Abstract Book

7th INTERNATIONAL ELECTRICAL ENGINEERING CONFERENCE

Theme: The Aspiring Pathways In ElectRical Engineering (ASPIRE -2022)

25th & 26th MARCH, 2022
KARACHI, PAKISTAN

IEEC 2022

being held on the occasion of
NED Centennial Year (1921-2021)

NED UNIVERSITY OF ENGINEERING & TECHNOLOGY
100 Years of Excellence
1921-2021

JOINTLY ORGANIZED BY

The Institution of Engineers Pakistan Karachi Centre

NED University of Engineering & Technology, Karachi

NED International Alumni Network (NEDIAN) Association Pakistan

IN COLLABORATION WITH

- Federation of Engineering Institutions of Islamic Countries (FEIIC)
- Federation of Engineering Institutions of South & Central Asia (FEISCA)
- Mehran University of Engineering and Technology Jamshoro
- Balochistan University of Information Technology Engineering & Management Sciences (BUITEMS), Quetta
- Balochistan University of Engineering & Technology Khuzdar
- DHA Suffa University, Karachi
- Sir Syed University of Engineering & Technology Karachi
- Hamdard University Karachi
- National University of Computer and Emerging Sciences, Karachi
- Muhammad Ali Jinnah University, Karachi
- Habib University Karachi
- Quaid-e-Awam University of Engineering Science & Technology Nawabshah
- Usman Institute of Technology Karachi
- PAF Karachi Institute of Economics & Technology Karachi
- NBC - National Center of Big Data & Cloud Computing Karachi
- Institute of Industrial Electronics Engineering Karachi
- National Centre of Artificial Intelligence
- National Center for Cyber Security
- Office of Research, Innovation & Commercialization
- National Centre of Robotics & Automation

Forthcoming Confererences

being organized by

The Institution of Engineers Pakistan

Karachi Centre

12th International
Civil Engineering Conference (12th ICCE-2022)
to be held on 9th & 10th May, 2022
Website: www.icec.neduet.edu.pk

1st International
Bio-Medical & Digital Health Conference-2022
to be held on 17th & 18th June, 2022
Website: iepkarachi.org.pk

10th International Conference
Health Safety & Environment (10th-HSE-2022)
to be held on 2nd & 3rd September, 2022
Website: iepkarachi.org.pk

International UN SDG's Conference 2022
to be held on 28th & 29th October, 2022
Website: iepkarachi.org.pk

4th International Conference on
Advance Materials & Process Engineering (4th AMPE-2022)
to be held on 2nd & 3rd December, 2022
Website: www.nedampe.com

For further information please contact
Engr. Farooq Arbi, FIE, PE
Secretary, Institution of Engineers Pakistan, Karachi Centre
177/2, Liaquat Barracks 4th Floor, IEP Buidling, Opp: Hotel Regent Plaza, Karachi
Tel: 92-21-32780233, 32781492
E-mail: iepkac1948@gmail.com / main @iepkarachi.org.pk
WhatsApp: 0311-2277721
Website: iepkarachi.org.pk

MESSAGE

Mohammad Sarwar
Governor Punjab

"I am glad to know that The Institution of Engineers Pakistan Karachi Centre, NED University of Engineering and Technology and NED) International Alumni Network (NEDIAN) Association are jointly organizing International Electrical Engineering Conference (IEEC-2022) scheduled to be held on Friday 25th & Saturday 26th March, 2022 in collaboration with many other institutions.

The Institution of Engineers Pakistan has its centres in various cities of Pakistan. I have been told that the Institution of Engineers Pakistan is holding Technical Lectures Conferences / Congresses Seminars Symposiums etc. throughout Pakistan. The role being played by the Institution in promoting the Science, practice and business of Engineering in all its branches throughout Pakistan is commendable.

I hope that this year ASPIRE-2022 will forge strong ties between academic and industry to not only allow for finding indigenous solutions to our national problems but also help Pakistan in reaping the benefits of a knowledge-based economy. I would like to appreciate the initiative of the Institution of Engineers Pakistan, Karachi Centre and NED University of Engineering & Technology to include all stakeholders in academia and industry by taking them on board as technical partners and co-organizers.

I wish The Institution of Engineers Pakistan and NED University of Engineering & Technology a real success."

MESSAGE

Imran Ismail
Governor Sindh

"The Institution of Engineers Pakistan is the premier body of qualified engineers in Pakistan and has made significant contributions to the development of the country. The role played by the Institution in spreading modern skills and technology is highly commendable. Recent advancements in Science and Technology have placed enormous power at the disposal of man which must be harnessed for the welfare of humanity. Pakistan possesses vast natural resources and it is the duty of our scientists and engineers to utilize these resources for the welfare of the society, in eradication of ignorance, poverty hunger and disease.

I am happy to know that the Institution of Engineers Pakistan and NED University of Engineering & Technology are holding the 7th International Electrical Engineering Conference on 25th & 26th March, 2022 at Karachi. I am sure this Conference which will be attended by engineers from all the provinces of Pakistan and abroad will provide an excellent opportunity to the participants to benefit from the experiences of one another and to find solutions to our current national problems.

I understand that the activities of the Institution particularly its role towards the spread of technical knowledge is commendable, I hope that the Institution will strive hard to further increase the range of its services with national sprit and devotion all over the country.

I wish every success for the Institution of Engineers Pakistan and NED University of Engineering & Technology and the conference."

MESSAGE

Shah Farman
Governor Khyber Pakhtunkhwa

"I am glad to know that the Institution of Engineers Pakistan Karachi Centre, NED University of Engineering & Technology, and NED International Alumni Network (NEDIAN) Association are jointly organizing 7th International Electrical Engineering Conference (IEEC-2022) scheduled to be held on Friday 25th & Saturday 26th March, 2022 at Karachi with other institutions.

Across the globe, Engineers are known for the quality of their work, a result of their passion for achievements. This is due to the efforts of organizations like yours Institution, which consistently encourage continued professional education among its members. Your conference is an opportunity to reaffirm that commitment by updating your knowledge base with the latest industry trends and practices; by collaborating on advancements in the field of Electrical Engineering; and by discussing the various issues that affect your profession. I am confident that your gathering is a significant step towards sustaining our competitiveness and distinction in the global community.

Our country takes pride in our professionals, who, despite many challenges being faced by the nation, continue to remain at par with the best in the world. As you gather for this occasion, may you be reminded of the duties we all bear in nation-building and be confident that, as long as we demonstrate integrity and excellence in our pursuits, we will secure for ourselves a future of stability and prosperity.

I wish all the success to the Institution of Engineers Pakistan & NED University of Engineering & Technology particularly engineering community in general."

MESSAGE

Engr. Syed Murad Ali Shah, FIE(Pak)
Chief Minister Sindh

"It is a matter of great pleasure to know that The Institution of Engineers Pakistan Karachi Centre, NED University of Engineering & Technology, Karachi and NEDIAN International Alumni Network Association are organizing the 7th International Electrical Engineering Conference (IEEC-2022) on 8th April, 2021 at Karachi, in collaboration with Federation of Engineering Institutions of Islamic Countries, Federation of Engineering Institutions of South & Central Asia and various academic Institutions of Pakistan. The Conference Theme "Aspiring Pathways in Electrical Engineering

(ASPIRE-2022)" provides a unique platform to eminent Engineers, Scientists, Researchers, Academicians, and Entrepreneur across the globe to participate and share their research advancements and new technologies.

I sincerely hope that the two days of deliberations, discussion, interaction and proactive exchange of ideas will prove to be fruitful and contribute immensely to our mutual growth. I also congratulate the conference organizers for attracting a wide range of papers from experts in the fields.

The technical talks and papers which will be presented by eminent scientists , Researchers, faculty members and industry personnel hopefully will ignite new ideas, inspire young graduates to focus on research and development, it will also pave way to work closely with industries for solutions in the relevant technical areas.

I wish every success for the Institution of Engineers Pakistan, Karachi Centre and NED University of Engineering & Technology and the conference."

MESSAGE

Engr. Prof. Dr. Sarosh H. Lodi
Vice-Chancellor
NED University of Engineering & Technology, Karachi

"I am very thrilled to see awe-inspiring response of researchers and other stakeholders from all over the world in the 7th IEEC 2022 event. Inaugural IEEC was held in 2016, and since then, we are witnessing gradually increasing response from academia and industry in every successive edition of the conference.

One of the greatest resources for the progress of any nation is "knowledge". Additionally, it is responsibility of every citizen to be the part of the knowledge sharing process. The events like IEEC-2022 are not only opportunities for the researchers to present their ideas but also opportunities to brainstorm the solutions to global challenges. The collaboration of IEP and NED University of Engineering & Technology Karachi shows the mutual trust and commitment between academia and industry, which is essential for better world of coming day.

Clean energy is the compelling necessity for greener and better future of the world. The integration of renewable energy resources with traditional fossil fuel-based plants is one of the major targets and challenges of the global development. Nowadays, the solutions based on artificial intelligent methods integrated through IoTs are gaining increasing popularity and yielding efficient results in every engineering field. This IEEC-2022 is one of the best opportunities for researchers, industry experts, and government regulators to get together and address these important emerging challenges and create solutions based on latest technological developments.

To conclude, I would like to congratulate organizing team of the IEEE- 2022 for their efforts and making this event possible. I wish them good luck"

MESSAGE

Engr. Dr. Javed Younas Uppal
President
The Institution of Engineers, Pakistan

"I am very pleased to convey this Message at the 7th International Electrical Engineering Conference organized by the Karachi Center, Institution of Engineers Pakistan jointly with NED University of Engineering and Technology, NED International Alumni Network Association-Pakistan and in collaboration with Federation of Engineering Institutions of South, Mehran University of Engineering & Technology, Balochistan University of Engineering and Technology, Balochistan University of Information Technology, Engineering & Management Sciences, Sir Syed University of Engineering & Technology, DHA Suffa University, Hamdard University, Quaid-e-Awam University of Engineering Sciences, and Technology, Pakistan Navy Engineering College-NUST, Muhamamd Ali Jinnah University, Habib University, National University of Computer and Engineering Sciences, Usman Institute of Technology, PAF- Karachi Institute of Engineering, Economics & Technology, Institute of Industrial Electronics Engineering, NBC- National Center of Big Data & Cloud Computing, NCCS-National Center for Cyber Security, NCRA-National Centre of Robotics & Automation, , Office of Research, Innovation & Commercialization.

I commend the organizers of the Conference to have chosen the theme: 'The Aspiring Pathways in Electrical Engineering (ASPIRE-2022)' pointing towards the new avenues that are being opened up for the electrical and electronic engineers in electrical power systems and policies, renewable energy technology, controls, robotics, automation, signaling, image and speech processing, IoT, ICT, big data, artificial intelligence, embedded systems, micro-electronics and nano-technology, and computer systems and networks. These technologies have enabled us to cut down the distances and to outreach and bring communication and energy to the remotest and forgotten populations of the world.
The engineers have to make the most of this opportunity to come forward and rid the society from the ills, poverty and deprivations. The future economic strength and sustainability of the society solely depends on steering engineering developments towards welfare of people.

We have to inspire our youth to lead advancements of and applications of engineering and digital technology to benefit people directly and build a better world.
The digital world of today, has enabled a special power to the engineers and technologists to build better world. Smart technologies are the home grounds of the IT engineers, electronic engineers and the OT mechanical mechatronic engineers.
The time has come for electrical and electronic engineers to change their focus and direction and that they now learn, train and use the smart technologies, train themselves to use advanced solid modeling tools, rapid prototyping, 3D printing and advanced automation in manufacturing techniques.

Think of what systems can be improved and not passively wait for someone to bring it to you.
In short be prepared to be competitive domestically and globally and boldly propose innovative engineering solutions and pursue opportunities. There are lots of opportunities domestically, those being outsourced globally as well for the innovative minds to come up with innovative solutions independently or reaching out to sponsoring agencies worldwide."

Go out there and prove your worth to the society- be ethical and be with likeminded people in the service to the society.

MESSAGE

Engr. Sohail Bashir, FIE, PE

Chairman, The Institution of Engineers Pakistan, Karachi Centre
Member Governing Body, Pakistan Engineering Council
Member, Executive Committee - FEIIC, FEISCA & ACECC

The Institution of Engineers Pakistan (IEP) is playing a vital role in the development of Pakistan since its inception within the frame work of its aims & objectives which revolves around the promotion of technology, advancement of the engineering practice, application of principles of science in engineering and dissemination of technical knowledge. Upholding its tradition continuously for the last many years, this year also the 7th International Electrical Engineering Conference-2022 is being hosted by the IEP Karachi Center with more zeal and enthusiasm.

The conference shall dwell on the latest technological development in the field of Electrical and Allied Engineering disciplines which would not only broaden the vision of participants but shall lead them to the frontiers of the existing knowledge and the way forward. Indeed to hold such an International gathering, was not only a challenge but was also an uphill task for which IEP Karachi Centre, NEDUET and NED International Alumni Network Association (NEDIAN)- Pakistan in collaboration with Federation of Engineering Institutions of Islamic Countries (FEIIC), Federation of Engineering Institutions of South & Central Asia (FEISCA),), Mehran University of Engineering & Technology- Jamshoro, Balochistan, University of Engineering and Technology-Khuzdar, Balochistan University of Information Technology, Engineering & Management Sciences- Quetta, Sir Syed University of Engineering & Technology-Karachi, DHA Suffa University-Karachi, Hamdard University- Karachi, Quaid-e-Awam University of Engineering Sciences, and Technology-Nawabshah, Pakistan Navy Engineering College-NUST-Karachi, Muhammad Ali Jinnah University-Karachi, Habib University- Karachi, National University of Computer and Engineering Sciences-Karachi, Usman Institute of Technology- Karachi, PAF- Karachi Institute of Engineering Economics & Technology-Karachi, Institute of Industrial Electronics Engineering-Karachi, NBC- National Center of Big Data & Cloud Computing, NCCS-National Center for Cyber Security, NCRA-National Centre of Robotics & Automation, Office of Research Innovation & Commercialization efforts are commendable.

On behalf of The Institution of Engineers Pakistan, Karachi Centre and the Organizing Committee of IEEC-2022, I would like to express my sincere appreciation for active participation, both from academia and industry. Indeed, all the members of Advisory Board, Management Committee, Coordination Committee and Technical Review Committee worked extremely hard to make this event happen. I have no doubt whatsoever that without their cooperation, support and active participatory role, this event would not have been possible for which I record my appreciation for all of them. Special thanks to the Conference Key Note Speakers of Inaugural Session Syed Ghufran Hashmi, University of Oulu, Finland and Prof. Dr. Lampros Stergioulas, UNESCO Al Chair in Europe, The Hague University Netherlands Thanks to key Note Speaker Dr. Hasan Baig University of Connecticut, USA, to invited speakers of Closing Session from industry and authors for strongly supporting the conference. I also take this opportunity to pay my sincere gratitude to the Chief Guest and Guest of Honor of Inaugural & Closing sessions for sparing their valuable time for this event. My sincere gratitude are to Engr. Prof. Dr. Sarosh Hashmat Lodi, Vice Chancellor, NEDUET, Engr .Prof. Dr. Saad Ahmed Qazi, Dean & Convener 7th IEEC- 2022, Engr. Dr. Javed Younus Uppal. President IEP, Engr. Amiir Zamir Ahmed Khan, Secretary General, IEP, Engr. Farooq Arbi, Secretary, IEP, Karachi Centre and Dr. Abdul Ghani Abro, Secretary 7th IEEC-2022 for their guidance & help in organizing IEEC-2022.

I would like to take this opportunity to place on record my sincere appreciation for Chairman, Department of Electrical Engineering & Co-Convener, Engr. Prof. Dr. Attaullah Khawaja, Engr. Dr. Riaz Uddin, Engr, M. Moshin Aman, Engr. Muhammad Ali Baig, Engr. Dr. Abdur Rehman Shaikh, Engr. Dr. kirshan Lal Khatri, Engr. Dr. Raja Masood Larik, Engr. Dr, M. Faisal Khan, Engr. Dr. Dur-e- Jabeen, Engr. Asif Memon, IIEE and all Council Member of IEP, Karachi Centre for their hard work & strong support for IEEC-2022.

MESSAGE

Engr. Asim Murtaza Khan
President
NED International Alumni Network (NEDIAN) Association
& CEO, Petroleum Institute of Pakistan

"It is a matter of great pride that The Institution of Engineers Pakistan, Karachi Centre, NED University of Engineering & Technology, and NED International Alumni Network Association Pakistan are jointly holding 7th International Electrical Engineering Conference on Friday 25th & Saturday 26th Marchm 2022 at NEDUET, Karachi in collaboration with National Engineering Universities.

