF across Pakistan participated in the online election, which utilized a unique code for voting. Engr Haider Ali Khan emerged as the elected President. -- PR

Schneider Electric Conducts Home & Distribution Seminars Across Pakistan

Schneider Electric Pakistan hosted a series of impactful technical sessions across Karachi, Lahore, and Islamabad, reaching 350+ industry professionals, including valued customers, retailers, consultants, and contractors.

The esteemed experts from KSA joined forces with the local team to deliver comprehensive training on the latest wiring devices and Home & Distribution solutions.

The sessions were designed to enhance the customers' knowledge and skills. Moreover, the speakers highlighted Schneider Electric Pakistan's business landscape and offerings in this sector, emphasizing the need to enhance the distributor infrastructure and expand the Schneider Electric portfolio to drive long-term growth.

The Country President for Schneider Electric Pakistan, Humayun Akhlaq said: "By sharing insights into the latest trends, best practices, and product offerings, the Schneider Electric team in Pakistan aims to empower customers to drive sustainable growth and achieve business excellence." – Karachi: PR

The Power of Materials Engineering: Key Takeaways from DUET's 2nd International Conference

The Department of Metallurgy and Materials Engineering at Dawood University of Engineering and Technology (DUET), Karachi, successfully hosted the highly anticipated 2nd International Conference on Blurring the Barriers: The Interdisciplinary Value of Materials Engineering on December 17–18, 2024. This landmark event served as a dynamic platform for exchanging ideas, showcasing cutting-edge research, and fostering collaborations between researchers, industry leaders, and academics.

The conference aimed to highlight the transformative potential of materials engineering in various domains. It emphasized the critical importance of interdisciplinary approaches in addressing global challenges and advancing technologies in sectors such as healthcare, architecture and construction, green energy, the circular economy, and aerospace. This two-day conference was dedicated to promoting engagement, networking, and collaboration among researchers from renowned universities and professionals from diverse institutions, encouraging the exchange of knowledge and technology for mutual benefit. Over the decades, the field of materials engineering has improved the well-being of people through innovative systems. These achievements are a testament to the multidisciplinary, pragmatic, and systems-oriented approach that characterizes the field.

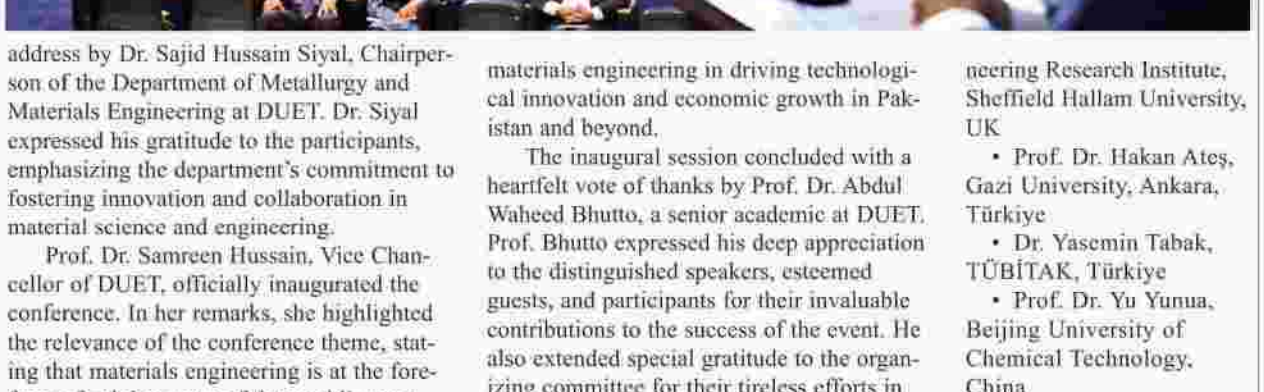
The event opened with a welcoming address by Dr. Sajid Hussain Siyal, Chairperson of the Department of Metallurgy and Materials Engineering at DUET. Dr. Siyal expressed his gratitude to the participants, emphasizing the department's commitment to fostering innovation and collaboration in material science and engineering.

Prof. Dr. Samreen Hussain, Vice Chancellor of DUET, officially inaugurated the conference. In her remarks, she highlighted the relevance of the conference theme, stating that materials engineering is at the forefront of solving some of the world's most pressing challenges. She further emphasized the university's role as a hub for interdisciplinary research and knowledge sharing.

The keynote address was delivered by Prof. Antonio Feteira, a renowned scholar from the Materials and Engineering Research Institute at Sheffield Hallam University. Prof. Feteira captivated the audience with his insights into recent advancements in materials science, particularly focusing on sustainable and high-performance materials that are revolutionizing industries. His address set a compelling tone for the two-day event.

Adding to the thought-provoking discussions during the inaugural session, Prof. Dr. Hakan Ateş from Gazi University, Ankara, Türkiye, shared valuable insights on the integration of advanced materials into emerging technologies. Prof. Ateş emphasized the importance of fostering international collaborations and highlighted how innovative materials are critical in addressing modern industrial and environmental challenges.

The Guest of Honor, Barrister Murtaza Wahab, Mayor of Karachi, praised DUET's initiative in organizing such a significant event. In his address, Barrister Wahab spoke about the importance of breaking down silos and fostering interdisciplinary approaches to problem-solving. He commended the organizers for their vision and stressed the role of materials engineering in driving technological innovation and economic growth in Pakistan and beyond.



The inaugural session concluded with a heartfelt vote of thanks by Prof. Dr. Abdul Waheed Bhutto, a senior academic at DUET. Prof. Bhutto expressed his deep appreciation to the distinguished speakers, esteemed guests, and participants for their invaluable contributions to the success of the event. He also extended special gratitude to the organizing committee for their tireless efforts in making the conference a reality.

The two-day conference featured an impressive lineup of experts and panelists, including five international speakers from leading universities and research institutions around the globe, nine national speakers who presented diverse perspectives and groundbreaking research in material science and engineering, and twenty-four panelists representing both academia and industry. These panelists engaged in stimulating discussions on the interdisciplinary applications of materials engineering.

The plenary sessions focused on key themes, including:

- Materials Engineering in the Healthcare Sector
- Materials Engineering & Architecture/Construction Industry
- Materials Engineering & Green Energy for a Sustainable Environment
- Materials Engineering & the Circular Economy

In the technical presentations, scholars and industry experts presented over 50 research papers covering a diverse range of topics, from nanotechnology and advanced composites to solid-state electrolytes and smart coatings. Moreover, panel discussions covered future trends in materials engineering and strategies to promote interdisciplinary collaborations.

The conference welcomed a distinguished lineup of international and national speakers, showcasing expertise from renowned institutions worldwide. These included:

- Prof. Dr. Antonio Feteira, Materials and Engineering Research Institute, Sheffield Hallam University, UK
- Prof. Dr. Hakan Ateş, Gazi University, Ankara, Türkiye
- Dr. Yasemin Tabak, TÜBİTAK, Türkiye
- Prof. Dr. Yu Yunua, Beijing University of Chemical Technology, China
- Dr. Tulio Hallak Panzera, Federal University of São João del Rei (UFSJ), Brazil

National speakers included:

- Prof. Dr. Irshad Hussain, LUMS, Lahore
- Prof. Dr. Mohsin Ali Raza, University of the Punjab
- Dr. Zakir Hussain Dahri, DG, Agriculture Sindh
- Prof. Dr. Niaz Ahmed Bhutto, IBA Sukkur
- Dr. Muhammad Atiq-ur-Rehman, Institute of Space Technology, Islamabad
- Dr. Muhammad Zahir Iqbal, GIK
- Dr. Sajjad Ali Mangi, MUET, SZAB Khairpur

Key luminaries from materials engineering and industries such as healthcare, architecture, green energy for a sustainable environment, circular economy, smart technology, agribusiness, and avionics also attended.

The event was honored by the presence of Prof. Dr. Atta-ur-Rahman, a renowned educationist, as the Chief Guest, and Prof. Dr. S. M. Tariq Rafi, Chairman of the Sindh Higher Education Commission (Sindh HEC), as the Guest of Honor. Commodore Nauman Rafique, Director General, Pakistan Navy Concept and Doctrine Development Center, also graced the occasion.

The event concluded with a vote of thanks from Prof. Dr. Samreen Hussain, Vice Chancellor of Dawood University of Engineering and Technology. She expressed heartfelt gratitude to the distinguished guests, speakers, participants, and organizing team for making the conference a resounding success.■

A Quick Look at 2024

Contesting for the last time; Oldies should leave the lot, PEC Chairman PEC advices former chairmen

By Manzoor Shaikh

Chairman Pakistan Engineering Council (PEC) Engr. Muhammad Najeeb Haroon is determined to contest PEC Elections 2024 for the second term and expects that his key allies—National Engineers Association (NEA), led by Engr. Abdul Qadir Shah and

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Prayers and Hope for 2024

Tampering with Indus River System Authority worries provinces

By Manzoor Shaikh

Be it politics or the economy, mishandling of federal principles is d... understanding the lessons that the nations around the world have drawn from their centuries-old history otherwise neither had Prime Minister Shehbaz Sharif withdrawn the notification of the Indus River System Authority (IRSA) chairman after stiff resistance from Sindh. But mind it, the amendment to the IRSA Act is still intact.

Chief Minister Syed Murad Ali Shah made a telephone call to the Prime Minister and conveyed ... very strong mo... ister for Water and Power, also spoke on a point of order in the National Assembly and raised concerns on the appointment of a retired bureaucrat as Chairman IRSA. "On the very first day, if we start encroaching upon

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انجینئرنگ ریویو فورم: پاکستان میں بجلی بحران کا حل

A Fresh Perspective on PEC Elections 2024

Can SC Directives Improve Public Sector Universities?

