NEWSLETTER

ELECTRICAL AND COMPUTER ENGINEERING DEPARTMENT

FALL 2021

What's inside this issue:

Message from the Director

Prof. Dr. Syed Asad Hussain

Director CUI, Lahore

I welcome you on behalf of the faculty and staff. These are exciting times for electrical and computer engineers as the discipline is now widely recognized as an essential source of tools and techniques for advancements in nearly all spheres of human endeavor. Our students get competitive skills in effective development and application of modern technology. We see our students as excellent engineers, outstanding researchers, extra ordinary analysts, and innovative designers. We are aware of everyday breakthroughs in modern technology and committed to equip our students with advanced competencies required to manage the growing needs of sciences and technology; in almost every professional field today. Research activities have been given high priority within the department resulting in a high quality of research publications. The Department of Electrical and Computer Engineering offers competitive degrees in rapidly expanding areas of study. Our qualified faculty and excellent facilities ensure that students have a solid technical grasp on different subjects to apply this knowledge in practical work settings. Our prolific linkages with the Higher Education Commission, Ministry of Science and Technology and leading universities of the world help us keep up-to-date with new policy initiatives and market driven incentives being unrolled by the government and private sectors.

Message from the Head Academics and Research

Prof. Dr. Muhammad Ahmed Farooqui

Head, Academics and Research

In the modern era of globalization and continuous struggle for excellence, the department of Electrical and Computer Engineering has built itself with a marked difference in quality. It is certainly a matter of pride that this department has produced a sparkling community of engineers, where faculty and students are cronies in a mutually inspirational education process to achieve learning objectives of inventions and skill development. The degree programs in electrical and computer engineering are carefully designed, updated and implemented with the objective to provide the students with a solid foundation for their professional life. Developments are taking place in almost all branches of engineering and sciences. These developments have substantial impact on the research output in computer and electrical engineering. It is satisfying that the faculty and students of ECE are well-versed with these developments and are carving their path steadily towards excellence despite the uncertainties of COVID-19. The department is well connected with the industry through Industrial Advisory Board and Collaboration & Outreach Committee (COC),and have managed to produce excellent research by securing funding from Higher Education Commission and other funding agencies. I am delighted that the Department of ECE has successfully managed to produce Newsletter despite many limitations and odds. This shows the determination and hard work of the faculty and students of the department.

Message from the Head of Department

Engr. Dr. Ejaz A. Ansari

Head of the Department

I feel honored to lead the Department of Electrical and Computer Engineering (ECE) as Head and welcome all newly admitted students in various programs of the department at both undergraduate and graduate levels in Fall 20 and SP 21 semesters. Electrical and Computer Engineering (ECE) is one of the largest departments of COMSATS University Islamabad (CUI), Lahore Campus and occupies a central place in major activities at the campus. We are striving to achieve this objective by imparting rigorous and quality education to our stellar students and engaging our faculty and research groups in the cutting edge fields of the research. The degree programs offered at the department have a balanced mix of theory and practical work in the laboratories. The theory courses are taught by our excellent, highly qualified and trained faculty. For the practical work, the department has a number of laboratories with the services of dedicated Lab Engineers which are fully equipped with modern and state of the art tools needed by the undergraduate and graduate students to learn, practice and enhance their practical skills towards engineering education. All the degree programs currently being offered both at undergraduate and graduate levels are recognized by the Higher Education Commission (HEC), Islamabad Pakistan and Pakistan Engineering Council (PEC), Islamabad.

Our graduate students currently enrolled in Master's and PhD degree programs are very much involved in carrying out research activities with these research groups under the guidance of their research Supervisor towards pursue of their degrees. Our students and faculty are fully committed in making all the possible efforts to play the due role in minimizing the adverse effects of the global Corona-virus pandemic and bring to the forefront new technologies and pedagogies to achieve our goals.