It gives me great satisfaction that renowned experts from within the country and from abroad shall be presenting their valuable papers during the conference. This event will provide opportunity to young engineers to benefit from the knowledge of experienced engineers in their relevant fields.

The Institution of Engineers Pakistan, Karachi Centre is working hard for dissemination of knowledge by holding National/International Engineering Conferences, Technical Seminars, Workshops and Lectures for the benefit of Engineering profession and development of the Country.

IEP, Karachi Centre deserve appreciation for organizing the Conference in hybrid mode for the benefit of engineering community in this situation of COVID -19.

As President, NED International Alumni Network Association I am confident the delegates, participants and corporate members attending the Conference, will be benefited by the presentations to be made by the experts from all over Pakistan and abroad, the participants will be able to improve their skills in their fields. It is hoped the participants attending this Conference will be able to apply their improved knowledge for better productivity in their practical life.

I pray for the success of the 7th International Electrical Engineering Conference."

MESSAGE

Engr. Ahmed Farooq Bazai (S.I)
Vice Chancellor
Balochistan University of IT, Engineering
and Management Sciences (BUITEMS)

It is my pleasure to be part of the seventh International Electrical Engineering Conference. I congratulate the Institution of Engineers Pakistan, Karachi Center, and NED University of Engineering & Technology for organizing the conference series. The conference has successfully contributed to promoting cutting-edge research and collaborations among the key stakeholders including academia, industry, and the government.

Energy and power are playing an increasingly pivotal role in our modern life and are transforming the way we utilize energy and the way we live. In this regard, "Aspiring Pathways in Electrical Engineering (ASPIRE-2022)" is worthy of the efforts; providing a platform to foster advancements within the domains of electrical engineering, promoting inter-disciplinary cross-cutting technological breakthroughs in a variety of fields including, renewable energy, bioinformatics, embedded systems, and smart grids, etc.

The ASPIRE-2022 conference will bring together leading scientists, practitioners, researchers, and delegates across the globe to present the latest innovations and knowledge in energy and power engineering and to stimulate new ideas and collaborations. We hope that the conference will provide an open forum for sharing and spreading the newest thoughts and research findings developed in key areas such as new and renewable energy, power electronics, data analytics, and artificial intelligence.

Energy is the driving force in sustaining many industrial, commercial, and domestic sectors. In today's world, developed nations are becoming more and more energy-intensive. However, there is a need to become energy efficient; to produce and consume environment-safe energy. Clean technologies are making progress to address energy and environment-related challenges, especially those faced by the developing world. We wish that ASPIRE-2022 will provide networking opportunities for global collaborations for developing suitable solutions for diverse applications and user groups and foster topics and key colorations on the production of environmentally safe energy in achieving goals for sustainable economies.
I sincerely appreciate the efforts of the entire organizing team in jointly making this conference a success.

On behalf of BUITEMS, I would like to extend my warm wishes to all the delegates and participants.

With best wishes.

MESSAGE

Prof. Dr. Ehsanullah Khan Kakar
Vice-Chancellor
Balochistan UET ,Khuzdar
Chairman
The Institution of Engineers Pakistan, Quetta Centre

"It is a great pleasure and honor for me and Balochistan University of Engineering & Technology, Khuzdar to be a part of 6th International Electrical Engineering Conference- 2021, which is going to be held at Karachi, Pakistan.

The 7th IEEC-2022, will focus on "Aspiring pathways in Electrical Engineering. The aim of the conference is to provide a premier platform for electrical engineers and researchers from Pakistan and abroad to present their research experiences and ideas in the field of electric power engineering.

The institution of Engineers Pakistan, Karachi Centre and NED University of Engineering & Technology in collaboration with various other universities organizes the national and international conferences on regular basis. These academic events make the industry-academia linkages stronger and provide a better platform for future developments.

The conference objective is focused on the new and challenging problems related to electrical transformations, modern control, smart grid, and distributed generation. In IEEC-2022, the power system experts around the globe will share the new trends, solutions, and aspiring pathways in their respective areas of research which will benefit the conference participants at large.

Best wishes for the successful organization of the event and comfortable stay as well as for the planned souvenir on the occasion."

MESSAGE

Prof. Dr. Vali Uddin
Vice Chancellor,
Sir Syed University of Engineering & Technology, Karachi

"Apart from imparting quality higher education in the contemporary academic disciplines, the hallmark of a seat of higher learning is to create new knowledge through quantitative and qualitative research in their respective domains. Against this backdrop, the 7th International Electrical Engineering Conferences (IEEC-2022), on the theme "Aspiring Pathways in Electrical Engineering (ASPIRE 2022), is highly laudable. On behalf of Sir Syed University of Engineering & Technology, a collaborator and partner of IEEC-2022, I offer congratulation both to The Institution of Engineers Pakistan Karachi Centre and NED University of Engineering & Technology for organizing this Conference aims to featuring research papers on the theme.

Undoubtedly, conferences like IEEC-2022 provide a dynamic platform to deliver and facilitate the networking between scientists, engineers and industrial employers. In the long run, their collaboration result in world-class research that become fundamentally vital for the society's progress and well-being. The universities/higher education institutions are primarily responsible and accountable to their respective societies, their employees and students; but above all, they facilitate each other in promoting Ilm-e-Naafa (beneficial knowledge) as required by their contemporary context and realities. And in our present techno-age, the IEEC-2022 is indeed relevant and will certainly prove to be thought-provoking and enriching in terms of bringing forth new knowledge on the theme of the Conference.

I trust that the creditable platform of IEEC-2022 will promote a meaningful dialogue between the researchers from the universities from home and abroad. This will indeed go a long way in scientific and technological development in the country. I felicitate all the participating research scholars and especially those whose papers have appeared in this MDPI Engineering Proceeding Journal and will be selected; and extended versions of the papers will be sent for publication in the NED University Research Journal after review process.

On behalf of Sir Syed University of Engineering & Technology, Karachi, I offer felicitation to the organizers, participants and delegates of IEEC-2022 and wish them godspeed."

MESSAGE

Prof. Dr. Muhammad Afzal Haque
Vice Chancellor
DHA SUFFA University

"It is a matter of immense pleasure for me to note that the Department of Electrical Engineering, NED University of Engineering & Technology and the Institution of Engineers Pakistan (IEP) Karachi Centre are going to organize the two day 7th International Electrical Engineering Conference (IEEC) in March 2022 which will have technical sessions to discuss fresh research results on various areas of electrical engineering.

In line with the past traditions of organizing the thematic Conferences this year's theme is "Aspiring Pathways in Electrical Engineering" (ASPIRE-2022), which relates to contemporary advancements and challenges in Electrical Engineering. It is satisfying to know that a diversified group of luminaries from academia and industry is expected to attend this Conference, which will provide a common platform for stakeholders to dilate upon various challenges and advancements in all areas of Electrical Engineering:

The world today is witnessing phenomenal advances and innovations in various areas of Engineering & Sciences. There is persistent increase in demand for electrical power energy. Electrical Engineers can be at the forefront of developing new technologies for power generation/distribution, power conservation, environmental remediation, smart devices, renewable energy, systems application, embedded systems, ITC. The Conference will hopefully also dilate at length on modern fields like Industry 5.0, Artificial Intelligence, Internet of Things, CAD/CAE, 3-D Printing, embedding AI into Robotic designs to convert robots into near human machines, AI and Neural Technologies.

With a galaxy of experts, researchers, academicians and professionals attending the Conference, it is hoped that they will come out with solutions for the comfort of humanity with phenomenal advancements in sciences & technologies across the globe. I wish the Conference a tremendous success and congratulate its organizers for their commendable job in conducting series of such useful events."

MESSAGE

Engr. Dr. Farah Haroon
Principal, IIEE, PCSIR

"It is a matter of gratification that the Institute of Engineers, Pakistan (IEP) and NED, UET are holding the consecutive 7th International Electrical Engineering Conference IEEC, 2022.

The bi-lateral collaboration of NED, UET and IEP for the last seven years is consistently promoting the research through coordination of Academia and Industry. The theme "Aspiring Pathways in Electrical Engineering" opens the doors of research inspiration and technological development not only in Electrical engineering but in all its associated disciplines.

IIEE, since its inception, under the umbrella of Pakistan Council of Scientific & Industrial Research (PCSIR) and with the affiliation of NED – UET Karachi is crafting engineers in the discipline of Industrial Electronics Engineering with the spirit of knowledge and technological advancement across the globe.

On this auspicious occasion, I take an opportunity to address the young youth to come forward and face the technical challenges of new era and carve out a bright future for themselves and their country, Pakistan.

It is quite imperative that technical congregation like IEEC 2022, is a pathway for new researchers and innovators. I sincerely wish the Organizing, Managing and Technical committees of the event all success in their efforts to build up this tradition and achieve the goals by serving the nation with excellence."

MESSAGE

Engr. Amir Zamir Ahmed Khan
Secretary General
The Institution of Engineers, Pakistan

"It is matter of great pleasure that The Institution of Engineers, Pakistan, Karachi Centre, NED University of Engineering and Technology Karachi and NEDIAN International Alumni Network Association are holding the 7th International Electrical Engineering Conference on 25th & 26th March, 2022 on the theme: Aspiring Pathways in Electrical Engineering (ASPIRE 2022) in collaboration with Federation of Engineering Institutions of South and Central Asia (FEISCA), Federation of Engineering Institutions of Islamic Countries (FEIIC), Mehran University of Engineering & Technology- Jamshoro, Balochistan, University of Engineering and Technology-Khuzdar, Balochistan University of Information Technology, Engineering & Management Sciences- Quetta, Sir Syed University of Engineering & Technology-Karachi, DHA Suffa University-Karachi, Hamdard University-Karachi, Quaid-e-Awam University of Engineering Sciences, and Technology-Nawabshah, Pakistan Navy Engineering College-NUST- Karachi, Muhammad Ali Jinnah University-Karachi, Habib University- Karachi, National University of Computer and Engineering Sciences-Karachi, Usman Institute of Technology- Karachi, PAF- Karachi Institute of Engineering Economics & Technology-Karachi, Institute of Industrial Electronics Engineering-Karachi, NBC- National Center of Big Data & Cloud Computing, NCCS-National Center for Cyber Security, NCRA-National Centre of Robotics & Automation, Office of Research Innovation & Commercialization.

The institution of Engineers Pakistan Karachi Center is working hard for dissemination of knowledge by holding National / International Engineering Conferences, Technical Seminars, Workshops and Lectures for the benefit of Engineering profession and development of the Country. I personally congratulate Chairman, Secretary, Organizer, and Members Organizing Committee, IEP Karachi Centre for organizing the Conference in the light of aims and objectives of the Institution of Engineers, Pakistan.

I pray to Almighty Allah for the success of 7th International Electrical Engineering Conference."

MESSAGE

Engr. Prof. Dr. Muhammad Tufail, FIE (Pak)
Pro Vice-Chancellor
NED University of Engineering & Technology, Karachi

"It gives me an immense pleasure that IEP and NED University of Engineering & Technology are conducting 7th International Electrical Engineering Conference (IEEC-2022). The IEP and NED University have always promoted these platforms where experts from various domains interact and share their knowledge, faced challenges and adapted solutions. The collaboration at various levels is the need of the hour for solutions of current challenges. A single institute can never bring an innovative and the acceptable solutions of challenges faced by the society.

This conference is a great opportunity for engineering professionals to sit together and brainstorm ideas for solving regional and global issues. IEEC 2022 encompasses wide spectrum of Electrical Engineering domain, which includes Electrical Power Systems and Policies, Renewable Energy Technology, Controls, Robotics, Automation Signal Processing, IoT, Big Data, Artificial Intelligence, Embedded Systems, Information and Communication Technologies, Computer Systems and Networks, etc. This conference provides a platform for all professionals to share and learn from each other.

IEP and NED University deserves a great applause for bringing academia, industry experts, and other stakeholders from all over the world to address common challenges. I congratulate all office bearers, and organizers of the conference for organizing such a wonderful event and I wish them great success."

MESSAGE

Engr. Prof. Dr. Saad A. Qazi
Dean
Faculty of Electrical & Computer Engineering
NED University of Engineering & Technology
& Convener IEEC-2022

"It is a pleasure for me welcoming you to IEEC-2022. IEP and NED University of Engineering & Technology deserves appreciation for their efforts in bringing academia and industrial experts together for sharing their experiences, challenges faced and solutions adapted. Platforms such as IEEC are crucial in today's instantly changing world, which brings opportunities to tackle the arising challenges.

Since, the key to success in these testing times is collaboration. The world nowadays has become a global village so challenges are no more regional but global, therefore it is our responsibility to bring solutions to these problems together.

At ASPIRE-2022, I hope the participants will be able to identify the challenges, brainstorm solutions and formulate methods to start collaborated approaches for solving technological and policy problems. It is heartening to note the industrial participation in the conference which is a good sign for an otherwise lacking academic-industry linkages.

I wish all the authors, presenters and delegates a successful gathering."

MESSAGE

Engr. Prof. Dr. Atta Ullah Khawaja
Chairman
Department of Electrical Engineering
NED University of Engineering & Technology
& Co-Convener IEEC-2022

"It gives me great pleasure as Co-Convener of IEEC-2022 to welcome you all to participate in 7h IEEC-2021. The efforts taken by IEP and NEDUET specially the faculty of Electrical Engineering Department are appreciable to bringing academia and industrial experts on a single platform for sharing experience and knowledge. At ASPIRE-2022, I hope the participants will be able to identify the challenges and also devise methods to start collaborated approaches for
solving technological and policy problems.

I would like to appreciate active participation, both from academia and industry. The members of Advisory Board Organizing Committee, IEP Headquarter Committee, Coordination Committee, Technical Advisory Committee, IEP Management Committee, Conference Technical Committee & Conference Program Team worked extremely hard to make this event happen. The support, cooperation and active participatory role from IEP Centre Karachi made this event possible.

Special thanks to the Conference Key Note Speakers, invited speakers, authors and sponsors for strongly supporting the conference.

Finally, I wish all the authors, presenters and delegates a successful gathering and hope that they will find IEEC-2022 useful in enhancing their technical knowledge and networking."

MESSAGE

Engr. M. Farooq Arbi, FIE, PE
Secretary,
The Institution of Engineers Pakista
Karachi Centre

"The Institution of Engineers Pakistan is playing a vital role in the Development of the Nation since its inception within the periphery of its approved aims and objectives, mostly revolving around the promotion and advancement of the practice and application of principles of Engineering, through its nine Centers spread across Pakistan and four overseas Centers. Upholding its traditions, the 7th International Electrical Engineering Conference is being jointly hosted by IEP-Karachi Centre, NEDUET and NED International alumni Network Association this year. The Conference shall explore the latest technological development in the field of Electrical Engineering and would broaden the vision of the participants.

On behalf of the Institution of Engineers Pakistan, Karachi Centre and the Organizing Committee, I would like to express my sincere appreciation for all participants, both from academia and industry, who played their role through contributions to the Conference and through their participation. Infact, all the members of the Technical Program Committee worked extremely hard to make this event happen. I have no doubt whatsoever that without their cooperation and their significant role and support, this event would not have been possible, appreciation for them, therefore, is to be recorded. Special thanks also go to the keynote speakers, invited speakers, and authors, for strongly supporting the Conference, while there are no words to thank the Chief Guest/Guest of Honor who have spared their valuable time for this important event.

I take this opportunity to express my appreciation to the joint efforts of Engr. Prof. Dr. Sarosh Hashmat Lodi, Vice- Chancellor, NEDUET and Engr. Sohail Bashir, Chairman, IEP Karachi Centre, for the success of this conference. Special thanks to Engr. Saad Ahmed Qazi, Dean Faculty of Electrical & Computer Engineering NEDUET & Convener IEEC-2022, Engr. Prof. Dr. Atta Ullah Khawaja, Chairman, Department of Electrical Engineering, NEDUET & Co-Convener, IEEC- 2022, Engr. Tafseer Ahmed Khan, Vice-Chairman (Electrical),IEP, Karachi Centre, Engr. Dr. Riaz Uddin, Member Central Council,IEEC-2022, and other members of IEP, Karachi Centre, Engr. Dr. Abdul Ghani Abro, Conference Secretary, IEEC-2022, Engr. Dr. Mohsin Aman, Engr. Abdur Rahman Javid Shaikh, , Engr. Dr. Muhammad Ali Baig, Engr. Dr. Kirshan Lal, Engr. Raja Masood Larik, Engr. Dr. Muhammad Faisal Khan, Engr. Dr. Du-E-Jabeen, Engr. Asif Memon, and my office staff for their untiring effort for IEEC-2022.

