

The 4<sup>th</sup> International Symposium on Advanced  
Electrical Engineering & Communication  
Technologies (ISAECT)

# ISAECT 2021

Al-Khobar, Kingdom of Saudi Arabia  
December 6 – 8, 2021

## Virtual Conference Program



# Program-at-a-Glance

**Sunday, December 5<sup>th</sup> 2021**

<b>Pre-conference Workshop</b> <b>Water Informatics</b> <b>Amlan Chakrabarti &amp; Jyoti Gautam, <i>University of Calcutta, India</i></b>	13:00 – 16:00	Auditorium
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- All times are Saudi Arabia time zone (GMT +3)

# Program-at-a-Glance

**Monday, December 6<sup>th</sup> 2021**

<b>Opening</b>	12:00 – 12:30	Auditorium
<b>Welcome Speech</b> <b>Faisal Al Anezi</b> <i>Honorary Chair and Vice President of Prince Mohammad Bin Fahd University, Khobar, Saudi Arabia</i>	12:30 – 12:45	Auditorium
<b>Keynote Lecture 1</b> <b>Elodie Viau, SES Technology, France</b> Earth and beyond: The Future of Communication Technologies	13:00 – 14:00	Auditorium
<b>Keynote Lecture 2</b> <b>Issa Batarseh, University of Central Florida, USA</b> Recent Advances in Inverter and Battery Integration in PV Systems	14:00 – 15:00	Auditorium
<b>Coffee Break</b>	15:00 – 16:00	
<b>Keynote Lecture 3</b> <b>Nasser Kutkut, Smart Charging Technologies, USA</b> Power Conversion for IIoT Applications: Design Considerations and Challenges	16:00 – 17:00	Auditorium
<b>Keynote Lecture 4</b> <b>Leslie Ying, University of Buffalo, USA</b> Machine Learning in Biomedical Image Reconstruction	17:00 – 18:00	Auditorium
<b>Technical Sessions</b>	All Day (pre-recorded)	

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# Program-at-a-Glance

**Tuesday, December 7<sup>th</sup> 2021**

<b>Keynote Lecture 5</b> <b>Vincenzo Piuri</b> , <i>University of Milan, Italy</i> Artificial Intelligence in Cloud/Fog/Edge Computing and Internet-of-Things	13:00 – 14:00	Auditorium
<b>Keynote Lecture 6</b> <b>John Shen</b> , <i>Illinois Institute of Technology, USA</i> Emerging DC Power Systems and DC Fault Protection Technologies	14:00 – 15:00	Auditorium
<b>Coffee Break</b>	15:00 – 16:00	
<b>Keynote Lecture 7</b> <b>Dario De Santis</b> , <i>Cisco Inc., USA</i> The Role of Collaboration Technologies in a Hybrid Workplace Era	16:00 – 17:00	Auditorium
<b>Keynote Lecture 8</b> <b>Ghaleb Abdulla</b> , <i>Lawrence Livermore National Laboratory, USA</i> A Federated and Cloud Enabled System for Climate Data Analytics and Machine Learning	17:00 – 18:00	Auditorium
<b>Technical Sessions</b>	All Day (pre-recorded)	

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# Program-at-a-Glance

**Wednesday, December 8<sup>th</sup> 2021**

<b>Keynote Lecture 9</b> <b>Farhad Shahnia</b> , <i>Murdoch University, Australia</i> Recent and Future Research on Microgrid Clusters	13:00 – 14:00	Auditorium
<b>Keynote Lecture 10</b> <b>Abdallah A. Chehade</b> , <i>University of Michigan-Dearborn, USA</i> Predictive Analytics and Condition Monitoring of IoT Systems	14:00 – 15:00	Auditorium
<b>Coffee Break</b>	15:00 – 16:00	
<b>Keynote Lecture 11</b> <b>Antonio Luque</b> , <i>University of Seville, Spain</i> Electronics for Medical Applications: Lab-on-Chip Devices for Radiopharmacy	16:00 – 17:00	Auditorium
<b>Keynote Lecture 12</b> <b>Areen Alsaid</b> , <i>Ford Motor Company, USA</i> Designing Emerging Technologies that Work for Humans: The Interaction Component	17:00 – 18:00	Auditorium
<b>Technical Sessions</b>	All Day (pre-recorded)	
<b>Conference Closing</b> <b>Jamal Nayfeh</b> , Dean of College of Engineering, Prince Mohammad Bin Fahd University, Khobar, Saudi Arabia	18:00 – 18:15	Auditorium

- All times are Saudi Arabia time zone (GMT +3)

# Technical Sessions

## Session 1: Power & Energy

### Paper ID: 25

Techno-Economic Assessment of Different Solar PV Configurations for a Typical House in Dhahran