I would like to assure the parents of our students that Department will take all possible steps to ensure the safety and well being of our students currently enrolled at our various programs. We (the faculty) are also deeply committed to inculcate in our graduates the essential skills and professional talent that helps them to meet the needs of the fourth industrial revolution as well as impart industry and market relevant education which may bring laurels to their adopted future careers.

In conclusion, please join us on our exciting journey into realizing your highest potential towards becoming academic leaders in Pakistan and South-East Asia . I pray to Almighty Allah (SWT) for assistance in our future endeavors and look forward towards glorious achievements in the times to come with our team work efforts.

Workshop and CPD Activity

4 days workshop on machine learning

An Online CPD Activity was conducted by Dr. Muhammad Yaqoob Javed on solar pv system

Workshop and CPD Activity

Outcome Based Education (OBE) with reference to PEC requirments, with special emphasis on Complex Engineering Problems and Open Ended Labs

Seminars

CIRCUTOR

COMSATS UNIVERSITY ISLAMABAD

Energy Management Seminar

Date: 11 Nov 2021 Time: 05:00pm to 07:30pm

Seminar Contents:

- *Introduction to Energy Management Systems*
- *Hybrid Energy Generation Systems*
- *Demand Side Management*
- *Electrical Energy Efficiency and Conservation*
- *Measurement Equipment's (Power Analyzer, Data Logger, Sensors)*
- *SCADA System*
- *Practical Examples related to Energy Efficiency Issues in Pakistani Industries*

Seminar conducted on Switch Gear on 11th November by circuitor Pakistan.

Seminars

Transfopower manager research and development conducted a seminar on Engineering Ethics and Professional Development on 23rd December 2021.

Seminars

Dr Ejaz Ansari, Dr Naeem Shahzad, Dr Naeem Awais, Mian Ahmad Yasir, Dr Muhammad Yaqoob Javed
Conducted Orientation Seminar

Seminars

NI Seminar

External Evaluation by HoD

"Dr. Ansari was invited by FAST-NU Lahore as an External evaluator for evaluation of their graduate programs, MSEE and PhD in EE on 18-02-2022".On behalf of Director FAST-NU Lahore, Prof. Dr Muhammad Sajid, Dean FoE presented a shield to Dr. Ansari for completing this activity successfully"