Finally, I welcome each participant and hope that they will find the 7th International Electrical Engineering Conference not only useful in many respects but also to be a good opportunity to meet people and connect positively through networking in available time slots."

Once again my thanks to all and all pray to Almighty for the success of this conference

MESSAGE

Engr. Muhammad Abbas Sajid
Secretary General
NED International Alumni Network (NEDIAN) Association

"NED International Alumni Network (NEDIAN) Association Pakistan I am delighted to have the opportunity to share a few thoughts at the time of 7th International Electrical Engineering Conference (IEEC-2022). It is a great initiative taken by Institution of Engineers Pakistan (IEP) Karachi Centre and NED University of Engineering and Technology Karachi and NED International Alumni Network (NEDIAN) Association Pakistan along with other reputed partners .

The 7th edition of the conference itself is an indicator of the quality and credibility of the Conference Internationally. This conference is great opportunity for engineering professionals to sit together and brainstorm ideas for solving regional and global issues. IEEC-2022 encompass wide spectrum of Electrical Engineering domain, which includes Electrical Power Systems and Policies, Renewable Energy Technology, Controls , Robotics, Automation Signal Processing, IoT, Big Data, Artificial intelligence, Embedded Systems, Information and Communication technologies , Computer Systems and Networks, etc.

This conference provides a platform for all professionals to learn from each other. IEP and NED University deserves a great applause for bringing academia, industry experts, and other stakeholders from all over the world to address common challenges.

I congratulate all office bearers, and organizers of the conference for organizing such a wonderful event and I wish them great success"

MESSAGE

Engr. Tafseer Ahmed Khan
Vice-Chairman (Electrical & Allied)
IEP, Karachi Centre

"The Institution of Engineers Pakistan is playing a vital role in the Development of Engineering Profession since its inception within the parameter of its approved aims and objectives, for the promotion and advancement of the practice and application of principles of Engineering, spread across Pakistan. As per its traditions, IEP, Karachi Centre is organizing the 7th International Electrical Engineering Conference this year in collaboration with NEDUET and NEDIAN International Alumni Network Association- Pakistan .

The conference shall focus on latest Technological Development in the field of Electrical Engineering not only to disseminate knowledge but will also broaden the vision of the participants, which will led them to explore the new frontiers.

As Vice-Chairman (Electrical) of the Institution of Engineers Pakistan, Karachi Centre and the 7th IEEC-2022 Organizing Committee, I would like to express my sincere appreciation for all participants, through contributions to the conference and through their extremely hard work to make this event happen, this event would not have been possible, special thanks also go to the keynote speakers, invited speakers and authors.

I wish the organizers, of this conference every success and hope this will become a regular event in future as well."

MESSAGE

Dr. Abdul Ghani Abro
7th IEEC 2022, Secretary

"On behalf of the Organizing Committee, we warmly welcome you to the yearly event 7th IEEC 2022, jointly organized by NED UET Karachi and IE-Pakistan. The conference theme, Aspiring Pathways In Electrical Engineering, has been carefully chosen to mark post-covid aspiring ideas and technologies in the realm of electrical engineering. Over the last 6 years, IEEC which is a platform for bridging gap between academicians and industry personals, have resulted-in valuable market-oriented collaborations.

The collaboration for event started in 2016. IEEC 2022 for the very first time publishing the conference proceedings in Journal of Engineering Proceedings published by well-reputed MDPI publisher. The organizing committee truly deserve appreciations for putting great efforts to make it possible.

At ASPIRE-2022, the participants will be able to identify the challenges and devise strategies to start collaborated approaches for betterment of society.

I wish great luck to all aspiring participants."

AIMS AND OBJECTIVES

The Institution of Engineers Pakistan

The main goal of the Institution of Engineers, Pakistan is to Build Better World as appearing in its logo.
The aims and objectives of the Institution are:

a. **To Promote and advance the science, practice, and business of engineering in all its branches throughout Pakistan.**

b. **To Promote efficiency in the engineering practice and profession.**

c. **To Regulate the professional activities and assist in maintaining high standard in the general conduct of its members.**

d. **To Lay down professional code of ethics and to make it mandatory for its members in their professional conduct.**

e. **To Help in the acquisition and exchange of technical knowledge.**

f. **To Promote the professional interest and social welfare of its members.**

g. **To Encourage original research in engineering and conservation and economic utilization of the country's materials resources.**

h. **To Foster coordination with similar institutions in other countries and Engineering Universities, Institutions and Colleges in Pakistan and in other countries for mutual benefits in furthering the objects of Institution.**

i) **To diffuse among its members information on all matters affecting engineering and to encourage, assist and extend knowledge and information connected therewith by establishment and promotion of lectures, discussions or correspondence, by the holding of conferences, by the publication of papers, periodicals and journals, proceedings, reports, books, circulars and maps or other literary undertaking, by encouraging research work or by the formation of library or libraries and collection of models, designs, drawings, and other articles of interest in connection with engineering or otherwise howsoever.**

j) **To promote the study of engineering with a view to disseminating the information obtained for facilitating the scientific and economic development of engineering in Pakistan.**

k) **To establish, acquire, carry on, control or advise with regard to colleges or other educational establishments where students and apprentices may obtain a sound education and training in engineering on such terms as may be settled by the Institution.**

l) **To encourage, regulate and elevate the technical and general knowledge of persons engaged in or about to engage in engineering or in any employment manual or otherwise in connection therewith and with a view thereto function as an Educational Institution and to provide for holding of coaching wherever possible and to test by examination or otherwise the competence of such persons and to institute and establish professor-ships, student-ships, scholar-ships, rewards and other benefactions and to grant certificates of competency whether under any Act of the Government of Pakistan or Local Government under the Bye-Laws of the Institution regulating the conduct and qualification of engineer or otherwise howsoever.**

m) **To-operate with various Government agencies and industrial and commercial enterprises connected with engineering and advising them in matters concerning the profession and practice of engineering and promotion of technical education.**

n) **To encourage inventions and investigate and make known their nature and merits.**

o) **To arrange and promote the adoption of equitable forms of engineering contracts and other legal documents, to encourage settlement of disputes by arbitration and to act as and nominate arbitrators and to act as and nominate arbitrators and umpires on such terms as may be expedient.**

p) **To promote just and honorable dealing and to suppress mal-practice in engineering**

q) **To do all such other acts and things as are incidental or conducive to the above objects or any of them.**

The Institution ever since its inception has been taking concerted efforts to upgrade the knowledge and technical know-how of its member engineers by undertaking various technical activities. IEP has, on number of occasions, conducted numerous studies on various technical problems, and has submitted its recommendations to the government.

LIST OF ORGANIZATIONS, INSTITUTIONS HAVING AGREEMENT OF CO-OPERATION / AFFILIATIONS WITH IEP

1. World Federation of Engineering Organizations (WFEO)
2. Federation of Engineering Institutions of Islamic Countries (FEIIC) (comprising all Engineering Institution of Islamic Countries).
3. Federation of Engineering Institutions of South and Central Asia (FEISCA), (all Engineering Institutions of SAARC Countries are its Members.)
4. Asian Civil Engineering Coordinating Council (ACECC)
5. Common-Wealth Engineers Council (CEC) (which works under the aegis of United Nations Organization).
6. International Federation of Automatic Control (IFAC)
7. Consortium of Affiliates of International Programme (CAIP)
8. American Association for Advancement of Sciences (AAAS), USA.
9. International Association for Bridges & Structural Engineering (IABSE), USA.
10. Russian Engineering Academy, Russia
11. American Society for Civil Engineers, USA.
12. Canadian Society for Civil Engineering , Canada.
13. Royal Aeronautical Society, U.K.
14. Institution of Structural Engineers, UK.
15. Institution of Civil Engineers, UK.
16. Institution of Electrical Engineers UK.
17. Institution of Mechanical Engineers UK.
18. China Civil Engineering Society, China
19. China Mechanical Engineering Society, China.
20. China Highways & Transportation Engineering Society, China.
21. Chinese Society of Electrical Engineers, China.
22. China Institution of Electronics, China.
23. Cyprus Professional Engineers Association, Cyprus.
24. Institution of Engineers, Bangladesh.
25. Institution of Electrical Engineers of Japan
26. Institution of Engineers Sri Lanka.
27. Nepal Engineers' Association, Nepal.
28. Institution of Engineers Malaysia.
29. Institution of Engineers Indonesia.
30. Engineering Academy of Tajikistan.
31. Engineering Academy of Uzbekistan.
32. Engineering Academy of Kazakhstan.
33. Institute of Seismology and Seismological Construction, Tajikistan.
34. Republican Association of Young Engineers and Specialist, Kazakhstan.
35. Institution of Engineers Afghanistan.
36. Council of Aeronautical Science, USA.
37. Engineering Academy of Kirgistan.
38. Institution of Engineers, Australia.
39. Union of Chambers of Engineers & Architects, Turkey.
40. Korean Society of Civil Engineers, Korea.
41. Japan Society of Civil Engineers, Japan
42. Institution of Electrical and Electronics Engineers, USA.
43. Institute of Marine Engineering, Science & Technology, UK.
44. Bahrain Society of Engineers, Bahrain.

ORGANIZING TEAM

ADVISORY BOARD

Engr. Sohail Bashir
Chairman, IEP, Karachi Centre
Engr. Tafseer Ahmed Khan
Vice-Chairman (Electrical & Allied) IEP, Karachi Centre & Chief Organizer IEEC-2022
Engr. Dr. Ehsanullah Kakar
Vice-Chancellor, BUET- Khuzdar
Prof. Dr. Syed Shabib Ul Hasan
Vice- Chancellor, Hamdard University, Karachi
Engr. Asim Murtaza Khan
President, NEDIAN Association- Pakistan
Engr. Prof. Dr. Muzaffar Mahmood
Dean (GSSE), PAF-KIET, Karachi

Engr. Prof. Dr. Sarosh Hashmat Lodi
Vice-Chancellor, NEDUET, Karachi
Engr. Prof. Dr. Muhammad Tufail
Pro-Vice Chancellor, NEDUET, Karachi
Engr. Prof. Dr. Saad A. Qazi
Dean ECE, NEDUET & Convener,IEEC-2022
Engr. Prof. Dr.Asim Imdad Wagan
Dean, FoE. MAJU, Karachi
Prof. Dr. Mukhtiar Ahmed Unar
Dean (ECE) MUET, Jamshoro
Engr. Prof. Shoaib Zaidi
Provost, UIT, Karachi
Dr. Syed Ali Raza shah
Dean (FoE), BUET, Khuzdar

Engr. Prof. Dr. M. Afzal Haque
Vice-Chancellor, DHA Suffa University, Karachi
Engr. Ahmed Farooq Bazai (S.I)
Vice-Chancellor, BUITEMS, Quetta
Engr. Prof. Dr. Vali Uddin
Vice-Chancellor, SSUET, Karachi
Engr. Prof. Dr. Saleem Raza Samo
Vice-Chancellor, QUEST, Nawabshah
Engr. Dr. Farah Haroon
Principal, IIEE, Karachi
Engr. Dr. Jawwad Shamsi
Director and Professor, FAST-NUCES, Karachi
Engr. Farooq Arbi
Secretary, IEP, Karachi Centre

ORGANIZING COMMITTEE

Engr. Prof. Dr. Saad A. Qazi
Dean ECE, NED UET & Convener IEEC-2022
Engr. Prof. Dr. Attaullah Khawaja
Chairman, EE Dept., NEDUET & Co-Convener, IEEC-2021
Prof Ashfaque Ahmed Hashmani
HoD (EE Dept), MUET Jamshoro
Engr. Prof. Dr. M. Usman Keerio
Dean, FoEECE, QUEST-Nawabshah
Engr. Dr. Abdul Ghani Abro
Conference Secretary, IEEC-2022
Engr. Dr. Abdurrahman Javed Shaikh
Program Secretary, IEEC-2022
Engr. Dr. Mirza Muhammad Ali Baig
Academic Secretary, IEEC 2022

Engr. Dr. Muhammad Mohsin Aman
Industrial Engagement Secretary IEEC-2022
Engr. Dr. Riaz Uddin
Deputy Chief Organizer, IEEC 2022
Engr. Dr. Krishan Lal Khatri
Universities Coordination Secretary IEEC 2022
Engr. Syed Muhammad Zahid
IT Support, IEEC 2022
Engr. Anjum Darakhshan
Vice Principal IIEE, Karachi
Dr. Attaullah Khidrani,
Chairman (EED) BUET Khuzdar
Engr. Dr. Ghazanfar Monir
MAJU, Karachi

Engr. Dr. Raja Masood Larik
Event Secretary, IEEC 2022
Engr. Dr. Syed Ali Raza Shah
Dean (Engineering), BUET-Khuzdar
Prof. Dr. M. Aamer Saleem
Dean (FEST), HU Karachi
Dr. Surat Khan
HoD, EE (BUITEMS), Quetta
Engr. Dr. Dur E Jabeen
SSUET, Karachi
Engr. Dr. Bizzat H. Zaidi
(EE HoD), DHA Suffa University, Karachi
Dr Sameer Qazi
HoD (EE) PAF-KIET, Karachi
Dr. Burhan Khan
FAST-NUCES, Karachi

IEP MANAGEMENT COMMITTEE

Engr. Dr. Tehseen Rahim
Vice-Chairman (Electronic), IEP, Karachi Centre
Engr. Gulzar Ahmed Memon
Member Central Council, IEP
Engr. Muhammad Idris
Member Central Council, IEP
Engr. Syed Anwer Ali
Member Central Council, IEP
Engr. Obaid ur Rehman Khan Kamal Zai
Member, Local Council, IEP, Karachi Centre

Engr. Aftab Ahmed
Member, Local Council, IEP, Karachi Centre
Engr.Afaq Ali Siddiqui
Member, Local Council, IEP, Karachi Centre
Engr. Sheeraz Ali
Member, Local Council, IEP, Karachi Centre
Engr. Mariam Anwer
Member, Local Council, IEP, Karachi Centre
Engr. Talha Ahmed Farooqui
Member, Local Council, IEP, Karachi Centre

Engr. Masood Ahmed Memon
Member, Local Council, IEP, Karachi Centre
Engr. Nabil Kalu
Member, Local Council, IEP, Karachi Centre
Engr. Abdul Samad
Member, Local Council, IEP, Karachi Centre
Engr. Muhmmad Shariq Khan
Member, Local Council, IEP, Karachi Centre

IEP HEADQUARTERS COMMITTEE

Engr. Dr. Javed Younas Uppal
President, IEP
Engr. Mian Sultan Mahmood
Vice-President (Electrical & Allied), IEP
Engr. Amir Zamir Ahmed Khan
Secretary General, IEP

Engr. Masood Ahmed Khan
Chairman Lahore Centre
Engr. Hafiz M. Ehsan Ul Haq Qazi
Chairman Islamabad Centre
Engr. Azhar Habib
Chairman Peshawar Local Centre
Engr. Prof. Dr. Ehsan Ullah Kakar
Chairman Quetta Local Centre

Engr. Syed Raghib Abbas Shah
Chairman Hyderabad Centre
Engr. Khalid Rashid
Chairman Faisalabad Centre
Engr. Muhammad Murtaza Khurshid
Chairman Multan Local Centre

TECHNICAL AND PROGRAMME TEAM

Engr. Shariq Shaikh
Engr. Ayesha Saeed
Engr. Adnan

Engr. Nabeel Fayaz
Engr. Muhammad Uzair Khan
Engr. Muhammad Arshad

Engr. Hassan ul Haque
Engr. Najia Naveed
Engr. Hiba Kamal Zubairi

TECHNICAL REVIEW COMMITTEE

Engr. Prof. Dr. Attaullah Khawaja, NEDUET
Engr. Dr. Muhammad Ali Memon, NEDUET
Engr. Prof. Dr. Syed M. Usman Ali Shah
Engr. Prof. Dr. Ali Raza Jafri, NEDUET
Engr. Prof. Muhammad Ali Ismail, NEDUET
Engr. Prof. Muhammad Khurram, NEDUET
Engr. Dr. Muhammad Mohsin Aman,NEDUET
Engr. Dr. Riazuddin, NEDUET
Engr. Dr. Muhammad Javed
Engr. Dr. Abdul Ghani Abro, NEDUET
Engr. Dr. Abdurrahman Javid Shaikh,NEDUET
Engr. Dr. Mirza Muhammad Ali Baig, NEDUET
Engr. Dr. Raja Masood Larik, NEDUET
Engr. Dr. Krishan Lal Khatri, NEDUET
Engr. Dr. Umbreen Sultana, NEDUET
Engr. Dr. Beenish Sultana, NEDUET
Engr. Dr. Imran Aslam, NEDUET
Engr. Dr. Engr. Eraj Humayun Mirza, NEDUET
Engr. Dr. Muhammad Abul Hasan, NEDUET
Engr. Dr. Sadia Muniza Faraz, NEDUET
Engr. Dr. Hashim Raza Khan, NEDUET