By Manzoor Shaikh

Supreme Court's order for clearing the mess in the country's public sector universities regarding temporary postings against tenured positions may with the law have to bear the brunt of ruling circles and face stiff resistance from within the institution.

"There are many factors involved that have led the public sector universities to their present condition," says a retired professor who requests anonymity. ... chancellors ... clan in the area where his university is located or a close aide of someone connected to the appointing authority in the respective province. In ... candidates' ... These ... establ...

Inside the nest of Pakistani en...

Let's have a look at ex... upgradation of the re...

...haikh ...t of the ...term ...e eleva... ...or the ...Engi... ...PEC) ...nood ...t the ...mong ...upgradation of the registrar were lawful and in accordance with the Restructuring Plan of ... by the 44th meeting of the Governing Body of the council on December 18, 2022, after ... senior vice chairma... four vice chairme... provinces."

...unds Refuse to Heal as ...C Embarks on a New Three-Year Journey

...aikh ...er ...ngr. ...e ...ngi... ...EP) ...as ...te of ...ior ...n- ...us ...ive ...ed ...in ...s ...xperi... ...lwarts ...man ...such ...ffer... ...rought ...d into ...ne ...quite ...weeks ...s ...l as the ...cial ...overn... ...s about ...tion ...ystem linked with the PEC polling. The system, which failed around 11 a.m., could not be restored until 3:30 p.m. As a result, a significant number of voters returned home, and it is unknown how many decided to return after the Election Committee extended the polling time to 9 p.m.

Although NADRA did not provide a clear reason for this lengthy glitch, the disruption cast doubt on the credibility of the elections. Due to its duration, engineers in charge considered postponing the elections for a week, but common wisdom and the nature of the elections made this impractical.

Ironically, no one in the council or NADRA has come forward with an explanation for the glitch, which ... Salim Qureshi is significa... for several reasons. First, ... group, which he claims to ... the largest party of engine... in Pakistan, faced a setbac... Second, he is well-entrenched in Punjab, the largest province. Third, his group is believed to have strong ties with the ruling PML-N in the province. Additionally, this time, he and his group employed a different campaign strategy similar to political parties, using multiple tools such as election songs and slogans to attract voters. His campaign succeeded in creating the perception of being a strong contender.

But the question remains: why did he lose despite these factors? "Engr. Qureshi failed to recognize the dwindling political support of PML-N in the three years. Both the winners and the losers are analyzing the factors that led to results that left many candidates in an uncertain state

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Engineering an engine... ...e 4th PEC Int'l Deans C... exchange ideas to solv...

...anzoor Shaikh ...4th PEC International ...ans Conference is ...lerway in Karachi, the ...tan's economy with the ...neering as an engine of ...rese... Challenges and Solutions, Emerging Trends in Teaching-Learning & Assessment (TLA), Engineering Practice and Ethics, Cutting-edge and inter-disciplinary synergies, Realigning of internship/ practicum practices during education and Digital Transformation & Business Process Re-Engineering. The most which will come out of the decla... first on February ... October 14, 2019 ... 2019. This moot, ... of four years was ... variety of reasons ... The conferenc... regards outcomes ... around the world

Economic recovery: Pakistan secures support of Int'l monitory, dev institutions

Global financial organizations including the World Bank (WB), Asian Development Bank (ADB), and International Finance Corporation (IFC) have assured their support for Pakistan's initiatives aimed at economic stabilization through structural reforms, digital transformation, and privatization efforts.

The assurance came during sidelines meetings of Federal Minister for Finance and Revenue Muhammad Aurangzeb, the leader of a Pakistan delegation in the IMF and World Bank-2024 Spring Meetings in Washington DC, with heads and representatives of the global lending institutions.

Talking to WB Group President Ajay ... He underscored the importance of digital technologies to enhance governance and public service delivery and asked the gov... as well as timely investment in critical areas to help improve the domestic revenue mobilization. Both sides agreed on the need ... Ajay Banga assured his full support f... Pakistan's reforms and digitalization pro... grams to stabilize the economy. During a ... meeting with WB Senior Managing Dire... tor Axel Van Trotsenburg, Finance Minis... Aurangzeb discussed the bank's support ... and engagement with Pakistan. The meet... explored the option of maximizing Regio... al IDA resources for development project... in Pakistan including flood-affected area... agreeing to use the story of effective uti... lization of Pakistan IDA resources more ... effectively and benefit from the Knowled... Centre of the bank. The finance minister ... invited the ... to the Pakistan ... visit Pakistan at his earliest convenience.

Muhammad Au...rangzeb, in his meeting with President of Asian Development Bank Masatsugu Asakawa., appreciated ADB's partnership with Pakistan to support its ... the constitutional com... is agreed upon between ...ming units pave a ...oth road to the develop... ...d and prosperity of the ... attempted to change the federal character of the authority. Prime Minister Shehbaz Sharif had to withdraw the ... Chairman IRSA under the controversial amended IRSA Act by the caretaker government was not acceptable to the province. ... ing engineering issues in Pakistan. The objective of the program titled 'ER Forum' is to promote engineering issues and ... ...gaan on 27th February with the collaboration of The Institution of Engineers Pakistan, Karachi Center at IEP Building. The topic was "The Future of Alternate Energy in Pak... (ER) took part in the discussion. Mustafa Habib Siddiqui moderated the discussion. You can watch the discussion on ER's YouTube Channel and ... tnu ntested the group with a wish that any bigger group may come and get it to the victory stand.

The crisis that has gripped NEA, if not here for...

Digital Twin Technology in Enterprise Management: Bridging Physical and Virtual Worlds

Engr. Dr. Muhammad Nawaz Iqbal

Digital twins have become an advanced solution for managing enterprise assets where a physical thing has its digital twin. Digital twins allow enterprises to model a physical system, product, or process in-depth and in real-time, all while achieving better results with fewer errors and greater efficiency. This technology uses information gathered from various sensor characteristics, IoT objects and much more to create real models of actual physical objects, which can be altered or interacted with within the technology platform. Digital twins' application in enterprise management introduces solid fundamentals to address the increased performance improvement rational. Organizations can keep track of asset status continuously, observe a deviation, and employ preventive measures. This cuts the time that machinery takes before it can be used again and in turn increases the lifespan of machinery that are highly crucial. In particular, for manufacturing and logistics industries strongly dependent on highly technical equipment, digital twins offer an affordable approach to maintaining flawless functionality and addressing potential equipment failures.

Another major benefit of digital twins is generated from various dynamic models associated with it, which can simulate scenarios. It provides the enterprises the virtual environment on which they can test out different operational models that would not interfere with the actual operations. For instance, a factory manager can model what a new production schedule will look like or try a new layout of equipments to determine the most efficient flow rate. This capability ensures that business organizations are in a position to respond to new market conditions whenever these are available and make decisions based more on facts than feelings. In supply chain management, digital twins act as a source of a holistic representation of the company's value chain. They give enterprises tools to describe the material flow of products, find out where the problem is, and when demand changes. Real-time integration of information from suppliers, warehouses and distribution channels increases supply system robustness and customer satisfaction. Thus, this approach guarantees that resources be consumed to their optimum; and that any disruptions be addressed before they happen.

As important as in each stage of the product's lifecycle, the applications of digital twins are also impactful in product lifecycle management

as well. Digital twins do not only extend from design and development phase all the way to deployment and even the retirement phase of the product's life. Engineers can also simulate rigid prototypes and learn of structural drawbacks and usage of materials during simulation without physically manufacturing their products. Digital twins, after the product release, can also be used in ongoing monitoring, and if necessary, product updates and customer experiences may be updated to meet their needs.

Digital twins find application in smart cities and relate to areas such as urban planning and management of infrastructure. They serve as a Rest Controller of the city's layout for the city planners to simulate data to make decisions on movement patterns, energy usage and resources. The decision makers of the city can get an idea of how to apply sustainable concepts to improve the standard of living in the different quarters. Another thing that can point to the use of digital twins is the prediction of potential effects of natural disasters and suggested measures. Another sector that greatly profits from using digital twin technology is healthcare. Avatars of the medical devices, the hospital environment, or – even – patients themselves may have a positive impact on health care's quality and on the service's organization. For instance, patient-specific digital twins allow for better estimation of the physical response to various therapeutic measures since each patient is considered a special case. This approach in devising diagnosis, reduces the side effects in a patients treatment process.

In retail specifically, they are transforming the entire experience that a consumer gets or the running of stores. Today retailers have the chance to utilize virtual replicas of stores in order to define the best layouts, evaluate various merchandising scenarios and even determine customers' traffic simulation. Regarding e-commerce, they are useful in forecasting the behavior of consumers and estimating their purchases, controlling stock and providing customization of the advertisements. Such capabilities can help retailers to sustain the forthcoming marketplace challenges successfully.

In energy and utilities industries, digital twins are also helping them manage and improve performance and reduce overall impact on the environment. Utility companies, windmill generators, and solar companies can derive a lot of value from monitoring original equipment buildup and analytics that digital twins offer. In this way, modeling helps stress-test companies and introduces approaches that would help save money and meet environmental standards at the same time. This is a move that is in harmony with the main world trends aimed at using renewable energy and reducing carbon footprint.

Some of the industries earliest to embrace digital twin are the aviation and automotive industries applying it in the design, maintenance and overall operational optimization. All developers of aircraft can perform tests on engines and airframes as well as predict the behavior of their aircraft to guarantee safety. The same way, auto makers leverage digital twin in improving the car design and evaluating the vehicle fleets, in addition to creating the self-driving technology.