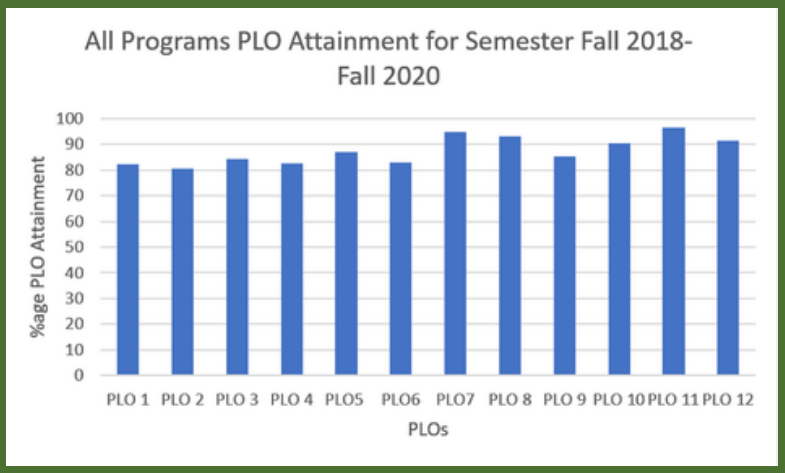
Online Orientation

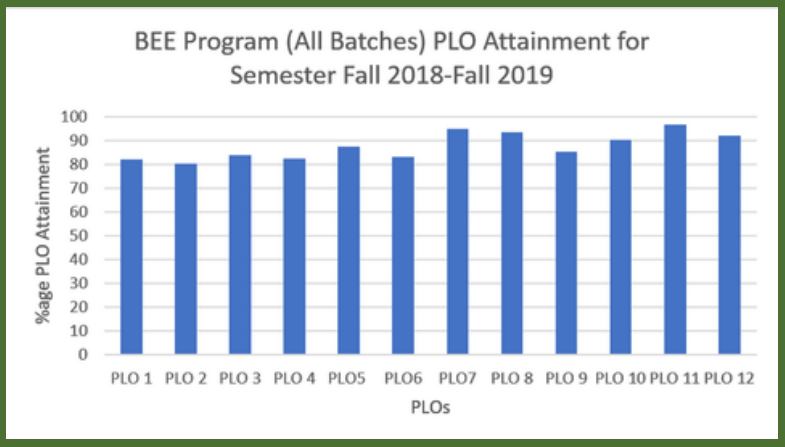
Online orientation conducted by Dr Khurram zaidi from computer engineering and Dr Naeem Awais from electrical engineering

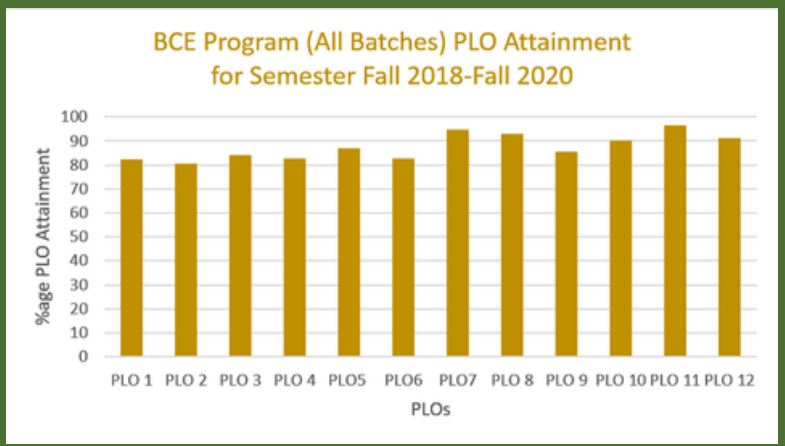
Student Counseling Session

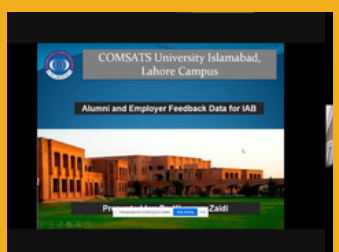
FA18 and FA21 BEE and BCE
2 Student counseling session
were conducted after midterm
Exam

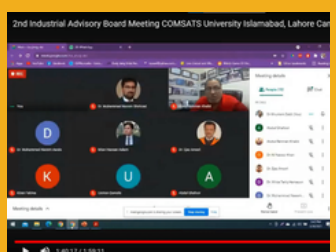
Industrial Advisory Board Meeting

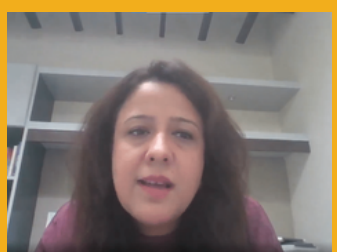


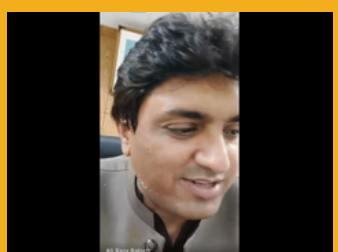












Industrial Tour

Visit to Technocrafts

An industrial visit to technocrafts for FA18- BCE was arranged by ECE, Dr Mujtaba Jafery, Dr. Jehangir Arshad and Ms. Wajeha accompnied students. The CEO Mr. Navneet Kumaar Welcomed the participants and gave presentation on their ongoing private and government projects. It was a healthy session for students and they asked questions after detailed presentation. Further more, students visited all sections of the industry. CUI is going to have MoU with Technocraft for further collaboration.