Engr. Dr. Farah Haroon, IIEE
Engr. Asif Memon, IIEE
Engr. Dr. Inayat Ali Jamali, BUET Khuzdar
Engr. Dr. Imran Qureshi, BUITEMS
Engr. Dr. Attique Ur Rehman, BUITEMS
Engr. Dr. Mehr Gul, BUITEMS
Engr. Dr. Talha Mir, BUITEMS
Engr. Dr. Mudassir Hussain, BUITEMS
Engr. Dr. Abdul Ali, BUITEMS
Engr. Dr. Muhammad Abid Mengal, BUET
Engr. Dr. Kashif Ishaque, MAJU, Karacjhi
Engr. Prof. Dr. Abdul Sattar Saand, QUEST
Prof. Dr. Rashid Hussain, HU
Engr. Dr. Muhammad Ahmed Sikander, HU
Engr. Dr. Tayyab Ahmed Shaikh, HU
Engr. Dr Nayyer Hussain Mirjat, MUET
Engr. Dr. Faheemullah Shaikh, MUET
Engr. Dr Muhammad Arif, PAFKIET
Engr. Dr Saba Javed, PAFKIET
Engr. Dr Mazher Iqbal, PAFKIET
Engr. Dr. Faheem Sherwani, FAST-NUCES

Engr. Dr. Burhan Khan, FAST-NUCES
Engr. Dr. Fahim ul Haq, NEDUET
Engr. Dr. Sunila Akbar, NEDUET
Engr. Dr-ING. Shehzad Hasan, NEDUET
Engr. Dr. M. Asad Arfeen, NEDUET
Engr. Dr. Saneeha Ahmed, NEDUET
Engr. Dr. Majida Kazmi, NEDUET
Engr. Dr. Tariq Rehman, NED UET
Engr. Dr. Urooj Ainuddin, NEDUET
Engr. Dr. Maria Waqas, NEDUET
Prof. Dr. Abdul Qadir, UIT
Prof. Dr. Abid Karim, UIT
Engr. Dr. Babar Khan, UIT
Engr. Dr. Rana Javed, UIT
Engr. Dr. Aamir Zeb, NEDUET
Engr. Dr. Tahir Malik, NEDUET
Engr. Dr. Riaz un Nabi Jafri, NEDUET
Engr. Dr. Razia Maroof, SSUET
Engr. Dr. Amber Israr, SSUET
Engr. Dr. Ingila Raheem, SSUET
Engr. Dr. M. Ibrar Ul Haq, SSUET

COORDINATION COMMITTEE

Dr. Surat Khan
Chairperson Electrical Engineering BUITEMS
Dr. Imtiaz Hussain
HoD Electrical Engineering, DHA Suffa
Engr. Dr. Nayyer Hussain Mirjat
Associate Professor, Electrical, MUET
Prof. Dr. Abid Karim, (UIT)

Engr. Anjum Darakshan
Principal Instructor, IIEE
Engr Dr. Sameer Qazi,
(PAF-KIET)
Engr. Dr. Raza Haider
BUET-Khuzdar
Dr Muhammad Burhan Khan
Assistant Prof, FAST-NUCES-Karachi

Dr. Ghulam Mujhtaba
Chairman/Director
National Centre of Robotics & Automation
Dr. M. Faisal Khan
Manager (IRD) HU Karachi
Dr. Muhammad Ayub
BUITEMS
Dr. Razia Maroof
SSUET Karachi

The Institution of Engineers Pakistan

Inaugural Session
at Audio Visual Hall, Department of Mechanical Engineering,
NED University of Engineering & Technology, Karachi
(Friday 25th March, 2022)

03:40 pm	Guests Arrival
03:55 pm	Guests to be seated
04:00 pm	Recitation from the Holy Quran
04:05 pm	National Anthem
04:10 pm	**Conference briefing by** Prof. Dr. Saad A. Qazi, Dean, Faculty of Electrical & Computer Engineering NEDUET & Convener, 7th IEEC-2022
04:15 pm	**Address by** Engr. Sohail Bashir, Chairman, IEP Karachi Centre
04:40 pm	**Key Note Address** Syed Ghufran Hashmi, University of Oulu, Finland
05:05 pm	**Key Note Address** Prof. Dr. Lampros Stergioulas, UNESCO Al Chair in Europe The Hague University, Netherlands
05:30 pm	**Address by Chief Guest** Dr. Naveed Sherwani, Chairman & CEO, FPGA Foundation
05:35 pm	**Address by** Engr. Amir Zamir Ahmed Khan, Secretary General, IEP
05:40 pm	**Address by** Engr. Asim Murtaza Khan President, NED International Alumni Network Association-Pakistan
05:45 pm	**Address by** Engr. Dr. Javed Yunus Uppal, President, IEP
05:50 pm	**Address by** Engr. Prof. Dr. Sarosh Hashmat Lodi, Vice-Chancellor, NEDUET
05:55 pm	**Presentation of Conference Mementos**
06:00 pm	**Vote of Thanks by** Engr. Farooq Arbi, FIE, PE, Secretary, IEP, Karachi Centre
06:05 pm	**Refreshments**

TECHNICAL SESSIONS (Saturday the 26th March, 2022 at NEDUET, Karachi) 10:30 AM - 12:30 PM

Technical Session-1 on Electronics & Communication Systems at Mechanical AV Hall	**Technical Session-2** on Data Science & Al in Power Systems-I at Civil AV Hall	**Technical Session-3** on Renewable Energy and Interconnected Systems at Computer Lab-II, Dept. of Electrical Engineering

12:30-1:45 Zohar Prayer & Lunch Break

1:45 PM - 3:25 PM

Technical Session-4 on Machine Learning & IoT at Civil AV Hall	**Technical Session-5** On Robotics and Automation at Mechanical AV Hall	**Technical Session-6** on Data Science & Al in Power Systems-II at Computer Lab-II, Dept of Electrical Engg.

PROGRAM SCHEDULE FOR ORAL SESSIONS IEEC-2022		
Technical Session-I Electronics & Communication Systems (Dr. Fahim Ul Haq, NEDUET, Engr. Gulzar Ahmed Memon, IEP, Durr-e-Jabeen, SSUET		
Mechanical Hall, NED UET, Karachi.		
Time:	Paper ID:	Title and Presenters
10:30-10:50	Invited Talk By TBD	
10:50-11:10	IEEC-2022-12	**Toll Automation System Using RFID and Webportal** *Zeghum Abbas Abbasi*
11:10-11:30	IEEC-2022-17	**Modelling the Electric Field Distribution in Polyethylene Nano-composite to Investigate Electrical Treeing Initiation Using Finite Element Method** *Khola Azhar and Salman Amin*
11:30-11:50	IEEC-2022-25	**Comparitive analysis of AES & RSA algorithms for security over cloud computing** *Sana Fatima , Tanazzah Rehman, Muskan Fatima, Shahmeer Khan, Mir Arshan Ali*
11:50-12:10	IEEC-2022-32	**Impact of Multiple Beams and Mobility based Beam Alignment Error on Millimeter Wave Communication** *Hira Mariam , Irfan Ahmed and Muhammad Imran Aslam*
12:10-12:30	IEEC-2022-83	**Confinement Specific Design of SOI Rib Waveguides with Submicron Dimensions and Single Mode Operation** *Abdurrahman Javid Shaikh, Abdul Ghani Abro, Mirza Muhammad Ali Baig, Muhammad Adeel Ahmad Siddiqui, and Syed Mohsin Abbas*
	Certificate Distribution	
Technical Session-II Data Science & AI in Power Systems-I (Dr. Beenish Sultana,NEDUT **Engr. M. Idris Khan, IEP**, Dr. Mukesh Kumar,MUET		
Civil A/V Hall, NED UET, Karachi.		
Time:	Paper ID:	Title and Presenters
10:30-10:50	Invited Talk by **TBD**	
10:50-11:10	IEEC-2022-10	**A Mixed Integer Second Order Cone Model for the Optimal Placement and Sizing of Battery Energy Storage System in Power Distribution Networks** *Muhammad Hussain, Raja Masood Larik and Kamran Ahmed*
11:10-11:30	IEEC-2022-19	**Cost Minimization in Radial Distribution System integrated with Commercial Electric Vehicle Charging Station** *Umbrin Sultana, Abeer Mujahid, Hamza Ahmed Jilani and Uzma Perveen*
11:30-11:50	IEEC-2022-26	**Smart Energy Meters in Renewable Energy Based Power Networks: An Extensive Review** *Muhammad Usman Haider, Faisal Mumtaz, Haseeb Hassan khan, Muhammad Asif, Muhammad Shoaib Rashid, Shah Rukh Abbas, and Muhammad Zeeshan*
11:50-12:10	IEEC-2022-35	**Smart OCR Application for Meter Reading** *Umbrin Sultana, Sannad Bilal, Syed Hamza Abbas Naqvi, Rafay Iqbal and Maha Irfan*
12:10-12:30	IEEC-2022-36	**Increase the Performance of Wind Energy Systems by using Optimal Layout Planning** *Umbrin Sultana, Maha Aamir, Maha Irfan and Midhat Fatima*
	Certificate Distribution	

Technical Session-III — Renewable Energy and Interconnected Systems

(Dr. Masood Larik, NEDUET, Engr. Afaq Ali Siddiqui, IEP, Dr. Saba Javed, PAF-KIET

Computer Lab-II, Electrical Engineering Department, NED UET, Karachi.

Time:	Paper ID:	Title and Presenters
10:30-11:10	IEEC-2022-49	**Experimental Analysis of Soiling Loss on PV Module in Cement Plant Environment** *Muhammad Hamid Riaz and Tahir Mahmood*
11:10-11:30	IEEC-2022-56	**Unveiling Surface Recombination Velocity Influence on the Device Characteristics for the Formamidinium Perovskite Solar Cell** *Faisal Saeed, Tauseef Ur Rehman, Abdullah Zohaib, Ahmad Farid, Muhammad Haseeb Khan, Mansoor Ahmad Khan, Haider Ali Taugeer and Asad Idrees*
11:30-11:50	IEEC-2022-67	**Analysis and Efficiency Evaluation of Non-Isolated DC/DC converter with Wide Input Voltage Range for PV Application** *Saqib Ali Syed, Hassan Abdullah Khalid and Hasaan Farooq*
11:50-12:10	IEEC-2022-79	**Efficiency analysis of GaN based LLC resonant converter for PV applications** *Hasaan Farooq, Hassan Abdullah Khalid, Muhammad Uzair Khalid and Saqib Ali Syed*
12:10-12:30	IEEC-2022-81	**Analytical and Simulation comparison of losses in Non-Isolated DC/DC converter using Si and SiC switches for PV Application** *Saqib Ali Syed, Hassan Abdullah Khalid and Hasaan Farooq*
	Certificate Distribution	

Technical Session-IV

Machine Learning & IoT

(Dr. Farah Haroon,IIEE, **Engr. Obaid ur Rehman Kamal Zai, IEP**, Dr. Muhammad Faisal Khan, HU

Civil A/V Hall, NED UET, Karachi.

Time:	Paper ID:	Title and Presenters
13:45-14:05	Invited Talk by **TBD**	
14:05-14:25	IEEC-2022-09	**Text-to-Image Generation Using Deep Learning** *Sadia Ramzan, Muhammad Munwar Iqbal & Tehmina kalsum*
14:25-14:45	IEEC-2022-39	**Air-MIT: Air Quality Monitoring using Internet of Things** *Syeda Messan, Asra Shahud, Amna Anis, Roma Kalam, Sundus Ali and Muhammad Imran Aslam*
14:45-15:05	IEEC-2022-48	**Fully automatic weave identification in woven fabrics using Digital Image Processing** *Rizwan Aslam Butt, M. Amir Qureshi, M. Zuhair Arfeen, Noreen Akram*
15:05-15:25	IEEC-2022-82	**Machine vision based plastic bottles inspection for quality assurance** *Majida Kazmi, Basra Hafeez, Hashim Raza Khan, and Saad Ahmed Qazi*
	Certificate Distribution	

Technical Session-V Robotics and Automation (Prof Dr. Ashfaque Hashmi, MUET, Engr. Tafseer Ahmed Khan, IEP, , Dr. Tariq Rehman,NEDUET		
Mechanical Hall, NED UET, Karachi.		
Time:	Paper ID:	Title and Presenters
13:45-14:05	IEEC-2022-13	**Stable Reduced Order Model for Index-3 Second Order Systems** *Mubashir Rehan, Shafiq Haider, Aamina Bintul Huda, Muhammad Saqlain and Hussain Hadi*
14:05-14:25	IEEC-2022-16	**Model Reduction of discrete Time Index-3 Second Order Form Systems for Limited Frequency Intervals** *Humaira Rauf Qazi, Shafiq Haider, Aamina Bintul Huda, Muhammad Saqlain and Ahmed Roohullah Arif*
14:5-14:45	IEEC-2022-59	**Motor Parametric Calculations for Robot Locomotion** *Syed Murtaza Hassan Kazmi, Abdullah Haider Ali, Humayun Khan, Hasnain Ali Poonja, Muhammad Ayaz Shirazi and Riaz Uddin*
14:45-15:05	IEEC-2022-63	**Oxygen Concentrator Design: Zeolite based Pressure Swing Adsorption** *Ahsan Sami, Marium Irfan, Muhammad Sameer, Abdullah Haider Ali, Humayun Khan, Riaz Uddin and Erij Khan*
15:05-15:25	IEEC-2022-75	**Design procedure for motor selec on for custom-made mul - 2 axis CNC Machine** *Haziq Iqbal, Muhammad Muhamid Ali Khan, Imtisal Ahmed, Huzaifa Yousuf, Humayun Khan and Riaz Uddin*
	Certificate Distribution	

Technical Session-VI Data Science & AI in Power Systems-II (Dr. Umbrin Sultana,NEDUET, Dr. Riazuddin, IEP, Dr. Anwer A. Memo, MUET		
Computer Lab-II, Electrical Engineering Department, NED UET, Karachi.		
Time:	Paper ID:	Title and Presenters
13:45-14:05	IEEC-2022-27	**High Impedance Faults Detection and Classification in Re-newable Energy-Based Distribu on Networks using Time-Varying Kalman Filtering Technique** *Faisal Mumtaz, Muhammad Asif, Hasseb Hassan Khan, Shah Rukh Abbas, Kashif Imran, Usman Haider, Muhammad Yousif and Asad Ullah*
14:05-14:25	IEEC-2022-44	**ITER PF AC/ DC Power Supply System Normal Operation Analysis Using TS Fuzzy Controller** *Hassan Mahmood Ul, Atta Ullah Khidrani, Syed Ali Raza Shah, Mati Ullah, Zaffar Nawaz Hayat Khan, Muhammad Humayun, Mudassir Rashid and Peng Fu*
14:25-14:45	IEEC-2022-60	**Microgrid Protection Scheme using Wavelet Packet Transform and Data Mining Classifier** *Shazia Baloch, Saeed Zaman Jamali, A aullah Khidrani and Syed Ali Raza Shah*
14:45-15:05	IEEC-2022-76	**Unsymmetrical fault Analysis and protection of 1.5MW DFIG Wind turbine Converters** *Muhammad Uzair Khalid, Hassan Abdullah Khalid, Hasaan Farooq and Afzaal Khan*
15:05-15:25	IEEC-2022-78	**Optimal Restoration Sequence Of Parallel Power System Using Genetic algorithm** *Saad Ullah Aftab, Muhammad Numan, Hasaan Farooq, Naseer Ahmed and Zain Ul Hassan*
	Certificate Distribution	

10:30 AM - 12:30 PM
Technical Session-1
on Electronics & Communication Systems
at Mechanical AV Hall

Paper ID: IEEC-2022-12 **Session Name: Electronics & Communication Systems**

TOLL AUTOMATION SYSTEM USING RFID AND WEBPORTAL

Zeghum Abbas Abbasi

This paper depicts the RFID-based programmed cost assortment framework for the cost entryway. Most of the cost assortment systems consistently used as a piece of Pakistan contain manual trade. By and by, a day's action has developed a broad scale achieving blockage at the cost courts. It causes blocked driving conditions and wastage of time and fuel. This undertaking aims tochange manual trade to electronic cost gathering with the help of RFID development. Customized cost courts shed wastage of time, and it can keep the customer invigorated about its change by imparting something explicit each time it goes through the cost square. The cost is deducted from the vehicle owner's pre-paid record each time it goes through it. A 125KHz RFID per user is used for perceiving the confined names used by the customer. Next to an LCD panel that displays all the trade's snippets of information is indeed the barricade's motor. This structure will slash downtime and fuel wastage at the cost courts, offer information to the customer about his/her change as the cloud-based information send, and ensure a smoother travel understanding for the explorers. Moreover, switches have been obliged to invigorate electives if an event of lousy equilibrium ought to emerge. Here we use multiple programming languages for obtaining desired output, such as CSS, SQL, PHP, Python, and HTML. Furthermore, it uses different software such as raspberry pi imager, VNC Viewer, and

Paper ID: IEEC-2022-17 **Session Name: Electronics & Communication Systems**

MODELLING THE ELECTRIC FIELD DISTRIBUTION IN POLYETHYLENE NANO-COMPOSITE TO INVESTIGATE ELECTRICAL TREEING INITIATION USING FINITE ELEMENT METHOD

Khola Azhar and Salman Amin

Electrical treeing is a type of dielectric breakdown in solid insulation when exposed to high voltage. It usually occurs due to non-uniform electric field, or by the presence of foreign particle (impurities) where partial discharge begins. Nanofillers improves dielectric strength by increasing the resistance to treeing. In this paper, the electric field distribution is simulated for polyethylene dielectric with needle-plane gap using finite element method in COMSOL Multiphysics simulation software. Using electric field distribution graphs, the electric stress at different points is computed. Filler addition makes the electric field uniform, and less intense which significantly improve electrical properties of polyethylene.