Jaafar Alboali, Abdullah Alsuwaid, Mustafa Aljafar and Muhammad Khalid

### Paper ID: 31

Power Sharing and Parallel Inverters Control in Islanded Microgrids

Leila Ammeh, Hassan El Fadil, Fouad Giri and Tarek Ahmed-Ali

### Paper ID: 37

Induction Motor DTC Performance Improvement by Reducing Flux and Torque Ripples in Low Speed

Yassine Zahraoui, Mohamed Akherraz and Sara Elbadaoui

### Paper ID: 53

An Overview and Practical Consideration of Common Lithium-ion Battery Cell Models

Ala Hussein

### Paper ID: 58

Application of 5G Technology in Operation of Virtual Power Plants and Demand Response

Javad Jazaeri

### Paper ID: 64

De-loaded Low-Voltage Ride-Through Control and Primary Frequency Control for AC-Microgrid based PMSG Enhanced by Battery

Assia Mahrouch and Mohammed Ouassaid

### Paper ID: 54

Enhanced EKF Method for State-of-Charge Estimation of Electric Vehicles' Li-ion Batteries under Highly Dynamic Power Profiles

Ala Hussein, Ali Wadi and Mamoun Abdel-Hafez

# Technical Sessions

## Session 1: Power & Energy

### Paper ID: 115

Robust Sliding Mode Hybrid Controller against Mechanical Parameter Inaccuracy of a Wind Energy Conversion System based on a Doubly Fed Inductance Generator

Nabil Dahri, Mohammed Ouassaid and Driss Yousfi

### Paper ID: 143

Experimental Evaluation of Fuzzy-Sliding Mode Control Applied to a Single Phase VSI for Photovoltaic Application

Khalid Chigane and Mohammed Ouassaid

### Paper ID: 65

Improvement of Energy Consumption of an Electric Bus with Loss Minimization

Martin Novak and Jaroslav Novak

### Paper ID: 66

Modeling and Simulation of a Permanent Magnet Synchronous Motor under the Vector Control Topology

Naoui Mohamed, Aymen Flah, Mouna Ben Hamed and Lassaad Sbita

### Paper ID: 69

Experimental Investigations of a CFLs Currents Harmonics Injection into an Electrical Network Grid

Mohamed Hajjej, Mohamed Naoui and Lassaad Sbita

### Paper ID: 71

A Four-Legged H-Bridge Inverter Topology for Cascaded Multilevel Inverter

Muhammad Muneeb, Khurram Karim Qureshi and Umar Farooq

### Paper ID: 79

Modeling and Control of a Wind Energy System Connected to the Grid

Aymen Flah, Hajer Gaied and Marcos Tostado Véliz

# Technical Sessions

## Session 1: Power & Energy

### Paper ID: 85

A Fuzzy-Based Multisource Power Management Control of Isolated Mini-Grid

Haythem Ben Messoud, Naoui Mohamed and Aymen Flah

### Paper ID: 86

Proposed Mitigation Techniques for Non-Compliance Challenges of a Grid-Connected Photovoltaic Plant

Theunis Duvenhage and Khaled Abo-Al-Ez

### Paper ID: 90

Pilot DC Distance Scheme for MVDC Zonal Shipboard Microgrid

Asmaa M. Aboelezz, Bishoy E. Sedhom and Magdi M. El-Saadawi

### Paper ID: 107

Analysis Study of City Obstacles Shading Impact on Solar PV Vehicle

Marwa Ben Said-Romdhane, Sondes Skander-Mustapha and Ilhem Slama-Belkhodja

### Paper ID: 110

SiC MOSFET Avalanche Breakdown Voltage Model for Temperature and Gate Voltage Dependence

Álvaro Llamazares, Miguel García-Gracia, Susana Martín-Arroyo and José Antonio Cebollero

### Paper ID: 112

Cleaning PhotoVoltaic Solar Panels by Drone Aerodynamic

Mohamed Mohandes, Shafiqur Rehman, Wael Suliman and Floris Schulze

### Paper ID: 92

Predictability of Wind Speed with Heights using Recurrent Neural Networks

Mohamed Mohandes, Shafiqur Rehman, Hilal Nuha and Floris Schulze



# Technical Sessions

## Session 2: Communication & Information Technologies

### **Paper ID: 1**

Reconfigurable Filter Based on Two-dimensional Materials

Aymen Hlali and Hassen Zairi

### **Paper ID: 7**

A 22nm CMOS 2.4-5.25GHz Mixer Resilient to Out-of-Band Blockers

Yuan Liang, Zhiqun Li, Dong Chen, Xiaowei Wang and Zhennan Li

### **Paper ID: 13**

Integration of a non-3GPP Satellite Interface in a 5G Multiple Access Configuration