Industrial Tour

WAPDA Grid Station

An industrial tour has been arranged for graduating BS (Electrical Engineering) students to WAPDA Grid Station on 24 December 2021 from 10:00am to 01:00pm. 22 students and 1 faculty member visited the grid station. These visits are very critical and important for our students as it provides the details and insight of how the work is been implemented in the field at the grid station and practical perspective of the work in the world beyond academics and how the things that students studied in the university are implemented and used in the real life. This is also a requirement from the Pakistan Engineering Council (PEC) for the better future of the engineer that is the future of the country.

Approved Research Grants

Dr. Farooq-I-Azam

Integrated and multidisciplinary investigation and early warning of high risk landslides using space, air and ground based remote sensing in collaboration with University of Azad Jammu and Kashmir. Rs. 11.787 Million

Total duration of the research project is two years. Dr. Muhammad Basharat at the University of Azad Jammu and Kashmir is the Principle Investigator while Dr. Muhammad Farooq-i-Azam at COMSATS University Islamabad, Lahore Campus is the CoPI of the project.

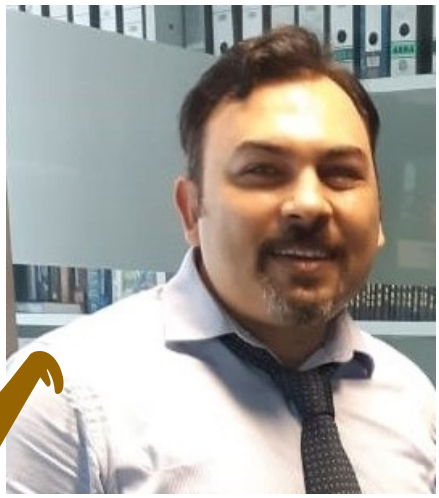
Solar Powered Battery Charger for plug-in electric vehicle using fourth order resonant converter , National Grassroots ICT Research Initiative (NGIRI)

Dr. M. Jawad

- IOT based Dynamic Automated Car Parking System, NGIRI.
- An IOT Based Fuzzy Logic Approach For Patient's Health Monitoring System, NGIRI.
- Smart and automated restaurant serving system, NGIRI.

Dr. Imran Ghous

Approved Research Grants



IGNITE- NGIRI 2021

168 NGIRI-2021-6562 COMSATS University of Information Technology Lahore Computer Engineering 3D Modeling and Printing for Dental Assistance

Dr. Khurram Zaidi

Wireless controlled vehicle with robotic arm, IGNITE ICT R&D Fund.