Paper ID: IEEC-2022-25 **Session Name: Electronics & Communication Systems**

COMPARITIVE ANALYSIS OF AES & RSA ALGORITHMS FOR SECURITY OVER CLOUD COMPUTING

Sana Fatima , Tanazzah Rehman, Muskan Fatima, Shahmeer Khan, Mir Arshan Ali

With the growing technologies, cloud is becoming center of sensitive information that makes it more open to danger, especially, when access to users with malicious plans increases. The huge amount of users use cloud for various reasons, therefore, require safe and protected data. In order to provide a safe environment, the aim of this paper is to analyze the well-known symmetric algorithm Advanced Encryption Standard (AES) and asymmetric algorithm Rivest,Shamir, Adleman (RSA) based on time complexity, space, resource and power consumption, and suggest a new hybrid encryption process that is a combination of symmetric and asymmetric cryptographic methods. Based on experimental analysis, this paper proposes AES cryptographic method as a first choice for data encryption processes for cloud applications and its data storage.

Technical Session-1
on Electronics & Communication Systems
at Mechanical AV Hall

Paper ID: IEEC-2022-32 **Session Name: Electronics & Communication Systems**

IMPACT OF MULTIPLE BEAMS AND MOBILITY BASED BEAM ALIGNMENT ERROR ON MILLIMETER WAVE COMMUNICATION

Hira Mariam , Irfan Ahmed and Muhammad Imran Aslam

Millimeter wave (mmwave) is potential technology to cater the data requirements of future cellular network through its wider spectrum and directional beamforming. With such directional communication, exact alignment of communicating beams is crucial. In this paper, the directivity gains with antenna model with Gaussian main lobe is used and the impact of beam alignment error due to user random movement is investigated on the uplink system performance of mmwave cellular network. Using stochastic geometry, we derive Signal-to-Interference-plus-Noise Ratio (SINR) coverage probability. Numerical results show that an optimal number of base station beams exist that maximizes coverage probability at different user velocity and cell radius.

Paper ID: IEEC-2022-83 **Session Name: Electronics & Communication Systems**

CONFINEMENT SPECIFIC DESIGN OF SOI RIB WAVEGUIDES WITH 2 SUBMICRON DIMENSIONS AND SINGLE MODE OPERATION

Abdurrahman Javid Shaikh, Abdul Ghani Abro, Mirza Muhammad Ali Baig
Syed Mohsin Abbas, Muhammad Adeel Ahmad Siddiqui

Full-vectorial finite difference method with perfectly matched layers boundaries is used to identify the single mode operation region of submicron rib waveguides fabricated using silicon-on-insulator material system. Achieving high mode power confinement factors is emphasized while maintaining the single mode operation. As opposed to the case of large cross-section rib wave-guides, theoretical single mode conditions have been demonstrated to hold for sub-micron wave-guides with accuracy approaching 100%. Both, the deeply and the shallowly etched rib waveguides have been considered and the single mode condition for entire sub-micrometer range is presented while adhering to design specific mode confinement requirements.

Technical Session-2
on Data Science & Al in Power Systems-I
at Civil AV Hall

Paper ID: IEEC-2022-83 **Session Name: Data Science & Al in Power Systems-I**

A MIXED INTEGER SECOND ORDER CONE MODEL FOR THE OPTIMAL PLACEMENT AND SIZING OF BATTERY ENERGY STORAGE SYSTEM IN POWER DISTRIBUTION NETWORKS

Muhammad Hussain, Raja Masood Larik and Kamran Ahmed

As the demand of the electricity is increasing day by day, the integration of battery energy storage system has highly influence in the power system. The battery energy storage system has the advantage to improve the economy, and also have the environmental benefits. For the integration of battery energy storage system an optimal placement and economic dispatch of energy will be required to avoid these types of problems. The BESS will provide the power whenever the DG'S are unable to provide the power to the system.in case of solar the sun cannot provide light to solar panel all the day and in case of wind turbine the wind also variate time to time. this research proposes the optimal placement and reduction of cost of the purchased energy from conventional sources by considering the BESS with active power capability in IEEE-33 bus system by using the algorithm Mixed-integer second-order cone programming (MI-SOCP) model in MATLAB using MOSEK solver to reduce the cost of purchased energy as objective function.

Technical Session-2
on Data Science & AI in Power Systems-I
at Civil AV Hall

Paper ID: IEEC-2022-19 **Session Name: Data Science & AI in Power Systems-I**

COST MINIMIZATION IN RADIAL DISTRIBUTION SYSTEM INTEGRATED WITH COMMERCIAL ELECTRIC VEHICLE CHARGING STATION

Umbrin Sultana, Abeer Mujahid, Hamza Ahmed Jilani and Uzma Perveen

Energy efficient modes of transportation have become essential today due to environmental challenges. However, utilities and decision-making bodies are reluctant to proceed in this direction because of the expected system instability. This paper contributes to minimizing the cost incurred due to energy losses in IEEE-37 bus system integrated with a commercial electric vehicle charging station (EVCS) located in Qatar. The Particle Swarm Optimization (PSO) algorithm is used for efficient location allocation of EVCS. The system is analytically examined through Thukaram Load Flow Algorithm and investigations are made to observe the beneficial impacts of load balancing between RES and utility.

Paper ID: IEEC-2022-26 **Session Name: Data Science & AI in Power Systems-I**

SMART ENERGY METERS IN RENEWABLE ENERGY BASED POWER NETWORKS: AN EXTENSIVE REVIEW

Muhammad Usman Haider , Faisal Mumtaz , Haseeb Hassan khan , Muhammad Asif , Muhammad Shoaib Rashid Shah Rukh Abbas , and Muhammad Zeeshan

The substantial growth in energy utilization, and the instant expansion of renewable energy resources, mainly winds, and solar, poses challenges to the environment and energy security. Therefore, Smart Energy meters (SEM's) are the bottom line modules in such Renewable energy-based networks (REBNs). Apart from measurement of energy flows, smart energy meters are capable of give-and-take complete information on the utilization of energy and the status of energy networks between end consumers and utility. Moreover, according to the individual consumer's commands, the SEM's can also be utilized for the monitoring and control consumer premises electrical device. The presented paper reviews the present development of SEM's scientifically, together with the other meters like smart gas (SG), smart heat (SH), and electricity (SE) meters. Furthermore, the fact-finding of various functions and applications of SEM's. At last,this paper provides conclusive remarks and the future direction of SEM's.

Paper ID: IEEC-2022-35 **Session Name: Data Science & AI in Power Systems-I**

SMART OCR APPLICATION FOR METER READING

Umbrin Sultana, Sannad Bilal, Syed Hamza Abbas Naqvi, Rafay Iqbal and Maha Irfan

The current method of meter reading being used by power distribution companies is outdated and complex since it relies on manual process of capturing images of meter by a human being and then manually updating the server with new readings. This process is not only complex but time consuming and has a huge margin of human error. The rise in human population has caused increase in electricity meters, thus increasing the number of readings to be recorded manually which has increased the chances of error. This research presents a prototype of an alternative method to reduce the manual work by replacing the existing method with a smart android application. We are suggesting a smart web application with a web-based server, designed to collect data from electricity meter and then transferring it to database/server for calculation and analyzation using Optical Character Recognition. After an image of electricity meter is taken, the calculated bill will be sent to customer via E-mail. This process is much easier and it reduces workload of an employee and companies as well.

Technical Session-2
on Data Science & Al in Power Systems-I
at Civil AV Hall

Paper ID: IEEC-2022-36 **Session Name: Data Science & Al in Power Systems-I**

INCREASE THE PERFORMANCE OF WIND ENERGY SYSTEMS USING OPTIMAL LAYOUT PLANNING

Umbrin Sultana, Maha Aamir, Maha Irfan and Midhat Fatima

As the years progress, the focal point has been swerved upon an alternative of generating electricity employing renewable and environment-friendly approaches, explicitly by Wind Energy. Today wind power plant technologies are experiencing a resurgence, as wind turbine promises to be an imperative substitute to fossil fuels. It has been analyzed that from 14781MW in 2004 to 51477MW in 2014 the capacity of producing electricity from wind energy has augmented drastically. However, researches are underway to optimize the productivity of Wind Turbines to the point of saturation, so in addition to those with our acquaintance, this research will be based on an area described as 'Increasing Efficiency by Using Optimal Sizing'. Discussion on the best possible geometrical profile of a Turbine, in terms of its size and area, covered. Along with this, the Wake effect theory of wind turbines will be discussed in-depth, describing how wind turbines extract energy from wind and reduce wind speed behind the rotor. Furthermore, the major parameter i.e., Cost will also be scrutinized while discussing different countries and their cost liabilities in making wind turbines effective. Additionally, the research shall cover all the fundamental components used in wind turbine design and how its productivity will proliferate at more economic terms for an average consumer of a power plant.

Technical Session-3
on Renewable Energy and Interconnected Systems
at Computer Lab-II, Dept. of Electrical Engineering

Paper ID: IEEC-2022-49 **Session Name: Renewable Energy and Interconnected Systems**

EXPERIMENTAL ANALYSIS OF SOILING LOSS ON PV MODULE IN CEMENT PLANT ENVIRONMENT

Muhammad Hamid Riaz , and Tahir Mahmood

Soiling phenomenon appears by covering the photovoltaic panels with layers of dust resulting in reduction of radiation to reach the panels thus reducing PV performance. This research focuses on the PV performance degradation due to soiling and chemical composition of dust particles. Four types of dust samples having different physical, chemical and optical properties were collected for experimental analysis. Three of them were coal, cement and iron oxide which are extensively used in cement plant, collected to investigate the impact of darker color dust on albedo and hence on transmission of sunlight and fourth sample was named as panel dust collected from solar plates installed at cement plant. Experimental results show that transmission of sunlight strongly depends on particle size distribution. Fine particles increase the transmission loss and degrade the performance of solar cell more as compared to larger one, as these particles leave no empty spaces between grains hence do not allow sunlight to reach the solar cell while randomly accumulated larger particles leave voids between grains allowing light to penetrate. Moreover, albedo and higher quantity of iron oxide in dust boost the absorption of sunlight and play significant role in scattering and attenuation of solar irradiance.

Technical Session-3
on Renewable Energy and Interconnected Systems
at Computer Lab-II, Dept. of Electrical Engineering

Paper ID: IEEC-2022-56 **Session Name: Renewable Energy and Interconnected Systems**

UNVEILING SURFACE RECOMBINATION VELOCITY INFLUENCE ON THE DEVICE CHARACTERISTICS FOR THE FORMAMIDINIUM PEROVSKITE SOLAR CELL

Faisal Saeed, Tauseef Ur Rehman, Abdullah Zohaib, Ahmad Farid, Muhammad Haseeb Khan Mansoor Ahmad Khan, Haider Ali Tauqeer and Asad Idrees

Herein we numerically elucidate the effect of varying surface recombination velocity (Srv) at the front and back metal contact on the device performance for our reported lead-free forma-midinium tin triiodide (FASnI3) perovskite solar cell. The Srv is generally contemplated as a trivial non-radiative recombination loss factor but determinately impacts the characteristics of the solar cell. Given that, we simultaneously varied the Srv at the back and front metal contacts in the range of 1×10 1– 1×10 7cm/s. Such values for Srv can be realized by ideally passivating the perov-skite film and with passivated perovskite films or metallic contact resistive nature. It was inferred that at Srv of 1×10 7cm/s, the device efficiency was 21.24 % and was steeply increased to 21.42% on decreasing the Srv rate to 1×10 1 cm/s revealing that at higher Srv rate, recombination losses enhances because of increased carrier recombination at the defect surface thereby reducing the effi-ciency and overall performance of the solar cell.

Paper ID: IEEC-2022-67 **Session Name: Renewable Energy and Interconnected Systems**

ANALYSIS AND EFFICIENCY EVALUATION OF NON-ISOLATED DC/DC CONVERTER WITH WIDE INPUT VOLTAGE RANGE FOR PV APPLICATION

Saqib Ali Syed, Hassan Abdullah Khalid and Hasaan Farooq

In renewable energy sources specifically in Photovoltaics systems DC/DC converter play vital role as the power generated by PV system is non-linear and changes with solar irradiance and temperature. So, these systems require converters which have wide input voltage range, high voltage gain, high power range and with improved efficiency. In this paper, analysis of non-isolated reduced redundant power processing converter topology is presented to evaluate its efficiency and reliability for the photovoltaic system. The proposed converter has very simple design and least number of circuit elements. The converter is designed in such a way that it always operates in continuous conduction mode. The mathematical modeling of 3kW converter is presented to show the theoretical evaluation of step-up voltage ratio of converter. For further evaluation of the performance and efficiency of the converter a simulation study is conducted in PSIM software. Overall efficiency of converter is improved for wide input voltage range and voltage gain specifically for Photovoltaic systems.

Paper ID: IEEC-2022-79 **Session Name: Renewable Energy and Interconnected Systems**

EFFICIENCY ANALYSIS OF GAN BASED LLC RESONANT CONVERTER FOR PV APPLICATIONS

Hasaan Farooq, Hassan Abdullah Khalid, Muhammad Uzair Khalid and Saqib Ali Syed

Due to the increase in renewable energy resources the need for highly efficient Power electronics converters at flexible operating conditions has increased. The newly introduced wide bandgap switches like Gallium Nitride (GaN) are more suitable mechanically ,thermally, and in terms of fast switching, etc. In this paper, a 3kW LLC resonant converter was designed for PV applications using GaN as switching devices. The converter was designed to achieve zero voltage switching at a wide input voltage range. The proposed system was simulated on PSIM software under different loading conditions. The performance comparison was made between GaN and Si switches. Analysis shows that GaN converter has better performance as compared to Si at higher voltages. The designed converter achieved 98.55% maximum efficiency. start of critical load and restoring the maximum load in minimum restoration time using an optimal transmission path with a minimum number of switching actions. A case study based on the IEEE-39 benchmark system validates the effectiveness of the proposed algorithm. scheme of Crowbar circuit is designed and check its operation on 1.5MW DFIG based Industrial Wind Turbine model in EMTDC/PSCAD.