Rather, digital twins are also creating positive change in construction and real estate sectors. Virtual models can also be used in demonstrating how well a given structure will be designed structurally, or how energy efficient the building will be once it's in use or how effectively a particular space inside a building will be utilized. As mentioned in the operational phase, the digital twins help the managers of the building to, monitor facility systems, control energy consumption, and forecast maintenance requirements. This not only brings down cost but also results in improved satisfaction levels of the occupants of the premises.

In the given field of education and training, it is used to give realistic learning sensations and simulations. Machineries, facilities or processes can be created or designed virtually to enable trainees handle them real like situations, which of course helps to climate extreme risks. This is especially useful in the fields like the oil and the gas, where mistakes which are made can be disastrous.

With more enterprises integrating the digital twin technology in their operations, issues to do with data security and privacy come to the forefront. Due to the overwhelming number of generated and shared data by digital twins, there are certain risks and threats that have to be considered. It will also be pertinent to use firewalls and other mechanisms like encryption and access control to enhance adequate protection of information within organizations for the sake of ascertaining expected corporate loyalty from stakeholders. To be precise, digital twins can be best and most efficiently utilized only if specialized assistance is sought from engineers, data scientists, and business strategists at the same time. IT vendors, subject-matter specialists, and consumers must work together to get the most out of this technology. In addition, companies have to rely on the infrastructure, which can be incorporated readily and manage the data integration easily for making the enterprises to function effectively in a large scale.

Digital twin technology is already gearing up to revolutionize the concept of the future enterprise management by dealing with duality of the physical and virtual realms. Its effectiveness to give monitoring detail, predictive analysis, and operation effectiveness make it an important tool in many sectors. In the future, the application of digital twins of everything will grow and make it possible for companies to set higher levels of technical advancement, environment preservation, and market prowess.■

Sales Blog for Young Engineers and Entrepreneurs

THINK OUT OF BOX & TAKE THE BULL BY THE HORNS:

Muhammad Tariq Haq | ESL

On a chilly October morning in 1960, a future game-changer, was born in Boston. From the get-go, Reed Hastings was destined to think outside the box and always take the bull by the horns!

Growing up in a family that valued hard work and helping others, he learned that true success isn't just about personal wins; it's about making a difference in the world.

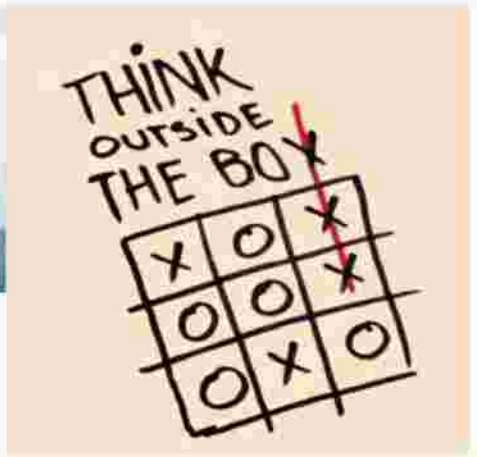
As a kid, Reed loved math. His thirst for knowledge took him to Swaziland, where he spent two eye-opening years teaching math in a rural school. He saw the tough side of life—poverty and resilience. Reed often said, "If you can make it in Africa with just ten dollars, no challenge back home can seem too big." This lesson became the backbone of his entrepreneurial journey.

After returning to the U.S., Reed earned a master's degree in computer science and jumped into the tech world. In 1991, he launched his first company, which found success quickly. But Reed knew that intelligence alone wouldn't make him a great leader. He rolled up his sleeves and worked on his leadership skills.

In 1997, everything changed. After being hit with a hefty late fee for a movie rental, an idea sparked in Reed's mind. He dreamed up a new way to rent movies—Netflix! It started simple: order DVDs online and get them delivered to your door. But Reed's vision was far ahead of this initial idea.g

In 2007, he took a big leap of faith and shifted Netflix from DVD rentals to online streaming. This was a risky move since internet speeds were slow, and streaming was still new. But Reed believed in the future and encouraged his team to think big. To think OUT OF BOX!

Facing tough competition from giants like



Blockbuster, Reed stood his ground. His hard work paid off when Netflix launched its first original series in 2013, turning the company into a global powerhouse.

Reed's journey shows us that everyone has the potential to succeed. It highlights the power of vision, resilience, and taking risks. Success isn't just about having a great idea; it's about having the guts to chase it and the determination to keep going.

Are you, as a young entrepreneur, ready to take the bull by the horns and carve your own path? The world is waiting for you to shine! ■

Pakistan Engineering Council's role in Development of Engineering Profession

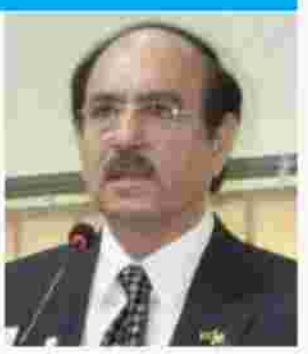
By: Engr. Zahid Arif

Nation progress revolves around the engineering profession. All developed countries have grown because they have properly utilized this strength. Engineer's input is almost everywhere starting from infrastructure, Health equipment's, Hospital's, Heavy-light industry, Information technology including artificial intelligence and so on. Wherever you go you will witness Engineering hand all around. In Pakistan, engineers are at the forefront of these advancements, yet they face challenges that limit their career prospects, financial stability, job opportunities and genuine recognition.

Pakistan Engineering Council, established under the Act of Parliament in 1976,serves as the regulatory authority for engineering education, professional licensing, and industry standards. However, time demands that it should assume role beyond regulation—it has the potential to be a driving force for the betterment of engineers and the engineering profession in Pakistan. As it is uniquely positioned to address these challenges. By adopting a multifaceted approach, it can play a transformative role in reducing unemployment among young engineers, ensuring timely promotions for mid-career professionals, and enhancing the respect and global recognition of engineers.

PEC Role for providing job opportunities

Unemployment Among Young Engineers is currently the major challenge faced by PEC. The rapid expansion of engineering universities in Pakistan has resulted in an increasing number of graduates entering the job market each year. However, the job creation rate in the engineering sector has not kept pace due to financial instability of our country, leading to unemployment and under-employment. Many young engineers are jobless or find themselves working in irrelevant fields, or even worse with absolutely no job opportunity. The present financial condition ofPakistan is also not conducive to enhance development activities which can create jobs in the Country. In such a scenario PEC role become more relevant and important. It's Think Tank must ensure that this professional energy is converted into positive strength by giving it a proper pathway. PEC must hold their



hands and lead them to the relevant area where from they can grow and contribute to their families and country.

• PEC needs to aligning engineering education with Industrial needs as the key reasons for unemployment among engineers is the disconnect between academic training and industry requirements. PEC can bridge this gap by way of curriculum development. It can play its mandated role of Collaborating with universities to design curricula that aligns with current and emerging market/industry trends, updating their knowledge with latest technology development in major engineering disciplines including renewable energy, artificial intelligence, advanced manufacturing, latest infrastructure development techniques etc.

• PEC needs to ensure and

Contd on page 10

Pakistan Engineering Council's role in Development of Engineering Profession

Contd from page 09

encourage Academic institutions so that all engineering programs include mandatory internships or industrial training, equipping students with practical skills and experience before graduation so that they are willingly absorbed by the relevant industry.

• Introducing specialized training programs to address skills gaps in fields like presentation, software development, project management, and sustainable Engineering.

• PEC can serve as a bridge between employers and job-seeking engineers by Launching a National Job Portal. Developing an online platform where engineering graduates can connect with employers, access job postings, and receive career guidance.

• PEC should Organize Job Fairs by Hosting annual or biannual job fairs that bring together engineering companies, government departments, and young professionals

• Mentorship Programs may be organized by Pairing recent graduates with experienced engineers who can provide career advice, technical guidance, and networking opportunities.

• Encouraging engineers to become entrepreneurs, this will not only address unemployment but also drive innovation and economic growth by offeringseed money and grants aspartner with government bodies and private organizations to provide financial support to engineering startups.

• PEC should establish Innovation Hubs by Creating incubation centers in newly constructed buildings at Peshawar, Lahore, Karachi, Quetta and under construction building at Islamabad. where young engineers can develop their ideas into viable businesses with access to resources, mentorship, and market exposure.

• Organize innovation competitions to identify and reward promising ideas in fields like clean energy, robotics, and smart infrastructure.

World markets offers significant potential for employment to young Engineers in particular and mid-career Engineers in general, PEC can help engineers tap these opportunities by ensuringcontinuous Collaboration with International bodies like the Washington Accord,IPEA, FIAP etc. to secure global recognition for Pakistani engineering degrees.

• To ensure that HEIs are Providing Certification Programs which align with international standards, making Pakistani engineers more competitive globally.

• PEC needs to engage with embassies and international engineering councils to create pathways for engineers to work abroad.

Role of PEC for Mid-Career Engineers

PEC should rigorously work with its connections with parliamentarian to secure passage of Bill in National Assembly which has already been passed by Senate for separate Engineering Cadre. This will provide a legal way of job security and in time promotion. PEC-can advocate for the adoption of standardized career progression frameworks in both public and private sectors. Which should include clear promotion Criteria defining benchmarks for promotions based on qualifications, performance, and professional development rather than solely on tenure basis.Introducing competency-based evaluation systems that reward engineers for their skills, knowledge, and contributions.

Focuson Continuing Professional Development (CPD)

CPD programs are not only crucial for mid-career engineers looking to advance their careers but also for young unemployed Engineers. PEC can enhance its CPD program by:

• Expanding Training Opportunities by Offering a wider range of workshops, courses, and certifications in leadership, management, and emerging technologies.