Mian Ahmed Yaser

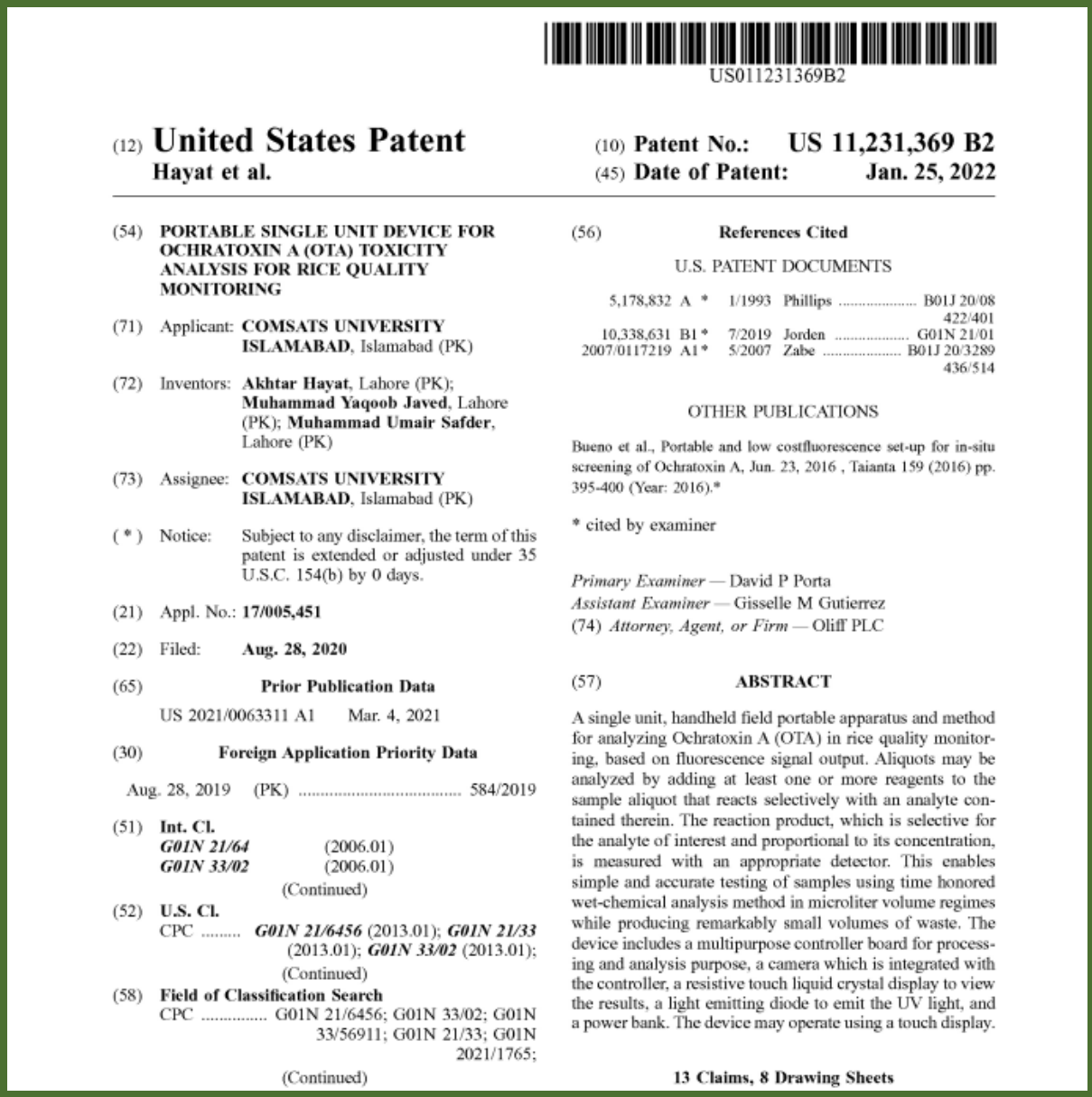
Detection and Classification of Activities of Daily Living Through EEG, Ignite NGIRI