Technical Session-3
on Renewable Energy and Interconnected Systems
at Computer Lab-II, Dept. of Electrical Engineering

Paper ID: IEEC-2022-81 | **Session Name: Renewable Energy and Interconnected Systems**

ANALYTICAL AND SIMULATION COMPARISON OF LOSSES IN NON-ISOLATED DC/DC CONVERTER USING SI AND SIC SWITCHES FOR PV APPLICATION

Saqib Ali Syed, Hassan Abdullah Khalid and Hasaan Farooq

With the growth of renewable energy sources around the world, the demand for most cost effective and efficient converters which can operate at high frequency and have less switching and conduction loss has grown. High efficiency is one of the most difficult goals to attain in power electronic converters. Wideband switches can be used to achieve this purpose, although they add to the system's cost. In this paper, a comparison between SiC MOSFET and Si MOSFET switches were made for a 3KW I-IIB Buck-boost/Boost non-isolated Reduced redundant converter for the photovoltaic system with wide input voltage range. Mathematical calculations were used to investigate the switching and conduction losses, and software simulations in PSIM were used to verify their authenticity. In high-frequency power applications, the results suggest that SiC MOSFET can work more efficient than Si MOSFET. Si MOSFETs, on the other hand, are still preferred for small voltage and low power applications due to their lower cost

1:45 PM - 3:25 PM
Technical Session-4
on Machine Learning & IoT
at Civil AV Hall

Paper ID: IEEC-2022-09 | **Session Name: Machine Learning & IoT**

TEXT-TO-IMAGE GENERATION USING DEEP LEARNING

Sadia Ramzan ,Muhammad Munwar Iqbal & Tehmina kalsum

Text-to-image generation is a method used for generating images related to given textual 8 descriptions. It has a significant influence on research areas as well as a diverse set of applications 9(e.g., photo-searching, photo-editing, art generation, computer-aided design, image reconstruction, 10 captioning, portrait drawing). It is most challenging task to produce consistently realistic image ac- 11 acording to given conditions. Existing algorithms for text-to-image generation create pictures that do 12 not properly match text. We considered this issue in our study and build a deep learning based 13 architecture, Recurrent Convolutional Generative Adversarial Networks (RC-GAN) for semanti- 14cally consistent image generation. RC-GAN successfully bridge the advancements in text and picture modelling, converting visual notions from words to pixels. Proposed model is trained on Oxford-102 flowers dataset and performance is evaluated using inception score & PSNR. Experimental 17 results demonstrate that our model is capable of generating more realistic photos of flowers from 18 given captions, with an inception score of 4.15 and PSNR value of 30.12dB respectively. In future, 19 we aim to train the proposed model on multiple datasets.

Technical Session-4
on Machine Learning & IoT
at Civil AV Hall

Paper ID: IEEC-2022-39 **Session Name: Machine Learning & IoT**

AIR-MIT: AIR QUALITY MONITORING USING INTERNET OF THINGS

Syeda Messan , Asra Shahud , Amna Anis , Roma Kalam , Sundus Ali and Muhammad Imran Aslam

In both developed and developing countries, air pollution is increasing daily, compromising the air quality index and causing harm to everyone. Some of the reasons for thisrapid increase in air pollution include the growing population, rising number of industries, rapid urbanization, and excessive use of fuel-consuming transportation. Hence, there is an ever-increasing need to monitor air quality using an energy-efficient, ubiquitous and connected manner. In this paper, we are presenting the design, working, and results of our device named Air-MIT, which is an air quality monitoring device, which uses the Internet of Things (IoT) to populate andupload data securely to the cloud server. We have developed a low-cost IoT-based air monitoringsystem capable of detecting carbon dioxide (CO2), Carbon Monoxide (CO), methane gas (CH4),Ammonium (NH4), with the provision of adding more sensors capable of detecting other harmful gases and particulates in the air as well. The system has been designed to monitor indoor air quality in real-time and to trigger an alarm if any one of the readings crosses the predefined threshold. The device also has the provision of turning on the exhaust fan in the house or kitchento clear out the air and ventilate the space to minimize the exposure of harmful gases, resulting in avoidance of any accidents or fires.

Paper ID: IEEC-2022-48 **Session Name: Machine Learning & IoT**

FULLY AUTOMATIC WEAVE IDENTIFICATION IN WOVEN FABRICS USING DIGITAL IMAGE PROCESSING

Rizwan Aslam Butt, M. Amir Qureshi, M. Zuhair Arfeen, Noreen Akram

Fabric is an important part and parcel of our lives. In addition to the fabric color and texture, the fabric weave also determines the physical appearance and the physical properties of the fabric. At times it is necessary to determine the weave type of the fabric for example at the sales outlets, or customs for tax duty computations or the end-user may require to confirm the fabric weave type. Conventionally a manual invasive technique is used to determine the weave type of the fabric also requires to have extensive knowledge about the fabric weaving process. Therefore, in this study, we have presented an image processing-based non-invasive and low-cost fabric weave identification scheme. The experimental results show that the proposed scheme has very encouraging results and shows 90% accuracy in detecting the fabric weave type in real-time.

Paper ID: IEEC-2022-82 **Session Name: Machine Learning & IoT**

MACHINE VISION BASED PLASTIC BOTTLES INSPECTION FOR QUALITY ASSURANCE

Majida Kazmi, Basra Hafeez, Hashim Raza Khan, and Saad Ahmed Qazi

With the increasing utilization of plastic bottles in fast moving consumer goods industry, the efficiency and accuracy of bottle defects inspection process become very important for quality assurance. Deep learning-based inspection is though accurate and robust, but at the same time data hogging and computationally expensive, thus not feasible for fast inspection. Therefore, this paper presents machine vision based efficient and fast system for inspecting plastic bottles defects. The system is comprised of a chamber having a camera and illuminators to capture high resolution images in a controlled lighting condition. Captured images are processed by using simple image processing techniques to identify a range of bottle defects such as seated cap, dents on body, and label alignment on plastic. The experimental results show that the proposed system is 95% accurate to determine a range of bottle defects. It is highly feasible for fast inspection without requiring high computation power and large amount of training data.

Technical Session-5
On Robotics and Automation
at Mechanical AV Hall

Paper ID: IEEC-2022-13 | **Session Name: Robotics and Automation**

STABLE REDUCED ORDER MODEL FOR INDEX-3 SECOND ORDER SYSTEMS

Mubashir Rehan, Shafiq Haider, Aamina Bintul Huda, Muhammad Saqlain and Hussain Hadi

A new technique for preserving stability of reduced order model (ROM) for index-3 second order systems (SOSs) in limited frequency interval is discussed in paper. This technique is implemented by making indefinite terms of algebraic Lyapunov equations definite which can be used in applications like signal reconstruction controller design and filter design.The index-3 form is first converted into index-0 form and then the Lyapunov eqautions are solved for computing limited frequency Gramians. The terms which are indefinite can be made definite by assigning them nearest possible positive eigen values.Gramians are balanced to obtain Hankel singular values which are used later to get ROM using balanced truncation.Putty.

Paper ID: IEEC-2022-16 | **Session Name: Robotics and Automation**

MODEL REDUCTION OF DISCRETE TIME INDEX-3 SECOND ORDER FORM SYSTEMS FOR LIMITED FREQUENCY INTERVALS

Humaira Rauf Qazi, Shafiq Haider, Aamina Bintul Huda, Muhammad Saqlain,Ahmed Roohullah Arif

Model order reduction framework for limited frequency interval response optimization of reduced order models (ROMs) for index-3 second order form systems (SOSs) is presented in this paper. Firstly, index-3 SOS system is transformed into index-0 and corresponding generalized first order form. In order to emphasize ROM response over required frequency interval, frequency limited gramians and corresponding generalized Lyapunov equations are presented and balancing of gramians obtained by solving Lyapunov equations to obtain the required ROM exhibiting good response in intended frequency interval.The developments are tested on multiple systems and superiority of proposed extension over existing method is certified. Propositions can be utilized for frequency limited applications for index-3 SOSs.Putty.

Paper ID: IEEC-2022-59 | **Session Name: Robotics and Automation**

MOTOR PARAMETRIC CALCULATIONS FOR ROBOT LOCOMOTION

Syed Murtaza Hassan Kazmi , Abdullah Haider Ali , Humayun Khan
Hasnain Ali Poonja, Muhammad Ayaz Shirazi and Riaz Uddin

Motor selection is an important step in designing a mobile robot since it governs the payload capacity of the robot.In this paper, a method is presented for the calculation of motor parameters when the robot payload is known and the motor is to be selected.The article also deals with the case when a motor is available and its corresponding payload is to be calculated. A motor load profile with varying speeds is presented so as to plot its change in torque and mechanical power.This method is employed towards motor selection procedure for a heavy weight mobile robot for an industrial manipulator using a MATLAB Graphical User Interface.

Technical Session-5
On Robotics and Automation
at Mechanical AV Hall

Paper ID: IEEC-2022-63 | **Session Name: Robotics and Automation**

OXYGEN CONCENTRATOR DESIGN: ZEOLITE BASED PRESSURE SWING ADSORPTION

Ahsan Sami , Marium Irfan,Muhammad Sameer , Erij , Abdullah Haider Ali , Humayun Khan ,Riaz Uddin

The ongoing coronavirus and its variants are alarming the world inadequately. Extreme reciprocal pneumonia is the primary element of serious COVID-19, and sufficient ventilator help is vital for patient endurance. Supplemental oxygen is the first fundamental stage for the cure of serious COVID-19 patients with hypoxemia. In this regard, oxygen concentrators can be used for patients of COVID-19 to supply oxygen.This paper primarily focuses on designing a portable medical device oxygen concentrator using the technology Pressure Swing Adsorption (PSA), which takes air from the atmosphere, adsorbs nitrogen, and supplies oxygen. A detailed study with the simulation has been done to benchmark the outcome of LiX, LiLSX, and 5A zeolite as adsorbents. Results show LiX is the most suitable with better nitrogen to oxygen selectivity ratio with a flow rate of 5LPM.

Paper ID: IEEC-2022-75 | **Session Name: Robotics and Automation**

DESIGN PROCEDURE FOR MOTOR SELECTION FOR CUSTOM-MADE MULTI-AXIS CNC MACHINE

Haziq Iqbal, Muhammad Muhamid Ali Khan, Imtisal Ahmed, Huzaifa Yousuf, Humayun Khan and Riaz Uddin

CNC machining is a high precision computer-controlled subtractive manufacturing technique. In this paper, motor selection for a custom-made, low cost multi-axis CNC machine is discussed. The paper also deals with mechanical assembly of the custom-made CNC machine along with the mathematical models for the linear and rotary axes movements to manipulate the cutting tool and work piece. The torque required to rotate rotary axes with the stock have been decided by SolidWorks motion study. This work is a part of design and development of a smart and cost-effective 5-axis CNC machine.

Technical Session-6
on Data Science & Al in Power Systems-II
at Computer Lab-II, Dept of Electrical Engg.

Paper ID: IEEC-2022-27 | **Session Name: Data Science & Al in Power Systems-II**

HIGH IMPEDANCE FAULTS DETECTION AND CLASSIFICATION IN RENEWABLE ENERGY-BASED DISTRIBUTION NETWORKS USING TIME-VARYING KALMAN FILTERING TECHNIQUE

Faisal Mumtaz, Muhammad Asif1, Haseeb Hassan Khan, Shahrukh Abbas, Kashif Imran, Usman Hadier Muhammad Yousif, and Asadullah

In the modern world, High Impedance (HI) Faults identification is challenging in renewable energy-based distribution networks (REBDN's) due to the low level of fault current. In this paper, a new HI fault detection/classification strategy is presented for the REBDN's, based on Time-varying Kalman Filter (TVKF). Initial, TVKF is applied to the voltage and current signal of each phase separately, to extract harmonic components. Secondly, the TVKF-based harmonic components are utilized to calculate single-phase reactive power (SPRP) independently. If the SPRP of any individual phase is greater than a specific threshold value, the corresponding phase is considered faulty. Fault classification is autonomous due to phase segregation. The proposed strategy is tested on the REBDN's test system in MATLAB/Simulink software. Results indicate that the proposed scheme detects and classifies HI faults under radial and mesh topologies

Technical Session-6
on Data Science & Al in Power Systems-II
at Computer Lab-II, Dept of Electrical Engg.

Paper ID: IEEC-2022-44 **Session Name: Data Science & Al in Power Systems-II**

ITER PF AC/ DC POWER SUPPLY SYSTEM NORMAL OPERATION ANALYSIS USING TS FUZZY CONTROLLER

Mahmood Ul Hassan, Atta Ullah Khidrani, Syed Ali Raza Shah, Mati ullah Zaffar Nawaz Hayat Khan ,Muhammad Humayun, Mudassir Rashid, and Peng Fu

The normal operating study of the ITER PF AC/DC converter system commissioning the new Takagi-Sugeno (TS) fuzzy controller is presented in this work. The performance of the PI and TS Fuzzy Controllers is compared. The Mamdani fuzzy controller has been studied and examined; however, it suffers from a huge number of sophisticated fuzzy sets and inference rules. The TS fuzzy controller on the ITER PF systems is relatively simple and straightforward to put into practice. The proposed scheme's current response verifies the step change. Furthermore, the investigation findings show that the TS fuzzy control method outperforms traditional PI control.

Paper ID: IEEC-2022-60 **Session Name: Data Science & Al in Power Systems-II**

A PROTECTION TECHNIQUE FOR MICROGRID USING WAVELET PACKET TRANSFORM AND DATA MINING CLASSIFIER

Shazia Baloch, Saeed Zaman Jamali, Attaullah Khidrani, and Syed Ali Raza Shah

In electrical power system, popularity of microgrid is significantly increasing because of its remarkable advantages. However, microgrid often exhibit protection problems and seriously effects the reliability of power system. Hence, a proper protection strategy is extremely needed to solve the protection issues. Therefore, this manuscript proposes a protection strategy against the faults in microgrid using wavelet packet transform and data mining classifier. MATLAB/SIMULINK and Python are used to investigate the proposed scheme performance. It was found that the proposed technique can detect and classify different types of faults for islanded and grid associated modes of microgrid.

Paper ID: IEEC-2022-76 **Session Name: Data Science & Al in Power Systems-II**

UNSYMMETRICAL FAULT ANALYSIS AND PROTECTION OF 1.5MW DFIG WIND TURBINE CONVERTERS

Muhammad Uzair Khalid , Hassan Abdullah Khalid , Hasaan Farooq and Afzaal Khan

Due to rapid increase in the installation of renewable enegy resources in to the grids ,the use of power electronics-based devices are increasing day by day. Whenever a Wind Farm is installed and integrate with the grid, most of work and control depends on its electronic converters. Whenever grid fault occours , it can cause significant overcurrents and overvoltages, placing the entire facility at risk. It quickly cause the converter system to deteriorate if countermeasures were not taken. So a proper protection scheme is needed to protect the generator and its converter from faults. In this paper asymmetrical fault analysis and protection scheme is presented in which a single line to ground fault is created and then check its effects on DFIG , rotor circuit and converters. Then a proper protection scheme of Crowbar circuit is designed and check its operation on 1.5MW DFIG based Industrial Wind Turbine model in EMTDC/PSCAD.

Technical Session-6
on Data Science & Al in Power Systems-II
at Computer Lab-II, Dept of Electrical Engg.

Paper ID: IEEC-2022-78 | **Session Name: Data Science & Al in Power Systems-II**

OPTIMAL RESTORATION SEQUENCE OF PARALLEL POWER SYSTEM USING GENETIC ALGORITHM

Saad Ullah Aftab, Muhammad Numan, Hasaan Farooq, Naseer Ahmed and Zain Ul Hassan

The restoration of power systems is more emphasized in the modern electric power system (EPS) due to complex, interconnected networks, and natural catastrophic events. However, large-scale disruptions in the power system result in a partial or complete blackout. Such events have a low probability and high impact, causing significant regional socio-economic losses. Hence, the black start (BS) resource is needed to deliver the cranking power to restart the non-black start (NBS) units, energize the path, load, and restore the complete system with parallel restoration. This paper implemented a novel optimal restoration scheme to resuscitate the power system after partial or blackout. A multi-objective genetic algorithm is used to solve each island's optimal generation units start-up sequence, priority start of critical load and restoring the maximum load in minimum restoration time using an optimal transmission path with a minimum number of switching actions. A case study based on the IEEE-39 benchmark system validates the effectiveness of the proposed algorithm. scheme of Crowbar circuit is designed and check its operation on 1.5MW DFIG based Industrial Wind Turbine model in EMTDC/PSCAD.