• Digital Learning Platforms through online learning portal should be properly programmed to benefit engineers of all disciplines to have accesses to latest research and developments in the world and is so convenient that engineers can access these CPD programs easily.

• Mandatory CPD for Promotions by way of encouraging organizations to make CPD participation a prerequisite for promotions.

PEC role for rights of Engineer

PEC can play a vital role in ensuring that engineers receive fair treatment and opportunities through negotiation with Employers advocating for policies that ensure fair wages, benefits, and career growth opportunities for engineers.

• Addressing Discrimination in working to eliminate biases and ensure equal opportunities for engineers of all backgrounds, including women and minority groups.

• Creating a Grievance Mechanism byestablishing a platform within PEC where engineers can report workplace issues and seek its remedy.

Role in enhancing Respect and Recognition of Engineers'

To improve the societal perception of engineers, PEC can launch public campaigns highlighting their contributions to national development. These campaigns can focus on:

• Showcasing Success Stories by Sharing inspiring stories of Pakistani engineers who have made significant contributions in fields like infrastructure, technology, and innovation.

• Highlighting National Projects by emphasizing the role of engineers in iconic projects like dams, highways, IT, Agriculture Industry etc.

Engineers for Engineering Job

The main issue of our Country is that no one prefers to do what he is supposed to do or for which he has competence and qualifications. Similarly, Engineers are not engaged on all engineering slots instead these are filled with non-technicaljournalists who have no idea how to guide the organization where he is perform his duties on path of success. Resultantly we are nowhere in the list of developed states of the world despite countries getting freedom much after us are progressing and even donating to poor Nations of the Globe.

PEC must play its role as per its Act to ensure that no Engineering position is occupied by a non-Engineer in the country. This slogan must be converted to reality. If PEC can achieve this, we will surly witness a different nation which progress with pride and dignity.

Continuity of National Honors and Awards

Recognizing excellence within the engineering profession can elevate its status. PEC since 2017 has initiated recognition of Engineers who have performed beyond the scope of their duty and have significantly contributed to the profession for innovation, leadership and social impact in engineering. With exception of 2018 and 2019 this PEC National Excellence Award has been a regular feature which should continue. This will not only motivate high performing Engineers but will also bring a healthy competition among inspiring Engineers to perform even better to be entitle for such Award.

Enhancing Policy Advocacy

PEC should focus on its very crucial mandate of acting as think Tank and advice Government on prioritization of steps of leader which can transform this developing country to a developed Nation. Once proper direction is set by our political leadership our youth wouldn't go aboard for seeking job but return back with their foreign friends and contribute in the development of ourNation. A country full of Natural resources and variety of season with more than sixty percent of its population of youth full of energy and brain can surely excel.

The Pakistan Engineering Council has a pivotal role to play in transforming the engineering profession in Pakistan. By addressing unemployment, creating pathways for career advancement, and enhancing the respect and recognition of engineers, PEC can ensure that the profession thrives. These efforts will not only benefit individual engineers but also contribute to Pakistan's socioeconomic development and global standing.Through strategic initiatives, strong partnerships, and a commitment to excellence, PEC can lead the way in making engineering a respected, rewarding, and globally competitive profession in Pakistan. It is time for PEC to step into its full potential as a catalyst for change in the engineering sector, paving the way for a brighter future for engineers and the nation alike.■

فرمانِ قائداعظمؒ

ایمان ، اتحاد ، تنظیم

آزادی اور قربانی

پس جہاں تک ممکن ہو ہمیں اپنے حریفوں کو سمجھانے کے لئے عقل اور دلیل سے کام لینا چاہیے۔ میں جانتا ہوں کہ دلیل اور عقل ہمیشہ ہی کامیاب نہیں ہوتیں لیکن ہمیں اپنی طرف سے پوری کوششیں کرنی چاہیئے۔ جو لوگ فی الحال لاہور کی قرارداد پاکستان کے خلاف ہیں، ہمیں ان کے دل میں غیر ضروری تلخی پیدا نہیں کرنی چاہیے۔ آخر ہمیں ضرورت ہی کیا ہے؟ مجھے پورا پورا یقین ہے کہ ہمارے یہی حریف ایک نہ ایک دن محسوس کر لیں گے کہ ہندوستان کے انتہائی پیچیدہ مسئلے کا واحد اور بہترین حل قیام پاکستان ہے کہ جس کے قیام کی نظیر پوری دنیا کی تاریخ میں نہیں ملتی۔

(پنجاب مسلم سٹوڈنٹس فیڈریشن۔2 مارچ 1941ء)

آوازِ اقبال

اقبال کا ترانہ بانگِ درا ہے گویا
ہوتا ہے جادہ پیما پھر کارواں ہمارا

تو شناسائے خراش عقدۂ مشکل نہیں
اے گل رنگیں ترے پہلو میں شاید دل نہیں
زیب محفل ہے شریک شورش محفل نہیں
یہ فراغت بزم ہستی میں مجھے حاصل نہیں
اس چمن میں، میں سراپا سوز و ساز آرزو
اور تیری زندگانی بے گداز آرزو
توڑ لینا شاخ سے تجھ کو مرا آئیں نہیں
یہ نظر غیر از نگاہ چشم صورت میں نہیں
آہ! یہ دست جو اے گل رنگیں نہیں
کس طرح تجھ کو یہ سمجھاؤں کہ میں گل چیں نہیں
کام مجھ کو دیدۂ حکمت کے الجھیڑوں سے کیا
دیدۂ بلبل سے میں کرتا ہوں نظارہ تر

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Riazul Hasan (Marhoom)

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Annual Subscription
2,400

Printer
Aslam Zaki, Ayisha Printers,
Eveready Chambers,
Off: Chundrigar Road, Karachi.

FORTNIGHTLY ENGINEERING REVIEW

Member All Pakistan Newspapers Society

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یونیورسٹیوں کی خودمختاری متاثر ہونے کا خدشہ

سندھ کابینہ نے اب یونیورسٹیوں کے وائس چانسلرز کی تقرری کے ضابطے میں تبدیلی کی منظوری دیدی ہے۔ حکومت سندھ کے ایک فیصلے کے مطابق وائس چانسلر کے لیے اہمیت متعلقہ شعبہ میں ماسٹر ڈگری کے ساتھ مکمل پروفیسر شپ کے علاوہ گریڈ 21 کا بیوروکریٹ بھی وائس چانسلر بنے کا اہل ہوگا۔ اس کے ساتھ ہی حکومت نے یہ بھی فیصلہ کیا ہے کہ اب غیر تدریسی عملے کے علاوہ ٹیچرز کا تقرر بھی کنٹریکٹ کا بنیاد پر ہوگا۔ سندھ کابینہ نے یہ بھی فیصلہ کیا ہے کہ تعلیمی بورڈز کے مسائل حل کرنے کے لیے سندھ بورڈ آف انٹرمیڈیٹ اینڈ سیکنڈری ایجوکیشن آرڈیننس میں ترمیم کی جائے گی۔ اب بورڈ کے چیئرمین بھی بیوروکریٹ ہوں گے۔ سندھ حکومت کے یہ فیصلے سرکاری یونیورسٹیوں کی ہیت کو تبدیل کردیں گے۔

جدید تعلیمی نظام میں تعلیم کے مختلف مدارج میں جدید نظام میں پہلا مرحلہ اسکول کی تعلیم کا ہے۔ اسکول میں بچے کی شخصیت بنے کا عمل شروع ہوتا ہے۔ بچہ بنیادی چیزیں سیکھتا ہے۔ اسکول میں استاد اس کا آئیڈیل ہوتا ہے، اور بچے کو زبانوں کے علم کے ساتھ لکھنا اور پڑھنا آتا ہے۔ بچہ میٹرک کرنے کے بعد کالج میں جاتا ہے۔ کالج میں خاصا آزادانہ ماحول ہوتا ہے۔ اب بچہ کو خاصی آزادی ملتی ہے۔ اسکولوں میں بچوں کی تنظیمی صلاحیتوں کو ابھارنے کے لیے کلاس کا نمایندہ CR بننے کا موقع ملتا ہے۔ کچھ اسکولوں میں مختلف نوعیت کی سوسائٹیاں بھی قائم ہوتی ہیں۔ ایک زمانے میں جب طلبہ یونین کا ادارہ موجود تھا تو طالب علم جمہوری رویے سے آشنا ہوتا تھا۔ مختلف طلبہ تنظیموں سے بھی اس کا واسطہ پڑتا ہے مگر اسکول اور کالج میں ابھی طلبہ کو تحقیق کا موقع نہیں ملتا مگر برطانوی نظام تعلیم O لیول اور A لیول میں نصاب جدید سائنسی بنیادوں پر مرتب کیا جاتا ہے، اس بناء پر طلبہ کو مختلف موضوعات پر تحقیق کا موقع ملتا ہے۔

دنیا بھر میں یونیورسٹی کا تصور مختلف ہے۔ یونیورسٹی کے بنیادی فرائض میں تدریس کے علاوہ تحقیق بھی شامل ہے ہی تصور کیا جاتا ہے کہ یونیورسٹی میں طلبہ اور اساتذہ ایک کھلے ماحول میں ہر موضوع پر تحقیق کریں گے اور تحقیق کے ذریعے معاشرے اور ریاست کو نئے نظریات سے آگاہ کریں گے۔ یونیورسٹی کے اساتذہ طالب علموں کے لیے نصاب بھی خود تیار کریں گے اور وقت کے ساتھ اس نصاب میں تبدیلی کی جائے گی۔ اساتذہ اور طلبہ یونیورسٹی کے اداروں میں شامل ہو کر اس کا نظام چلائیں گے۔ اس بناء پر یونیورسٹی کو مکمل خودمختاری دی جاتی ہے۔ اس سارے عمل کو علمی آزادی Academic Freedom کہا جاتا ہے۔ یورپ کی قدیم یونیورسٹیاں آج بھی علمی آزادی کے ادارے کی بناء پر دنیا بھر میں اہم مقام رکھتی ہیں۔ یہ یونیورسٹیاں زندگی کے ہر شعبے میں تحقیق پر اربوں روپے خرچ کرتی ہیں۔