Dr. Ali Nawaz Khan

Research Publications

- Estimation of the Solid Circulation Rate in Circulating Fluidized Bed System Using Adaptive Neuro-Fuzzy Algorithm, Aamer Bilal Asghar, Saad Farooq, Muhammad Shahzad Khurram, Mujtaba Hussain Jaffery, Krzysztof Ejsmont, Energies, MDPI, IF 3.004.
- Exploratory Data Analysis Based Short-Term Electrical Load Forecasting: A Comprehensive Analysis, U. Javed, K. Ijaz, M. Jawad, E. A. Ansari, N. Shabbir, L. Kütt, O. Husev, Energies, MDPI, IF 3.004.
- Exploratory Data Analysis Based Short-Term Electrical Load Forecasting: A Comprehensive Analysis, U. Javed, K. Ijaz, M. Jawad, E. A. Ansari, N. Shabbir, L. Kütt, O. Husev, Energies, MDPI, IF 3.004.
- A Systematic Review of Key Challenges in Hybrid HVAC–HVDC Grids, U. Javed, N. Mughees, M. Jawad, O. Azeem, G. Abbas, N. Ullah, M. S. Chowdhury, K. Techato, K. S. Zaidi, U. Tahir , Energies, MDPI, IF 3.004.
- A Detailed Testing Procedure of Numerical Differential Protection Relay for EHV Auto Transformer, Ehsan, U.; Jawad, M.; Javed, U.; Zaidi, K.S.; Ur Rehman, A.; Rassõlkin, A.; Althobaiti, M.M.; Hamam, H.; Shafiq, M. , Energies, IF 3.007.
- Link and System-Level NOMA Simulator: The Reproducibility of Research, Arsla Khan, Muhammad Arslan Usman, Muhammad Rehan Usman, Muneeb Ahmad, Soo Young Shin, MDPI Electronics, IF 2.397.
- Adadb: Adaptive diff-batch optimization technique for gradient descent, M. U. S. Khan, M. Jawad, and S. U. Khan, IF 3.745.
- Design and Analysis of a Novel High-Gain DC-DC Boost Converter with Low Component Count, Usman Rafiq, Ali Faisal Murtaza, Hadeed A. Sher and Dario Gandini, Electronics Journal, MDPI, IF 2.11.
- A New Actuator FTC Allocation Scheme for Lipschitz Nonlinear System Using Adaptive Sliding Mode Control Strategy", by S. Ijaz, F. Chen, Mirza Tariq Hamayun International Journal of Robust and Nonlinear Control, IF 3.503.
- Adaptive Integral Sliding Mode Control Strategy for Manoeuvring Control of F16 Aircraft subject to Aerodynamic Uncertainty", by S. Ijaz, F. Chen, Mirza Tariq Hamayun, H. Anwar, International Journal of Applied Mathematics and Computation, IF 3.472.
- Zaidi, K.S.; Hina, S.; Jawad, M.; Khan, A.N.; Khan, M.U.S.; Pervaiz, H.B.; Nawaz, R. Beyond the Horizon, Backhaul Connectivity for Offshore IoT Devices. Energies 2021, 14, 6918.

Research Achievements



US011231369B2

(12) **United States Patent**
Hayat et al.

(10) **Patent No.: US 11,231,369 B2**
(45) **Date of Patent: Jan. 25, 2022**

(54) **PORTABLE SINGLE UNIT DEVICE FOR OCHRATOXIN A (OTA) TOXICITY ANALYSIS FOR RICE QUALITY MONITORING**

(71) Applicant: **COMSATS UNIVERSITY ISLAMABAD**, Islamabad (PK)

(72) Inventors: **Akhtar Hayat**, Lahore (PK); **Muhammad Yaqoob Javed**, Lahore (PK); **Muhammad Umair Safder**, Lahore (PK)

(73) Assignee: **COMSATS UNIVERSITY ISLAMABAD**, Islamabad (PK)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **17/005,451**

(22) Filed: **Aug. 28, 2020**

(65) **Prior Publication Data**

US 2021/0063311 A1 Mar. 4, 2021

(30) **Foreign Application Priority Data**

Aug. 28, 2019 (PK) 584/2019

(51) **Int. Cl.**
G01N 21/64 (2006.01)
G01N 33/02 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ***G01N 21/6456*** (2013.01); ***G01N 21/33*** (2013.01); ***G01N 33/02*** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC G01N 21/6456; G01N 33/02; G01N 33/56911; G01N 21/33; G01N 2021/1765;
(Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

5,178,832 A * 1/1993 Phillips B01J 20/08 422/401
10,338,631 B1 * 7/2019 Jorden G01N 21/01
2007/0117219 A1 * 5/2007 Zabe B01J 20/3289 436/514

OTHER PUBLICATIONS

Bueno et al., Portable and low costfluorescence set-up for in-situ screening of Ochratoxin A, Jun. 23, 2016 , Taianta 159 (2016) pp. 395-400 (Year: 2016).*

* cited by examiner

Primary Examiner — David P Porta
Assistant Examiner — Gisselle M Gutierrez
(74) *Attorney, Agent, or Firm* — Oliff PLC

(57) **ABSTRACT**

A single unit, handheld field portable apparatus and method for analyzing Ochratoxin A (OTA) in rice quality monitoring, based on fluorescence signal output. Aliquots may be analyzed by adding at least one or more reagents to the sample aliquot that reacts selectively with an analyte contained therein. The reaction product, which is selective for the analyte of interest and proportional to its concentration, is measured with an appropriate detector. This enables simple and accurate testing of samples using time honored wet-chemical analysis method in microliter volume regimes while producing remarkably small volumes of waste. The device includes a multipurpose controller board for processing and analysis purpose, a camera which is integrated with the controller, a resistive touch liquid crystal display to view the results, a light emitting diode to emit the UV light, and a power bank. The device may operate using a touch display.