POSTER PRESENTATION LIST

S. No	Paper ID	Paper title	Full name (Presenter).	Mode of presentation
1	70	IOT Application for Energy Management in Smart Homes	Muhammad Adnan Khan	Online through Google meet
2	43	Development of CNC based automated soldering machine	Muhammad Umer Baig	On campus (Physical)
3	2	Trust Management Technique using Blockchain in Smart Building	Muhammad Saeed	Online through Google meet
4	73	Design and Analysis of Shielding for Denoising Sensitive Partial Discharge Measurements in High Voltage Laboratory	SAFIAN AHMED QURESHI	Online through Google meet
5	51	Analysis and Proposed Remedies for Power System Blackouts around the Globe	Muhammad Amir Raza	On campus (Physical)
6	53	Sector-Wise Optimal Energy Demand Forecasting for a Developing Country using LEAP Software	Muhammad Amir Raza	On campus (Physical)
7	11	The Adoption of Mobile App for Automating Gas Meter Reading in Industry 4.0	Mehwish Shaikh	Online through Google meet
8	34	Optimal planning of photovoltaic based grid-connected electric vehicle charging system using teaching learning based optimization (TLBO)	Muhammad Umer	On campus (Physical)
9	15	Steady-State and Dynamic Analyses of Large-Scale PV Pene-tration on High Voltage Transmission System	Nasir Abbas	Online through Google meet
10	20	AUTOMATED TESTING WITH MACHINE LEARNING FRAMEWORKS:A CRITICAL ANALYSIS	Bisma Mansoor	On campus (Physical)
11	40	Chronographic Implementation of Energy Management System in Small Scale Plastic Industry	ABDULLAH ASIF BHATTI	Online through Google meet
12	69	Earthing Analysis of High Voltage Laboratory, USPCAS-E, NUST	Muhammad Bilal	Online through Google meet
13	68	Optimizing the potential of the feasible combination for electrification through renewable resources in commercial and urban areas.	Amina Shahab	Online through Google meet
14	62	WALKING ALGORITHM USING GAIT ANALYSIS FOR 17-DOF HUMANOID ROBOT	Hasnain Ali Poonja	On campus (Physical)
15	57	Deepfake Tweets Detection using Deep Learning Algorithms	Muhammad Anwar	Online through Google meet

Paper ID: IEEC-2022-70 (1)

IOT APPLICATION FOR ENERGY MANAGEMENT IN SMART HOMES

M. Adnan Khan, Intisar Ali Sajjad, Mustanser Tahir and Abdul Haseeb

Increase in population and industrialization have made the consumption of electrical energy ever increasing. Therefore, it has become necessary to monitor, control and efficiently utilize the energy consumption. Present power system cannot monitor and control the flow of power at distribution level efficiently due to which financial losses occur. Therefore, a system can be developed which can monitor and control the power system faster and in an efficient way by using modern technologies to avoid these losses. This paper presents an IOT based concept for energy management to monitor and control specific loads in buildings. Among many wireless technology protocols, the proposed solution uses Wi-Fi along with the programmable ESP8266 controller in order to monitor the voltage, current and power of few home appliances. The IOT scheme also pursues an additional web server-based monitoring approach for online visualization, monitoring and controlling of electrical parameter

Paper ID: IEEC-2022-43 (2)

DEVELOPMENT OF CNC BASED AUTOMATED SOLDERING MACHINE

Hafsa Wahid, Hufsa Hashmi, Muhammad Umer Baig, Nawab Ahmed Raza
Muhammad Faizan Sheikh, Muhammad Yousif Bhutto

Researchers have proposed several designs and techniques to obtain sustainable development through industries which will be escalated in the future by automation in industries. Nowadays, the automated soldering for printed circuit boards (PCBs) employs vision-based and artificial intelligence-based techniques which are complex and expensive. Computer numeric control (CNC) has been used for machining, drilling, and milling purposes is very popular as it proves to be highly accurate, flexible, and precise. In this regard, a low-cost and less complex automated soldering machine is proposed in which temperature controlled soldering station and CNC are integrated into a single machine to complete the soldering operation. This design will help minimize the complexity and cost of soldering stations for smallscale and medium-scale production industries.

Paper ID: IEEC-2022-02 (3)

TRUST MANAGEMENT TECHNIQUE USING BLOCKCHAIN IN SMART BUILDING

Muhammad Saeed, Rashid Amin, Aftab Ahmed and Naeem Ahmed

Security is a big challenge for developing and implementing IoT in smart building situations. In this context, our goal is to create a secure trust management system blockchain-based. We may take advantage of the security features that blockchain technology provides in terms of reliability, traceability, and data integrity. We design and implement a blockchain-based trust strategy that collects trust evidence, assigns each device a trust score, and securely stores and shares them with other devices in the network by integrating them into blockchain exchanges. According to the findings of our performance evaluation, our concept includes security features such as tamper-proofing and assault resistance, reliability, and easy implementation for IoT environments and applications.

Paper ID: IEEC-2022-73 (4)

DESIGN AND ANALYSIS OF SHIELDING FOR DENOISING SENSITIVE PARTIAL DISCHARGE MEASUREMENTS IN HIGH VOLTAGE LABORATORY

Safian Ahmed Qureshi, Abraiz Khattak, Safi Ullah Butt and Muhammad Bilal

In today's technological advancements, Electromagnetic Interference (EMI) in High Voltage (HV) Laboratories is extremely important, especially for sensitive Partial Discharge (PD) measurements. To avoid electromagnetic interference during partial discharge studies, the laboratory must be shielded for accurate measurements and findings. There are number of techniques used for shielding to avoid noise during PD measurements but all the techniques are very expensive and complex. In order to develop a low-cost practical solution for denoising sensitive PD measurements two portable prototype models of shielding enclosures based on the operating principle of Faraday Cages are fabricated and used in this research. A comparative analysis of both portable cages was done and effect of cage's material on its denoising performance was observed. Practical experimentation yielded effective average noise reduction up to 0.5 pC for 1 kV by thin aluminum foil cage and the ways to further improve the denoising capability are also suggested

Paper ID: IEEC-2022-51 (5)

ANALYSIS AND PROPOSED REMEDIES FOR POWER SYSTEM BLACKOUTS AROUND THE GLOBE

Muhammad Amir Raza, Krishan Lal Khatri, Arslan Hussain
Mohammad Huzaifa Ahmed Khan, Ahmed Shah, and Hassan Taj

Stable operation of power system contributes towards the economic growth of developed and developing countries around the globe. Blackouts due to technical faults put the whole power system into danger. In this paper, a comprehensive analysis is of power system blackouts, their root causes and potential impacts on the economy of developed and developing countries around the globe has been presented and possible approaches to avoid and resolve power system blackouts are presented. It is also proposed how to avoid cascaded events in case of power system failure at single point results in cascaded events and a complete blackout.

Paper ID: IEEC-2022-53 (6)

SECTOR-WISE OPTIMAL ENERGY DEMAND FORECASTING FOR A DEVELOPING COUNTRY USING LEAP SOFTWARE

Muhammad Amir Raza, Krishan Lal Khatri, Arslan Hussain, Habiba Rehman, Fariha Rubab, and Aiman Khan

Energy demand forecasting is a crucial activity in deciding the energy generation requirements of the developing countries. Pakistan is one of developing countries in South Asia. This paper gives an overview of the electric power sector structure of Pakistan with historical data and forecasts the energy demand of consumer groups in Pakistan till 2030 based on expected growth in population and business. The proposed model is designed using Long-range Energy Alternatives Planning (LEAP) software with two scenarios, that are, Business-as-Usual and Energy Conservation. Implementation of these scenarios shows that the energy demand of Pakistan will raise three folds by 2030.

Paper ID: IEEC-2022-11 (7)

THE ADOPTION OF MOBILE APP FOR AUTOMATING GAS METER READING IN INDUSTRY 4.0

Mehwish Shaikh, Zakaullah Qureshi, Hiba Haque Sheikh and Memoona Sami

The term "Industry 4.0" refers to a new phase of the Industrial Revolution that emphasizes interconnection, automation, machine learning, and real-time data. Reading the gas meters is not an easy job and walking to and from the meter can be a hassle. The process of reading gas meter is manual which is time consuming and cause human error. To automate this system, an android application is presented which read gas meters automatically through mobile camera and analyzes the digits of the meter using technology of optical character recognition to obtain the consumption units. This proposed application prototype was tested for 50 gas meters, and it gives 99.89% accuracy results on digits reading and barcode reading.

Paper ID: IEEC-2022-34(8)

OPTIMAL PLANNING OF PHOTOVOLTAIC BASED GRID CONNECTED ELECTRIC VEHICLE CHARGING SYSTEM USING TEACHING LEARNING BASED OPTIMIZATION (TLBO)

Umbrin Sultana, Muhammad Umer, Muhammad Shamoon, Muhammad Hasan

In this paper, an energy management schedule is proposed for renewable energy (RE) based grid-connected electric vehicle (EV) charging system (commercial charging station). This energy management schedule is then converted into an energy management algorithm (EMA) on which teaching learning based optimization (TLBO) is used to find the optimum size of the photovoltaic (PV) array and energy storage unit (ESU) required to charge electric vehicles with the help of proposed energy management scheme. It is designed in such a way that the EVs are charged without incurring economic losses to the station owner. The objective function of the TLBO is formulated based on a financial model that comprises the grid tariff, EV demand, and the purchasing as well as selling prices of the energy from RE and ESU. By integrating the financial model with the energy management algorithm (EMA), the TLBO computes the minimum number of PV modules (Npv) and ESU batteries (Nbat) for various vehicles

Paper ID: IEEC-2022-15 (9)

STEADY-STATE AND DYNAMIC ANALYSES OF LARGE-SCALE PV PENETRATION ON HIGH VOLTAGE TRANSMISSION SYSTEM

Nasir Abbas, Muhammad Yousif, Areeba Shamim, Fatir Burhan

The penetration of large-scale photovoltaic (PV) systems into a traditional transmission system adds a lot to the global efforts to increase renewable energy usage. Stable, secure, and reliable power system operation can be assured by performing steady-state and dynamic analyses for the increasing penetration of large-scale PV systems. This paper aims to analyze voltage stability by studying the steady-state and dynamic behavior of the IEEE 24 bus test system. Critical fault clearing time (CFCT) is determined for all the system buses under different penetration levels of PV. The reactive power required by the critical buses during the worst contingency is determined to keep the bus voltages at 1pu. The simulations are carried out using PSS/E and the results reveal that the increasing penetration improves the voltage stability.

Paper ID: IEEC-2022-20 (10)

AUTOMATED TESTING WITH MACHINE LEARNING FRAMEWORKS: A CRITICAL ANALYSIS

Sana Fatima, Bisma Mansoor, Laiba Ovais, Sajid Ali Sadruddin, Syed Aun Hashmi

As software systems are becoming more and more complex and standard testing practices are exhausting. We need smart solutions to reduce time, efforts and resources spent on software testing. The aim of this paper is to critically analyzed machine learning (ML) frameworks related to software automation We have measured the performance of testing tools on the basis of Manual labor required (efforts), Test performance, accuracy or error rate, Test Scope, time required and prerequisite knowledge requirement. These factors play a vital role to ensure ML frameworks with automation software can produce great results and hence improve software quality.

Paper ID: IEEC-2022-40 (11)

CHRONOGRAPHIC IMPLEMENTATION OF ENERGY MANAGEMENT SYSTEM IN SMALL SCALE PLASTIC INDUSTRY

Basit Ali , Adeel Khan , Abdullah Asif , Shehryar Khan ,and Fahad Imtiaz

The purpose behind this research paper is to recognize principle achievement factors for the powerful execution, activity, and accreditation of an energy the executive framework (EnMS) as per ISO 50001, which addresses the quickest developing norm for the board frameworks of (International Organization for Standardization, 2018). Associations are spending a lot of cash on their energy utilization. The shortage of energy assets, alongside their value instability, has become a significant worry for all businesses. Thusly, the requirement for overseeing and rationing energy has as of late acquired bigger consideration. A decent administration consistently seeks after reserve funds openings with the least speculations; thus, setting up energy the board situation can give the right way to deal with distinguishing openings and support upgrades. In this paper, a most optimized plan of the execution plan is discussed that can be embraced by an association named SPARKLE PLASTIC PRODUCT to facilitate the execution and decrease the endeavors.

Paper ID: IEEC-2022-69 (12)

EARTHING ANALYSIS OF HIGH VOLTAGE LABORATORY, USPCAS-E, NUST

Muhammad Bilal, Abraiz Khattak, Numan Ahmed and Safian Ahmed Qureshi

An effective and reliable grounding system is a necessary parameter for the safety of test equipment and personnel working in a high voltage laboratory. This paper analyses the performance of grounding system of high voltage laboratory located at USPCAS-E, NUST. By using grounding system analysis techniques based on IEEE standard 80-2013, and programs based on soillayer models, grounding system of high voltage laboratory is analyzed and solutions to the encountered issues are recommended.

Paper ID: IEEC-2022-68 (13)

OPTIMIZING THE POTENTIAL OF THE FEASIBLE COMBINATION FOR ELECTRIFICATION THROUGH RENEWABLE RESOURCES IN COMMERCIAL AND URBAN AREAS

Amina Shahab, Naseer Ahmed, Hasaan Farooq, Saad Ullah Aftab and Adnan Aslam

According to the global perspective, overpopulated urban areas require increased electric utility and demand. The national and regional energy supply and distribution companies find it difficult to fulfill this increasing demand. This study involves a proper optimization of regional solar potential and capacity for a possible hybrid model in the light of variable renewable energy and optimized software-based results, including the Net Present Costs (NPC) and Cost of Electricity (COE) that have been analyzed within HOMER simulations, in light of system performance and system's durability, operation & maintenance cost, derating factor, lifetime, revenue and their efficiency including the solar irradiance potential, as an application of electrical energy. Our results show that if we implement a design of this hybrid model that is analyzed for different plant capacities of 50MW, 100MW, 150MW, and 200MW and draw a comparative analysis having a lifetime of 25 years. So, the total power generating capacity of 200MW will be the most cost-effective and profitable system. It generates a profit four times more than the profit generated by 50MW, having a lifetime of 25 years.

Paper ID: IEEC-2022-62 (14)

WALKING ALGORITHM USING GAIT ANALYSIS FOR 17-DOF HUMANOID ROBOT

Hasnain Ali Poonja, Muhammad Soleman Ali Shah, Humayun Khan
Syed Murtaza Hassan Kazmi, Muhammad Ayaz Shirazi, Riaz Uddin.

People have been fascinated with humanoid robots for over two decades. They are expected to assist and collaborate with humans in the future. However, due to the limitations and complications of bipedal humanoid's walking mechanisms, they are still a long way off. In this paper, we have presented a walking mechanism algorithm using the gait analysis to mimic human walking pattern and applied that knowledge to enable 17 DoF bipedal humanoid robot to walk in a constraint environment. The basic sequence of stance and swing phase of human locomotion is studied and used to control servo motors to perform walking action of robot. These robots can be useful for social interaction and collaborative tasks in near future.

Paper ID: IEEC-2022-57 (15)

DEEPFAKE TWEETS DETECTION USING DEEP LEARNING ALGORITHMS

Muhammad Anwar

The simple contact and the significant improvement in the records that are easily accessible through the use of web-based broadcasting methods have made it complicated to recognize bo-gus and genuine information. The unadorned distribution of documents by allocation has re-sulted in significant growth of its misrepresentation. Wherever the dissemination of deceptive material is frequent which is putting questions on the validity of internet broadcasting webs. As a result, it has become an exploring task to naturally check the data in terms of its source, sub-stance, and supplier to sort it by false or legal. Despite some limits, Artificial Intelligence has assumed many common record groupings. This broadsheet examines a variety of Deep learning approaches for cutting-edge deception and generated dissemination. The constraint, techniques, and impromptu inventions that may be achieved by deep learning are also studied.

The Institution of Engineers Pakistan

Closing Session
at Video Conferencing Hall, Department of Civil Engineering,
NED University of Engineering & Technology, Karachi
(Saturday 26th March, 2022)

03:30 pm	Guests Arrival
03:40 pm	Guests to be seated
03:45 pm	Recitation from the Holy Quran
03:50 pm	**Conference Highlights by** Engr. Prof. Dr. Atatta Ullah Khawaja, Chairman, Department of Electrical Engineering, NEDUET & Co-Convener, IEEC-2022
03:55 pm	**Address by** Engr. Sohail Bashir, Chairman, IEP, Karachi Centre
04:00 pm	**Keynote Address by** Dr. Hasan Baig, University of Connecticut, USA
04:25 pm	**Address by** Engr. Amir Zamir Ahmad Khan, Secretary General, IEP
04:30 pm	**Address by** Engr. Muhammad Abbas Sajid, Secretary, NED International Alumni Network Association-Pakistan
04:35 pm	**Address by** Engr. Dr. Javed Yunas Uppal, President, IEP
04:40 pm	**Address by** Engr. Prof. Dr. Sarosh Hashmat Lodi, Vice-Chancellor, NEDUET
04:45 pm	**Address by Chief Guest**
04:50 pm	**Chairman's Medal for Best Paper and Best Poster Award**
04:55 pm	**Conference Recommendations by** Engr. Dr. Abdul Ghani Abro, Secretary, IEEC-2022
05:00 pm	**Vote of Thanks by** Engr. Tafseer Ahmed Khan, Vice-Chairman, (Electrical & Allied) IEP, Karachi Centre & Chief Organizer, IEEC-2022
05:05pm	**Refreshments**

List of Papers presented in 6th Electrical Engineering Conference held on 8th April, 2021 at IEP Karachi Centre

Keynote Speech by **Prof. Ir. Ts. Dr. Muhammad Rizal Arshad**, Deputy Vice-Chancellor (Academic & International) Universiti Malaysia Perlis, Malaysia

Invited Talk by **Dr. Hashim Raza Khan**, Assistant Professor, Department of Electronics Engineering, NEDUET

Invited Talk by **Dr. Asim Hussain** System Studies Specialist at SNC-Lavalin, Canada

Invited Talk by **Engr. Muhammd Imran Khan**
Manager, Grid System Maintenance and Protection, K-Electric

Application of Machine Learning in Physical Asset Management Employing Reliability
Shahzeb Anis, Raja Masood Larik, Fatima Memon and Muhammad Nadeem Iqbal.