پاکستان میں گزشتہ صدی میں یونیورسٹیوں میں تحقیق کا رجحان نہیں تھا۔ ایم اے اور ایم ایس سی میں کسی موضوع پر تحقیق کو اضافی مضمون کا درجہ حاصل تھا اور محدود پیمانے پر ایم فل اور پی ایچ ڈی ہوتا تھا۔ طبی سائنس اور انجینئرنگ یونیورسٹیوں میں تو تحقیق ہوتی نہیں تھی۔ یہ یونیورسٹیاں ایم فل اور پی ایچ ڈی کے لیے اپنے اساتذہ کو امریکا اور یورپی ممالک میں بھیجتی تھیں۔ صرف چند نوجوان اپنے فرق پر یورپی اور امریکی یونیورسٹیوں میں تحقیق کرتے تھے مگر نئی صدی کے آغاز کے ساتھ دنیا بھر میں یونیورسٹیوں کے بنیادی ڈھانچے میں نمایاں تبدیلیاں رونما ہوئیں۔ اب یونیورسٹی گرانٹ کمیشن کی جگہ ہائر ایجوکیشن کمیشن HEC وجود میں آیا۔ ایچ ای سی نے دنیا بھر کی یونیورسٹیوں میں نافذ نے کورس رائج کیے اور بی ایس کی سطح سے تحقیق کا مضمون تدریس میں شامل ہوا اور پہلے سمسٹر سے تحقیق لازمی حیثیت اختیار کرگئی ہوں ایم ایس اور پی ایچ ڈی یونیورسٹی اساتذہ کے لیے لازمی قرار پائے۔ ایچ ای سی بہت سی وجوہات کی بناء پر تحقیق کے لیے ویسے فنڈز فراہم نہیں کرسکتا جیسے فنڈز بھارت، جاپان، یورپ اور امریکا کی یونیورسٹیوں کے پاس ہوتے ہیں۔ ریاستی بحرانات کی بناء پر یونیورسٹی کو ملنے والی گرانٹ کم ہوئی۔ ایچ ای سی کے سربراہوں نے یہ بیانیہ اختیار کیا کہ یونیورسٹیاں مالیاتی خودمختاری کے لیے فیسوں میں اضافہ کریں۔ تعلیمی آڈٹ نہ ہونے کی بناء پر غیر معیاری پی ایچ ڈی کے تھیسس بھی سامنے آئے۔ اس کے ساتھ ہی علمی سرقہ نویسی Plagiarism کا رجحان بھی تقویت پا گیا مگر مجموعی طور پر پاکستان کی یونیورسٹیاں ایک جدید دور میں داخل یونیورسٹی کے مسائل کو سمجھنے اور معیار تعلیم کو بلند کرنے اور دنیا بھر میں یونیورسٹیوں میں تحقیق کے نتیجے میں سامنے آنے والے نئے رجحانات کو پاکستان یونیورسٹیوں میں رائج کرنے کا فریضہ وہی شخص بہتر طور پر انجام دے سکتا ہے جو یونیورسٹی کلچر میں ابھر کر سامنے آیا ہو اور خود تحقیق کی ہو وہ شخص صرف پروفیسر ہوسکتا ہے وہ طلبہ کے رجحانات سے واقف ہوتا ہے اور ان کے مسائل کا حل نکالتا ہے۔ اچھے وائس چانسلر کے بارے میں کہا جاتا ہے کہ وہ خود بڑا محقق ہو، انتظامی تجربہ ہو اور طلبہ کی نفسیات کو سمجھتا ہو۔

پاکستان کی یونیورسٹیوں میں بہت سے اساتذہ وائس چانسلر گزرے ہیں جنھوں نے یونیورسٹی میں بڑے بڑے بحرانوں کا حل بغیر کسی امتناعی اقدام کے کیا۔ جب ایک بیوروکریٹ وائس چانسلر تعینات ہوگا وہ علمی معاملات سے نابلد ہو گا مگران پر فیصلے کرے گا۔ ایم ایس اور پی ایچ ڈی کے تھیسس اور تحقیق کے لیے موضوعات کے بارے میں فیصلے کا تنہا مجاز ہوگا۔ یوں بیوروکریٹ وائس چانسلر کے لیے طلبہ اور اساتذہ کی علمی آزادی کی کوئی اہمیت نہیں ہوگی۔ ایک بیوروکریٹ کے پاس طلبہ و اساتذہ اور غیر تدریسی عملے سے نمٹنے کا صرف انتظامی راستہ ہی ہوگا۔ اس کے لیے علمی ادارے کی کوئی اہمیت نہیں ہوگی جس سے یونیورسٹی میں علمی آزادی کو سخت نقصان ہوگا۔ اساتذہ کو کنٹریکٹ پر رکھنے کا مطلب یہ ہے کہ استاد ہر وقت اپنے افسران کی تابعداری پر مجبور ہوگا۔ ایک زمانے میں چیئرمین اور ڈین مستقل ہوتے تھے، جو نیئر اساتذہ کے ساتھ ان کا رویہ ڈکٹیٹر کا ہوتا تھا۔ اس وقت اساتذہ دس دس سال تک ایڈہاک بنیادوں پر کام کرنے پر مجبور ہوتے تھے اور جو استاد اپنے حق کے لیے آواز اٹھاتا تھا تو وہ ملازمت سے فارغ کردیا جاتا تھا۔ ناتجربہ کار بیوروکرر ہے چارج سنبھالیں گے تو وہاں پر بھی صورتحال خراب ہوگی۔ جب پیپلز پارٹی کی حکومت برسر اقتدار آئی تو یونیورسٹی کے اس قانون میں تبدیلی کر دی جو پیپلز پارٹی کے بانی ذوالفقار علی بھٹو کے دور میں بنایا گیا تھا۔ اس قانون کے تحت حکومت نے سنڈیکیٹ سے رجسٹرار اور ڈائریکٹر فنانس کے تقرر کا اختیار چھین لیا گیا۔ اس ترمیم سے وائس چانسلر بے اختیار ہوئے مگر جب اساتذہ نے احتجاج کیا تو حکومت نے ترمیم تو واپس نہ لی مگر کراچی یونیورسٹی میں اور سندھ یونیورسٹی کو اس قانون سے مستثنیٰ قرار دیا تھا البتہ دیگر یونیورسٹیوں میں یہ قانون نافذ ہوگیا۔

وفاقی اردو یونیورسٹی کی اساتذہ یونین کے سابق سیکریٹری جنرل ڈاکٹر عرفان عزیز کا کہنا ہے کہ ”جامعات کے وائس چانسلرز کے عہدے کے لیے غیر پی ایچ ڈی افراد کی تقرری نہ صرف تعلیمی اداروں کے ساتھ ناانصافی اور غیر اخلاقی ہوگی بلکہ یہ پاکستانی جامعات میں تعلیمی معیار میں مزید گراوٹ کا سبب بنے گی۔ یہ فیصلہ بین الاقوامی روایات اور اصولوں کی بھی خلاف ورزی ہوگا۔“ دنیا بھر میں یونیورسٹی کی سربراہی تعلیم و تحقیق میں ممتاز مقام رکھنے والے افراد کے سپرد کی جاتی ہے۔ حکومت کو یونیورسٹیوں کی خودمختاری پر حملہ کرنے کے بجائے یونیورسٹیوں کے انتظامی اور مالیاتی بحران کے حل کے لیے مدد کرنی چاہیے۔ ■

ہفت روزہ

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کراچی میں ٹرانسپورٹ سمیت 5 منصوبوں کیلئے پاک چین ایم او یو پر دستخط

الیکٹرک کار کی لوکل اسمبلنگ، سولر پینل کی لوکل مینوفیکچرنگ، الجی فارمنگ اور میڈیکل سٹی کے قیام سمیت دیگر منصوبے شامل

چینی سرمایہ کاروں کی جانب سے کسی بھی شعبے میں سرمایہ کاری کی گئی تو حکومت سندھ ہر ممکن مدد کرے گی، شرجیل میمن

حکومت سندھ کی معاونت سے چینی اور پاکستانی سرمایہ کاروں نے کراچی میں ٹرانسپورٹ، صحت، توانائی و زراعت کے 5 مختلف منصوبوں کے مفاہمت کی یادداشت ناموں پر دستخط کر دیے، فریقین کی جانب سے الیکٹرک کار کی لوکل اسمبلنگ، سولر پینل کی لوکل مینوفیکچرنگ، سلور لیز فرٹیلائزر، الجی فارمنگ اور دھابیجی اسپیشل اکنامک زون میں میڈیکل سٹی کے قیام کے ایم او یوز پر دستخط کیے گئے۔

چینی اور پاکستانی سرمایہ کاروں کے درمیان ایم او یوز پر دستخطوں کی تقریب سندھ کے وزیر توانائی سید ناصر حسین شاہ کے دفتر میں ہوئی، تقریب میں سندھ کے سینئر وزیر شرجیل انعام میمن، صوبائی وزیر برائے توانائی، منصوبہ بندی و ترقیات اور وزیر اعلیٰ سندھ کے معاون خصوصی برائے سرمایہ کاری پبلک پرائیوٹ پارٹنر شپ سید قاسم نوید قمر نے بھی شرکت کی سینئر وزیر شرجیل انعام میمن نے کہا کہ چینی سرمایہ کاروں کا ایک وفد سندھ آیا ہوا ہے، وفد کی وزیر اعلیٰ سندھ سید مراد علی شاہ سے ملاقات ہوئی۔ کرے گی، سرمایہ کاروں نے صدر آصف علی زرداری سے بھی ملاقات کی، جس میں چینی سفیر بھی موجود تھے،