13 Claims, 8 Drawing Sheets

Mr. Akhtar Hayat

Dr. Muhammad Yaqoob Javed

Mr. Muhammad Umair Safder

Project Design Competition

Superior University's 1st Technical Symposium 2021 powered by the IEEE-Computer Science Society

Electrical and Computer Engineering Department, CUI Lahore Campus Shines

Electrical and Computer Engineering Department, CUI Lahore Campus Shines in Project Design Competition, **Superior University's 1st Technical Symposium 2021**

The Final Year 7th semester students Muhammad Ali, Dur e adan, Mehroz Ahmad & Farhan Amin from Electrical and Computer Engineering (ECE) Department, COMSATS University Islamabad, Lahore campus represented their Final Year design project, "IoT based Multi-Service Robot for Covid 19 Scenarios" supervised by Dr. Mujtaba H Jaffery Assistant Professor, ECE, in the project design competition organized by Superior University Lahore.

uperior University's 1st Technical Symposium 2021 powered by the IEEE-Computer Science Society was held **at the Superior University, Gold Campus** Lahore, Pakistan on 1st December 2021. The honorable chief guest Executive Director NetSol Technologies, Mr. Ayub Ghauri inaugurated the event.
They represented their project among 1500 participants from renowned universities of Lahore and Punjab province. The students managed to secure the second position and were awarded prize money worth Rs 25000/-. They were appreciated for the remarkable work done on their project.

We congratulate the students and their supervisor for this splendid victory.

Power Lab Training

Power lab training was conducted on 7th and 8th February, 2022 in power lab. Training was conducted by Mr. Umair Safder and attended by Mr. Ali Mansoor Pasha, Mr. Talha Raheem, Mr. Faisal Tariq and Miss Nisma Saleem.

FIT Conference

Welcome Party

Faculty Hi Tea
Spice Bazar

Faculty Joining

Mr. Zaid Ahmed

Degree institute: Universiti Putra Malaysia (UPM)
Research area: Wireless Communications and Networks Engineering
MS and BS degree title and institute:
MS: Telecommunication, Iqra University, Karachi, January 2012
BS: Communication Systems Engineering, Institute of Space Technology, Islamabad, September 2007

Mr. Taimoor Naeem

Degree institute -->(Information Technology University (ITU))
Research area -->(Nanophotonics, Nanotechnology, Imaging and holography)
MS and BS degree title and institute:
--> (MS in Electrical Engineering from NUST, BS in Electrical (Telecommunication) from COMSATS, Lahore)

MS Graduate Students FALL 2021

The following students have completed their MS in this semester. Their names are as under:

1. Junaid Razzaq
2. Hafiz Umar Khan
3. Syeda Farwa Fatima

Junaid Razzaq

Hafiz Umar Khan

Syeda Farwa Fatima

Muhammad Usman Iqbal, Lecturer and Ph.D. scholar at the electrical and computer engineering department, has completed his Ph.D. research work and submitted his thesis for foreign evaluation. He got admission in Spring 2015 under the supervision of Dr. Ejaz Ahmad Ansari and Dr. Saleem Akhtar. He published two journal research articles in IEEE Access (IF:3.55) and one in HEC Y-Category journal. He is the second Ph.D. scholar after Mr. Bilal who has successfully completed his Ph.D. research work and submitted a thesis for foreign evaluation.

Newsletter Committee

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Mr. Ahmed Mudassir

Ms. Sidra Saleem

Ghazala Mushtaq

Mr. Assad Ali