Autonomous Notification and Observability for Industrial Control Systems on Azure Cloud
Tanees Ahmad, Haseeb Ahmed Qureshi, Mohammad Kaleem and Sajid Nazir.

IoT Based Energy Management System for Optimal Energy Consumption in Residential Facilities
Durr E Shehwar, Urooj Shaukat, Farah Akram and Syed Sajjad Haider Zaidi

Design and Development of a Cardiac Coronary Intervention Simulator
Hafsa Taj, Kainat Muhib and Dr. Tariq Javid

Analytical Kinematic Analysis Of Multi DOF Serial Link Robot Arm
Muhammad Affan, Ahmed Naim Ghaniwala, Muhammad Afaq Khan, Muhammad Maaz Akhtar, Abdullah Shaikh and Dr. Riaz Uddin

Design of Tactile Feedback Control and Interfacing with Virtual Environment
Muhammad Affan, Muhammad Hassan, Faiz Ahmed, Riaz Uddin and Sadiq Rasheed.

Embedded System Design for Real-time Detection of Asthmatic Diseases Using Lung Sounds in Cepstral Domain
Misha Urooj, Areeba Mobeen, Aqsa Samer and Sana Samer.

Hybrid Multifunction PV and CST based Solar Cooling System using Flat Plate Collector and Graphene based Nanofluid
Muhammad Shehram, Dr. Tariq Javid and Zubair Khalid

Solar Based Potable Water Purification using Tandem Solar Cells and Anionic Polyacrylamide Alum
Muhammad Shehram Shehram and Uzma Rani

Analysis of Optimization Model of Solar and Wind energy for meeting electricity demand of Sindh Province
Aseed Ur Rehman, Nayyar Hussain Mirjat, Khanji Harijan and Shoaib Ahmed Khatri

Harmful Effects of Uninterruptable Power Supply (UPS) on Power System and its Way Forward
Murtaza Ali Khooharo, Munsif Ali Soomro, Mushtaq Dal, Iqra Rana and Nimra Nawaz.

How to Deal with Intermittent Loads
Raja Masood Larik, Sana Zaheer, Huda Ahmed and Sania Javed

Intelligent System Design for Early Diagnosis of Faults in Machine Bearings
Misha Urooj Khan, Areeba Zainab, Hareem Khan and Syeda Ume Rubab Bukhari

Anticipation and Mitigation of Conducted emissions in a DC-DC Buck converter Using LTspice
Sajid Naseeb, Inayat Ali, Muhammad Aamir, Sher Yar and Mahmood Ul Hassan

Strategy for Sizing and Placement of Distributed Generation in a Radial Distribution Network
Shahryar Muhammad, Muhammad Yousif, Kashif Imran & Usman Ahmed

FPGA Implementation of a High-Speed SPI Design For Single Board Computers (SBCs)
Farooq Alam - National University of Sciences and Technology, Islamabad, Fariha Farooq - College of Engineering, PAF-KIET, Karachi.

Kidney Tumor Detection and Classification using Ultrasonography Images, Rabail Fatima, Wakeel Ahmad, S. M. Adnan Shah and Shahbano, Department of Computer Science, University of Engineering and Technology Taxila.

Revamped Haptic Tele-Operation with Optimized Latency
Humayun Khan , Subhan Ahmed , Afsheen Bibi, Muhammad Affan , Sadiq Rasheed and Riaz Uddin, NED University of Engineering and Technology, Karachi.

Design of Autonomous Mobile Manipulator for Medical Applications
Muhammad Saad Wasif , Abdullah Haider Ali, Syed Murtaza Hassan Kazmi, Mohammad Sulaiman Hasan Siddiqui and Riaz Uddin, NED University of Engineering and Technology, Karachi.

Strategy to Detect, Quantify and Locate Power Theft in a Distribution Network Haider Ali Raza , Dr. Kashif Imran , Dr. Abraiz Khattak , Dr. Absasin Ulasyar
U.S.-Pakistan Center for Advanced Studies in ENERGY, National University of Sciences & Technology, Islamabad, Arqam Ilyas, Lahore Electric Supply Company (LESCO), Lahore,

The Power Sector Of Pakistan; A Brief Review
Fariha Masroor , Marwa Ashfaq, Maham Siddiqui, Muhammad Mishraz Hussain, Muhammad Haris Shahbaz , Mohd Komeil Sadeghi, Ghulam and Ahmed Bin Saeed, Research and Development IEEE PES NEDUET BRANCH, Karachi.

Formulation of Design Criteria for Lighting of Shopping Centers
Ayesha Khan, Sana Zaheer, Syeda Ariba Shahid, Ayesha Muddassir Rizvi and Zanir Ali IssaniNED University of Engineering and Technology, Karachi,

DC Voltage Performance Analysis of a Hybrid Multiterminal HVDC Grid Under Abnormal Conditions with Topological Investigation on Hybrid Scheme
Syed Tahir Shah, Abraiz Khattak, Syed Qasim Shah, Abasin Ulasyar and Kashif Imran, National University of Sciences and Technology, Islamabad

Comparative Study of Wind-Energy Conversion System on Fixed-speed and Variable Speed in Synchronization to Grid
Umbrin Sultana, Umair Abid, Ahmed Shuja, Uzair Mansoor and
Wajahat Ali Rathore, Department of Electrical Engineering, NEDUET, Karachi

LIST OF PARTICIPANTS

S. #	NAME	UNIVERSITY/DEPTT.	YEAR
1	Abdul Rafay Khan Bin Khalid	Electrical-NEDUET	Final Year
2	Izhaan Malik	Electrical-NEDUET	Final Year
3	Mohammad Abdur Rafay	Electrical-NEDUET	Final Year
4	Muhammad Taimoor Javed	Electrical-NEDUET	Final Year
5	Muhammad Mudassir Hussain	Electrical-NEDUET	Final Year
6	Humayoun Ahmed Khan	Electrical-NEDUET	Final Year
7	Irsa Saif	Electrical-NEDUET	Final Year
8	Hashir Ahmed	Electrical-NEDUET	Final Year
9	Nabah Jawed	Electrical-NEDUET	Final Year
10	Syed Basim Ahmed Kazmi	Electrical-NEDUET	Third Year
11	Syed Irshad Afzal	Electrical-NEDUET	Final Year
12	Sameer Murtuza Shariff	Electrical-NEDUET	Final Year
13	Mishraz Hussain	Electrical-NEDUET	Third Year
14	Wania Salahuddin	Electrical-NEDUET	Third Year
15	Wajeeha Ali	Electrical-NEDUET	Final Year
16	Syed Ameem Mustafa	Electrical-NEDUET	Final Year
17	Hassan Khan	Electrical-NEDUET	Final Year
18	Neha Ijaz	Electrical-NEDUET	Final Year
19	Rimsha	Electrical-NEDUET	Final Year
20	Rimsha Muhammad Nadeem	Electrical-NEDUET	Final Year
21	Muhammad Daniyal Khan	Electrical-NEDUET	Final Year
22	Laiba Mazhar	Electrical-NEDUET	Final Year
23	Nymra Muskan	Electrical-NEDUET	Final Year
24	Anousha Athar	Electrical-NEDUET	Final Year
25	Nargis Idrees	Electrical-NEDUET	Third Year
26	Uroosa Jamal	Electrical-NEDUET	Final Year
27	Syed Ali Abbas Naqi	Electrical-NEDUET	Third Year
28	Marium Irfan	Electrical-NEDUET	Final Year
29	Zain Aslam	Electrical-NEDUET	Second Year
30	Noveera Baloch	Electrical-NEDUET	Third Year
31	Muhammad Ashar ul Haque	Electrical-NEDUET	Final Year
32	Faraz Niaz	Electrical-NEDUET	Third Year
33	Syed Faizan Hassan Zaidi	Electrical-NEDUET	Third Year
34	Zoya Binte Zeeshan	Electrical-NEDUET	Second Year
35	Wajahat Ullah	Electrical-NEDUET	Third Year
36	Muniba Aslam	Electrical-NEDUET	Second Year
37	Wareesha Azwar	Electrical-NEDUET	Second Year
38	Hafsa Usman	Electrical-NEDUET	Second Year
39	Ammara Tanveer	Electrical-NEDUET	Second Year
40	Muhammad Shaheer	Electrical-NEDUET	Third Year
41	Maaz Ahmed	Electrical-NEDUET	Second Year
42	Khhorem Uzair Khan	Electrical-NEDUET	Final Year
43	Sardar Muhammad Maaz	Electrical-NEDUET	Final Year
44	Atiqa Gul Hassan	Electrical-NEDUET	Final Year
45	Rija Siddiqui	Electrical-NEDUET	First Year
46	Hafsa Ashfaq	Electrical-NEDUET	First Year
47	Hafsah Anjum	Electrical-NEDUET	Third Year

A BRIEF ABOUT IEP

The Institution of Engineers Pakistan was founded with the blessing of the Father of the Nation, Quaid-e-Azam Muhammad Ali Jinnah, in 1948 with its Headquarter at Dhaka. In 1972 the Headquarter was shifted to Lahore. Presently IEP has 5 Capital & Provincial Local Centres at Islamabad, Karachi, Lahore, Peshawar & Quetta and 5 local centres at other major cities which includes Hyderabad, Sukkur, Multan, Faisalabad & Gujranwala. IEP also has 3 International Centres at Saudi Arabia, Bahrain & USA. Beside various Technical programs organized regularly, every year IEP Karachi Centre and NED University of Engineering & Technology, Karachi in collaboration with almost all PEC Accredited Engineering Institutions of Karachi & Balochistan organizes three International Conferences on Civil, Mechanical & Electrical Engineering. In these conferences International & Local researchers, academicians & distinguish Engineers from Industry actively participate and present their papers / research / achievements.

IEP IS AN ACTIVE MEMBER OF FOLLOWING INTERNATIONAL ORGANIZATIONS

1. World Federation of Engineering Organization (WFEO)
2. Federation of Engineering Institutions of Islamic Countries (FEIIC)
3. Federation of Engineering Institution of South & Central Asia (FEISCA)
4. The Asian Civil Engineering Coordinating Council (ACECC)
5. Common Wealth Engineers Council (CEC)
6. Collaboration Agreements with more than 40 National Engineering Bodies of various countries.

DO YOU KNOW WHY YOU SHOULD BECOME A MEMBER OF IEP?

Simply Because!

- ★ You will be exposed to International Experts, International Audience and International Organizations either ONLINE and /or through INPLACE Seminars/Lectures/Conferences
- ★ You will be able to attend; career counseling workshops, training on job seeking techniques, lectures and seminars on Entrepreneurship, skills and many more related topics.
- ★ You will enjoy online access to thousands of national and international engineering professionals, updates on job opportunities globally, information/Consultation regarding further study abroad
- ★ Discount on International Conferences, Congresses, Exhibitions and Workshop conducted regularly by IEP.
- ★ To fulfill the requirement of Pakistan Engineering Council (PEC) to become professional Engineers (PE), you will be able to attend CPD courses conducted by IEP.
- ★ Women Engineers can actively participate in the activities of IEP through IEP Women Engineers Forum (IEP-WEF)

SPECIAL GROOMING PROGRAMS AT IEP FOR YOUNG ENGINEERS

In order to groom the Young budding Engineers, IEP has launched following programs:

- ★ IEP Future Leaders Forum (IEP-FLF) for Young Engineers to show case their technical talents.
- ★ In order to encourage meritorious young engineering graduates to excel in their respective fields, Award of Gold Medal to First Position holders of all PEC Accredited Engineering Programs / Institutions of Karachi.
- ★ Seminar on Resume writing , cover letter and tips for preparation for job interview
- ★ Career counselling session by the academia and industry.
- ★ Job placement through IEP website where prospective Employee & Employer can find their match.
- ★ Various professional / certified training programs for Young Engineers in collaboration with internationally authorized training institutes which could be useful to develop their careers in their respective fields and to increase their employment opportunities.
- ★ Home Based Employment Initiatives for Women Engineers not actively involved in the profession.

IEP SPECIAL LIFE TIME MEMBERSHIP OFFER FOR ENGINEERS

IEP is now offering Life Time Membership to Engineers on payment of Rs.500/= only

THREE SIMPLE STEPS TO GET IEP MEMBERSHIP

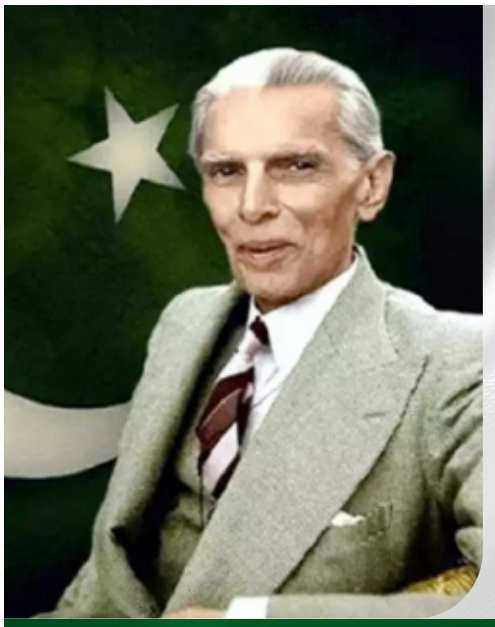
1. Download the IEP membership form from IEP website www.iepkarachi.org.pk or collect the IEP membership form IEP Karachi Centre.
2. Fill the Form and submit the form with following documents:

(i) Attested Photo Copy of Matric Certificate.
(ii) Attested Photo Copy of Intermediate Certificate
(iii) Attested Photo Copy of Degree Certificate,
(iv) Attested Photo Copy of Pakistan Engineering Council Certificate
(v) Attested Copy of CNIC
(vi) Two Passport size photographs.
(vii) Rs. 500/= by cash or pay order / cross cheque in favor of **The Institution of Engineers Pakistan, Karachi Centre**

3.Submit these documents to **The Institution of Engineers Pakistan, Karachi Centre,** 4th Floor, IEP Building, Opp: Hotel Regent Plaza, Shahrah-e-Faisal, Karachi.
Tel: 32780233, 32781492, WhatsApp: 0311-2277721, E-mails: main@iepkarachi.org.pk, info.iepkc@gmail.com , iepkc1948@gmail.com, Web: www.iepkarachi.org.pk

TO KNOW MORE ABOUT IEP, FEEL FREE TO CONTACT

Engr. Sohail Bashir, Chairman, IEP, Karachi Centre (E-mail: chairman@iepkarachi.org.pk) **Engr. M. Farooq Arbi**, Secretary, IEP Karachi Centre (E-mail: secretary@iepkarachi.org.pk)
Mr. Sikandar Mannan, Deputy Director, IEP Karachi Center (Cell # 0321-2723095) **Mr. Sharif Khan**, Assistant Director, IEP Karachi Center (Cell # 0312-2356316) **Mr. Shaikh Saifuddin**, Assistant Director, IEP Karachi Center (Cell # 0300-5784726)



FATHER OF THE NATION

Quaid-e-Azam Muhammad Ali Jinnah
Message on the occasion of
Foundation Stone Laying Ceremony of the
Institute of Engineers Pakistan, Headquarters
at Dacca on 30th May, 1948

"If Pakistan is to take its proper place among the progressive nations of the world, it will have to take up a good deal of leeway in the realm of scientific and technical education which is so necessary for the proper development of the country and the utilization of its resources. The establishment of institution like the Institute of Engineers will greatly stimulate technical research and help in disseminating available information.

The Institute of Engineers will not only benefit the engineers themselves by improving their technical knowledge but also bring lasting benefits to public services which they are called upon to perform.

I wish the Institute every success"