انھوں نے کہا کہ چینی سرمایہ کاروں کی جانب سے کسی بھی شعبے میں سرمایہ کاری کی گئی تو حکومت سندھ ہر ممکن مدد انھوں نے کہا کہ چینی سرمایہ کاروں نے مختلف شعبوں میں سرمایہ کاری کرنے میں دلچسپی دکھائی۔ پاکستان میں اسٹیٹ آف دی آرٹ میڈیکل سٹی بنانا چاہتے ہیں، جس پر حکومت سندھ نے تمام ممکنہ سہولیات

وزیر اعلیٰ معاون خصوصی سید قاسم نوید قمر نے وفد کو دھابیجی اسپیشل اکنامک زون کا بھی دورہ کروایا، سرمایہ کار اعلان کیا تھا، انھوں نے کہا کہ چینی سرمایہ کاروں کا دورہ کامیاب رہا، حکومت سندھ نے میڈیکل سٹی کے قیام کے لیے سرمایہ کاروں کو مکمل تعاون کی یقین دہانی کروائی، وزیر اعلیٰ کے معاون خصوصی قاسم نوید قمر نے کہا کہ گرینائٹ یہاں سے ایکسپورٹ ہوتا تھا اور دوسرے ملکوں سے پراسیس ہو کر ہمارے ہی ملک میں فروخت ہو رہا تھا، ہماری کوشش ہوگی کہ اس کے پراسیس کا کام بھی یہاں پر ہی ہو۔

وزیر توانائی، منصوبہ بندی و ترقیات ناصر شاہ نے کہا کہ فرسٹیلائزیشن ہماری اہم ضرورت ہے، دو سو ایکڑ زمین پر پلانٹ لگا کر کول کی گیسیفکیشن کا کام کیا جائے گا، سولر پارک بھی لگائے جا رہے ہیں، ہم چاہتے ہیں کہ عوام کو سستی بجلی ملے، سستی بجلی کی فراہمی حکومت کا ویژن ہے۔■

سپر کمپیوٹر سے کروڑوں گنا تیز چپ تیار کرلی، گوگل کا دعویٰ

کروڑوں برس میں ہونے والا کام محض 5 منٹ میں ہو سکے گا، مزید تحقیق جاری

چپ جوہری فیوژن ری ایکٹرز کے ڈیزائن، ادویات، بہتر بیٹریاں بنانے میں معاون ہوگی

امریکی کمپنی گوگل نے دنیا کے تیز ترین سپر کمپیوٹر سے بھی کھربوں گنا تیز چپ تیار کرنے کا دعویٰ کیا ہے۔ گوگل کا کہنا ہے کہ جس کام کو کرنے میں آج کی دنیا کے تیز ترین سپر کمپیوٹر کو کروڑوں سال لگیں گے وہ کام ان کی چپ محض پانچ منٹ میں کر سکتی ہے۔

گوگل کی کوانٹم اے آئی لیب کے سربراہ ہارٹمٹ نیوین کا کہنا ہے کہ کمرشل ایپ لیکیشنز میں استعمال کی جا سکنے والی کوانٹم چپ کی تخلیق میں مزید کئی سال لگ سکتے ہیں۔

ہارٹمٹ نیوین کے مطابق ابتدائی طور پر یہ ایپلی کیشنز ایسے کاموں کی نقل کرنے میں استعمال کی جائیں گی جہاں کوانٹم اثرات اہم ہوتے ہیں۔ ان میں جوہری فیوژن ری ایکٹرز کے ڈیزائن، ادویات کی تیاری، گاڑیوں کی بہتر بیٹری بنانے اور اس نوعیت کے دیگر کام شامل ہیں۔

انہوں نے کہا کہ ولو آج تک بنایا جانے والا سب سے بہترین کوانٹم کمپیوٹر ہے۔ رواں سال فروری میں ایپل نے اعلان کیا تھا کہ انھوں نے ایپل کے آئی میسجز کی انکرپشن کو کوانٹم پروف بنا دیا ہے تاکہ کوانٹم کمپیوٹرز کا استعمال کرتے ہوئے ان میسجز تک رسائی حاصل نہ کی جا سکے۔

اس سینٹر کے سربراہ مائیکل کیتھمر ٹ ولو کو کسی بریک تھرو سے زیادہ ایک سنگ میل کے طور پر دیکھتے ہیں۔■

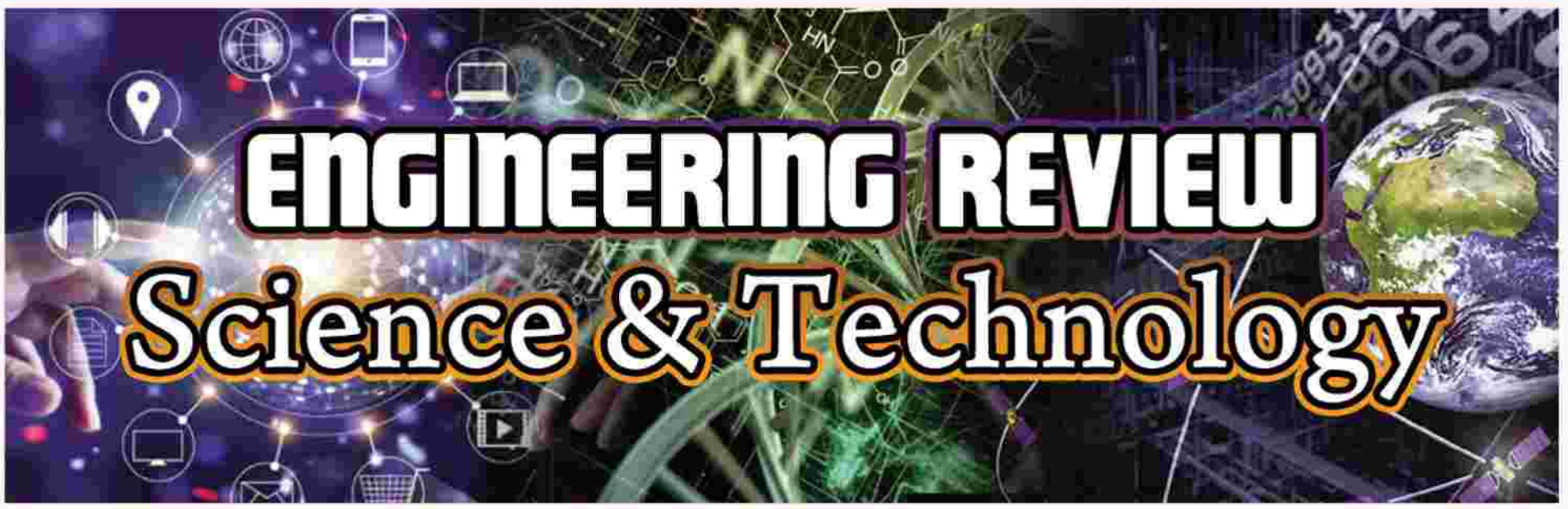
جامعہ داؤد میں جدید کورسز متعارف کرا رہے ہیں، ڈاکٹر ثمرین

ہمارا مقصد تعلیمی اداروں اور انڈسٹری کے درمیان فاصلوں کو ختم کرنا ہے

داؤد یونیورسٹی کے اکیڈمک کونسل اجلاس میں نئے پروگراموں کی منظوری

داؤد یونیورسٹی آف انجینئرنگ اینڈ ٹیکنالوجی کی اکیڈمک کونسل کا 20 واں اجلاس وائس چانسلر انجینئر پروفیسر ڈاکٹر ثمرین حسین کی زیر صدارت ہوا جس میں اکیڈمک کونسل نے 28 اپریل کو ہونے والی 19 ویں اجلاس کے منٹس کی باضابطہ توثیق کی اور 19 ویں اجلاس میں کیے گئے فیصلوں کی عملدرآمد رپورٹ کا جائزہ لیا۔

اکیڈمک کونسل نے 2 نئے بیچلر آف سائنس (بی ایس) پروگراموں کے لیے اسکیم آف اسٹڈیز کی منظوری دی، یہ پروگرام روبوٹی سکھر میں واقع سینٹر فار انٹرپرینیورشپ مینجمنٹ اینڈ ایمرجنگ ٹیکنالوجیز (CEMET) میں شروع کیے جانے والے ہیں، اجلاس میں پروفیسر ڈاکٹر سید عامر اقبال، پروفیسر ڈاکٹر عبدالوحید بھٹو، پروفیسر ڈاکٹر سید آصف علی شاہ اور دیگر فیکلٹی ممبران نے شرکت کی۔■



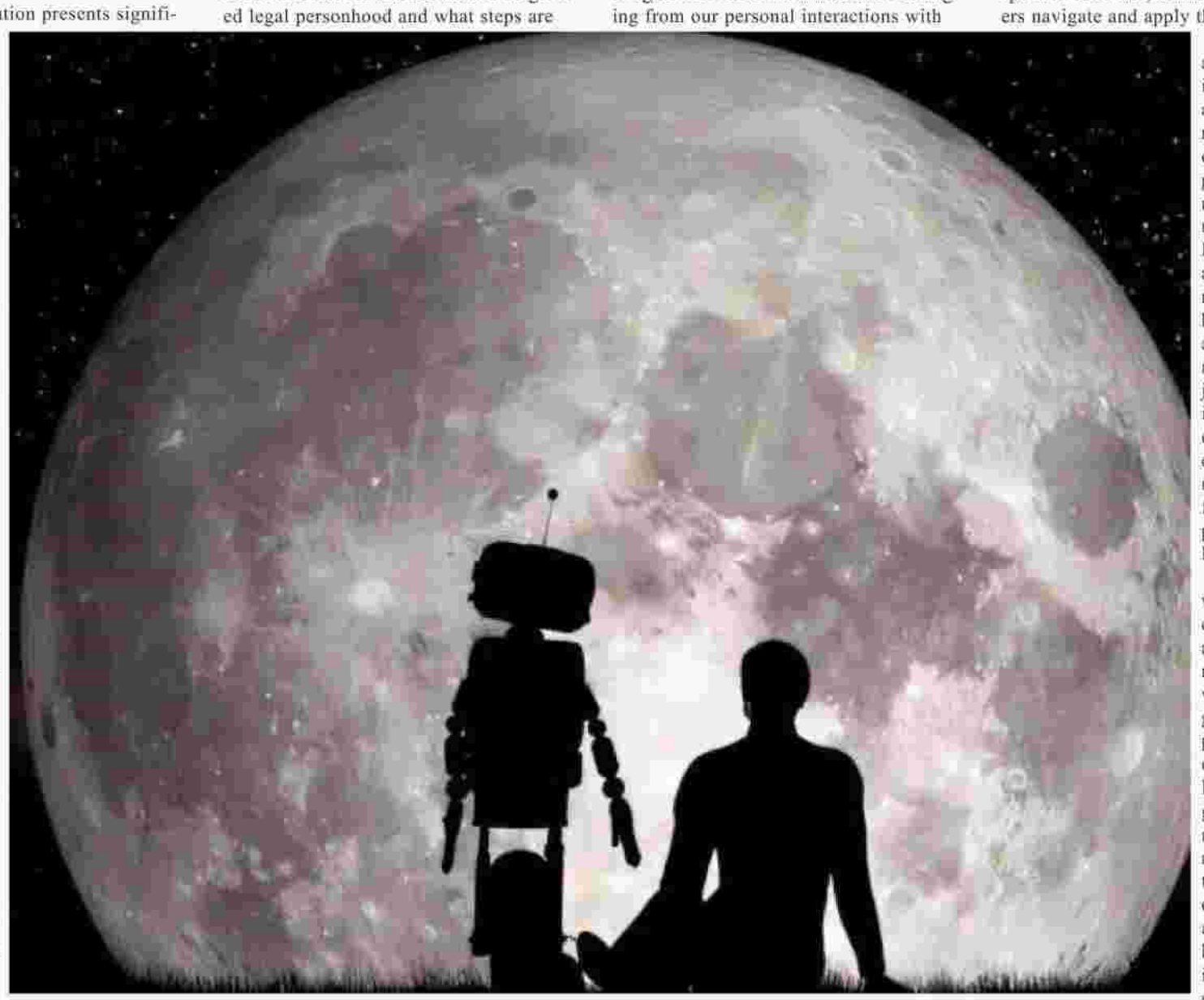
Interactions between humans, robots are no longer just science fiction

AI and robots pose new ethical challenges for society

Artificial intelligence (AI) and AI-enabled robots are becoming a bigger part of our daily lives. Real-time, flexible interactions between humans and robots are no longer just science fiction. As robots become smarter and more human-like in both behavior and appearance, they are transforming from mere tools to potential partners and social entities.

This rapid evolution presents significant challenges to our legal and ethical frameworks, including concerns about privacy, safety, and regulation in the context of AI and robots. The Cambridge Handbook of the Law, Policy, and Regulation for Human-Robot Interaction, published by Cambridge University Press in November explores and addresses these emerging issues. It is now available online as of December 2024.

Edited by Woodrow Barfield, Yueh-Hsuan Weng, and Ugo Pagallo, three experts in AI-related legal issues, the handbook gathers insights from social sciences, computer science, and engineering. It is the first book to specifically address issues of law, policy, and regulation focusing on human-robot interaction.



"Humanities are crucial to AI development," says Yueh-Hsuan Weng, Associate Professor at the Institute for Advanced Study (IAS), Kyushu University, and the Frontier Research Institute for Interdisciplinary Sciences (FRIS), Tohoku University (Cross-appointment). He is also a co-editor of the book. "Tech professionals can create cutting-edge systems, but without input from legal and humanities perspectives, these systems may struggle to coexist with humans. We hope this book serves as a compass for developers, ensuring AI systems better benefit our society."

Comprising 46 chapters, the handbook is organized into four parts. The opening section introduces the legal and ethical challenges arising from human-robot interaction, addressing issues such as trust in robots and anthropomorphism—where non-human entities are given human-like emotions or intentions. The second section explores the societal impacts of human-robot interaction, discussing questions about whether AI entities should be granted legal personhood and what steps are needed for the growing integration of robots into human life.

The third section looks deeper into ethical, cultural, and value-based issues in human-robot interaction. A key aspect of AI governance is aligning AI's value judgments with human values, which can vary across regions, contexts, and cultural value systems. Through a range of scenarios, including the role of robots in long-term assistance, their potential function in religious settings, and intercultural challenges, this chapter reveals the complexities of value alignment.

The book concludes by discussing the legal challenges posed by AI's integration into society, offering insights into how consumer law, criminal law, and constitutional law may need to evolve to accommodate intelligent systems.

This handbook brings together authors from various countries and presents case studies from across the globe. By offering diverse perspectives, it provides valuable insights into the ethical dilemmas emerging from our personal interactions with robots, sparking a global dialogue on these issues.

"A major issue I addressed in the book is the AI pacing problem," says Weng. This refers to the gap between rapid AI advancements and the slower pace of legislation. While many countries and organizations are working on regulations for AI-enabled robots, creating comprehensive laws often struggles to keep up with AI's progress. "Governance mechanisms have been proposed, ranging from 'hard' legislation to 'soft' ethical guidelines. What's needed now are solutions that balance enforceability and flexibility."

One solution Weng proposed in his chapter is global AI ethics standards developed by the Institute of Electrical and Electronics Engineers (IEEE), the world's largest technical professional organization. Currently, Weng chairs a working group at the IEEE and is compiling a database of AI-related ethical cases from various countries, modularizing core issues and region-specific concerns, aiming to help developers navigate and apply them effectively.

The handbook also addresses critical topics like anthropomorphism, robots in health care, and privacy protection, all requiring continued focus and collaboration. As algorithms enable robots to perform human-like actions, such as robot dogs dancing jazz, these behaviors challenge traditional ethical expectations and may reshape how future generations perceive concepts like "dogs."

Meanwhile, when people, especially older adults, are unfamiliar with robots, they may view robotic caregivers as true companions, leading to emotional challenges. Ethical guidelines are needed to ensure responsible use in these sensitive contexts. Additionally, balancing high-quality services with data security remains an urgent task that demands innovative regulatory solutions.

Reflecting on these topics, Weng emphasizes, "As human-AI interactions become more common, I hope designers, manufacturers, and users of robots will engage with our book. Responsible research and innovation are crucial for the development of AI and robots, and this requires input from people across various societal sectors. We warmly invite everyone to explore this book and join us in creating IEEE's global standards for AI ethics." -- TX

Five cybersecurity tips to protect yourself from scams and deepfakes

In an age when misinformation and deepfakes blur the lines between fact and fiction, identifying scams has never been more challenging. Falling for a scam can have devastating social, financial, and personal consequences. Over the past year, victims of cybercrime reported losing an average of $30,700 per incident.

As Christmas and Boxing Day approach, shoppers face heightened risks, particularly millennials and Gen Z consumers. In the U.S., one in five people have unknowingly purchased a product promoted by deepfake celebrity endorsements. This figure climbs to one in three among those aged 18-34.

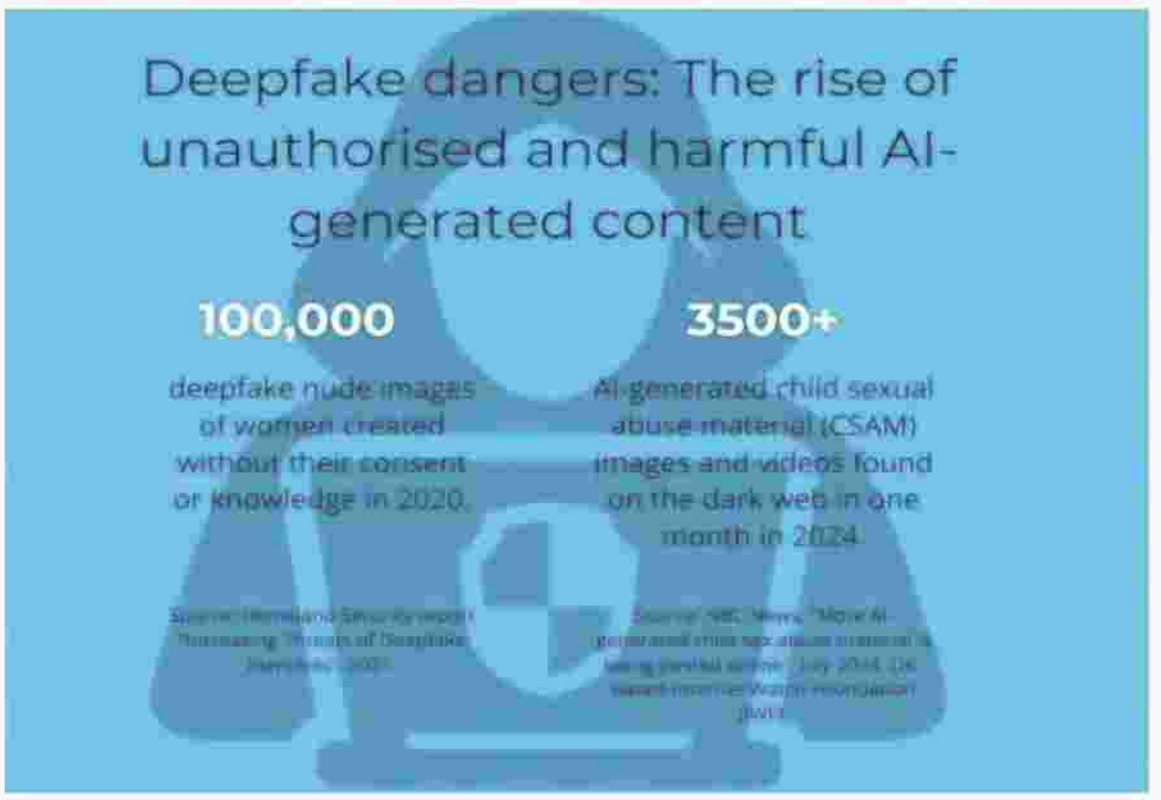
Sharif Abuadbba, deepfake expert in our Data61 team, highlighted how technology like AI has made deception easier than ever.

"Scammers can quickly and easily create imitations of popular social media influencers. Deepfakes can manipulate a person's voice, gaze, mouth, expressions, pauses—basically putting words in their mouth that they've never said," Sharif said.

"On social media, attackers rely on the viewers believing fake content and sharing it widely," he added.

You might think you have nothing valuable for a hacker to steal. However, cybercriminals often exploit individuals as gateways to larger targets, including family members, friends or organizations. Identity fraud can also severely damage your professional relationships and reputation with financial services.

As technology becomes more integral to our daily lives, how can we protect ourselves and those we care about from these cyber threats? Here are five expert tips:



1. Have a family safe word

Scammers are increasingly using texts, calls and even video to impersonate loved ones and request money. With AI voice cloning on the rise, these schemes are becoming more and more believable.

Jamie Rossato, our Chief Information Security Officer, advises setting up a pre-agreed safe word to verify who you're speaking to. This word should remain private and not be easily discovered through social media or other online sources.

"Use this proactively, rather than waiting until you are suspicious," Jamie said.

"If my children asked me for money, unless they said our special safe word, I would never transfer funds to them."

2. Don't be afraid to hang up

With advances in voice-spoofing technology, fraudsters can convincingly mimic organizations like banks to steal money. Lauren Ferro, Human-centric Security Research Scientist with our Data61 team, recommends verifying caller identities before sharing any information.

"If something seems a bit off, hang up and call the organization directly using their official number, or go and visit them in person," Lauren advised.

"They would prefer you to be cautious. It's far easier to address concerns up front than to recover stolen money or repair reputational damage later."

3. Enable multi-factor authentication

Identity fraud is the most common self-reported cybercrime this year, making it crucial to protect your personal data online. For example, private or sensitive information stored with Medicare and government accounts.

One effective method to protect your account is enabling multi-factor authentication (MFA) to log in. MFA requires a password and a one-time verification code. Often, this is sent as a text message, but Jamie suggests using authentication apps like Microsoft Authenticator for added security.

"One of the benefits of app-based authenticators is they often use biometric controls, such as face ID or thumbprints to get into the app, before you get to the actual code itself," Jamie explained.

"This creates an extra layer of protection beyond SMS codes."

4. Turn on banking push notifications

With most people using card and online payments, staying informed about your transactions can help you detect scams. While banks monitor suspicious activity, scammers can bypass these measures by mimicking your usual spending patterns.

Enabling real-time notifications through your banking app allows you to track transactions immediately, adding another layer of security.

5. Be aware of what you are sharing online

Most of us have an online and social media presence, but the photos, videos and information we share can be exploited. These assets can train deepfakes, which, once created and shared, are difficult to detect and remove.

Liming Zhu, Research Director in our Data61 team, stresses the importance of being mindful of what we share online and who can access it. This is especially critical for children.

Education is your best form of protection

Ultimately, awareness and proactive protection are key to staying safe online. Educating yourself about cybersecurity is your first line of defense against scams. -- TX

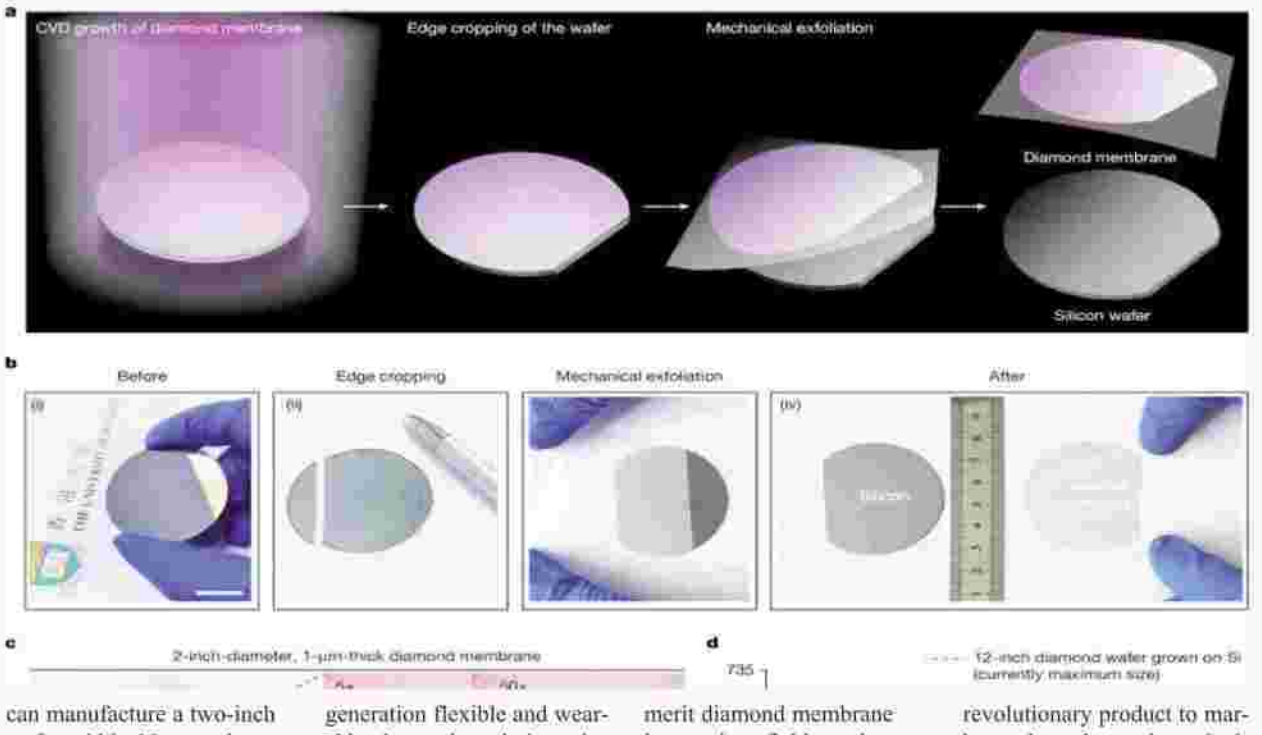
New method enables mass production of flexible diamond membranes

A research team has developed a method for massively producing ultrathin and ultra-flexible diamond membranes.

The results are published in Nature. The researchers were led by Professor Zhiqin Chu, Associate Professor in the Department of Electrical & Electronic Engineering, and Professor Yuan Lin, Professor in the Department of Mechanical Engineering, Faculty of Engineering at the University of Hong Kong (HKU).

These ultrathin and ultra-flexible diamond membranes are compatible with existing semiconductor manufacturing technologies, and thus can, in principle, be fabricated into a variety of electronic, photonic, mechanical, acoustic, and quantum devices.

The innovative edge-exposed exfoliation method discovered by the team facilitates the rapid production of scalable, free-standing diamond membranes. This approach is superior to traditional methods, which are typically time-consuming, costly and limited in size. Remarkably, the new process can manufacture a two-inch wafer within 10 seconds, offering unmatched efficiency and scalability.



These ultra-flat diamond surfaces, essential for high-precision micromanufacturing, along with the flexibility of the membranes, open up new possibilities for next-generation flexible and wearable electronic and photonic devices. The research team envisions significant industrial applications in electronics, photonics, mechanics, thermics, acoustics, and quantum technologies.

"We hope to promote the usage of the high-figure-of-merit diamond membrane into various fields, and to commercialize this cutting-edge technology and deliver premium diamond membranes, setting a new standard in the semiconductor industry. We are eager to collaborate with academic and industry partners to bring this revolutionary product to market and accelerate the arrival of the diamond era," said Professor Chu.

Diamonds, renowned globally as valuable gemstones, possess exceptional versatility in various scientific and engineering applications. They are the hardest natural material, boasting unparalleled thermal conductivity at room temperature, extremely high carrier mobility, dielectric breakdown strength, an ultrawide bandgap, and optical transparency spanning from the infrared to the deep-ultraviolet spectrum.

These remarkable properties make diamonds ideal for fabricating advanced high-power, high-frequency electronic devices, photonic devices, and heat spreaders to cool high-power density electronic components, such as those in processors, semiconductor lasers, and electric vehicles.

However, the inert nature and rigid crystal structure of diamonds pose significant challenges in fabrication and mass production, particularly for ultrathin and freestanding diamond membranes, thereby restricting their widespread usage. -- TX