Cesare Roseti

### **Paper ID: 14**

VoIP CODEC Assessment and Performance Evaluation in Satellite-Based Scenarios

Francesco Zampognaro, Renato Aurigemma and Walter Munarini

### **Paper ID: 15**

Development of a Testing Emulation Platform for the Validation and Design of 5G Satellite Services

Mattia Quadrini

### **Paper ID: 41**

SVR Based Design of Triple Band Rectangular Microstrip Antenna for WLAN and 5G Applications

Mahmud Esad Yiğit, Gülay Öke Günel and Tayfun Günel

### **Paper ID: 103**

Impact of Antenna Spacing on Differential Spatial Modulation and Spatial Modulation for 5G-Based Compact Wireless Devices

Sagarkumar Patel, Amit Patel, Dharmendra Chauhan, Alpesh Vala, Keyur Mahant and Hiren Mewada

# Technical Sessions

## Session 2: Communication & Information Technologies

### Paper ID: 113

Robust Speech Emotion Recognition System through Novel ER-CNN and Spectral Features

Muhammad Zeeshan, Huma Ayub and Farman Hassan

### Paper ID: 142

A Review on the Prediction of Energy Consumption in the Industry Sector based on Machine Learning Approaches

Mouad Bahij, Moussa Labbadi, Mohamed Cherkaoui, Chakib Chatri, Ali Elkhatiri and Achraf Elouerghi

### Paper ID: 44

Study of Microstrip Multiplexers for Satellite Communication Systems

Saleh Komies, Abdulaziz Alshaya and Khaled Aliqab

### Paper ID: 49

Specification, Verification, and Calibration of Active Electronically Scanned Array (AESA) Antennas

Marco Lisi

### Paper ID: 57

One Tcall: An Innovative VoIP Communications System Enabled by the Presence of a Satellite Link

Salvatore Schiano Lo Moriello and Renato Aurigemma

### Paper ID: 59

Incremental Least Mean Square CDMA Diffusion-Based Over Multitask Networks

Ali Al-Mohammed and Mohamed Deriche

### Paper ID: 95

Crowd Anomaly Detection Systems using RFID and WSN Review

W. Raad, A. Hussein, M. Mohandes, B. Liu and A. Al-Shaikhi

# Technical Sessions

## Session 2: Communication & Information Technologies

### **Paper ID: 105**

Sensor Node Selection Technique in Wireless Rechargeable Sensor Networks for Cyber-physical Systems

Efe Orumwense and Khaled Abo-Al-Ez

### **Paper ID: 116**

Demystifying LoRa Wireless Technology for IoT Applications: Concept to Experiment

Pradeep Reddy G. and Pavan Kumar Y. V.

### **Paper ID: 136**

Design of New Inset Fed Circular Patch Antenna with Gain Enhancement

Chemkha Hichem and Belkacem Afif

### **Paper ID: 141**

Review on Ultra Low Power Receiver Front-end Design

Neeraja Pasupuleti, Ganesh Lakshmana Kumar Moganti and Sameeulla Khan Md

# Technical Sessions

## Session 3: Modeling, Control & Simulation

### Paper ID: 2

PSO-MPPT Control Loop for Improving the PV System

Mayssa Rayhani, Aymen Flah and Marcos Tostado Véliz

### Paper ID: 3

A Consumer Producer Method Based Solar Home System in Bangladesh: Modelling, Challenges, and Prospects

Md. Sazal Miah, Md. Maidul Islam, Molla Shahadat Hossain Lipu and Aini Hussain

### Paper ID: 16

Development of Ultra-Wide-Band Indoor Positioning System Designed to Control the Position of a Grid Confined Robotic Platform

Ahmed Alghuraid, Adel Almalki, Ahmad Alnaim, Ali Almubarak, Sadiq Alhuwaidi, Ahmed Abul Hussain and Mohammed Alsubaie

### Paper ID: 23

Movie Subtitle Document Classification Using Unsupervised Machine Learning Approach

Md. Mehedi Hasan, Sadia Tamim Dip, T. M. Kamruzzaman, Mst Sonia Akter, Imrus Salehin and Nazmun Nessa Moon

### Paper ID: 30

Multilabel Movie Genre Classification from Movie Subtitle: Parameter Optimized Hybrid Classifier

Md. Mehedi Hasan, Sadia Tamim Dip, Mst Sonia Akter, Imrus Salehin and Nazmun Nessa Moon

### Paper ID: 42

Multiwall Carbon Nanotube Time Delay Section

Tayfun Günel, Mahmud Esad Yiğit and Gülay Öke Günel

### Paper ID: 63

Hybrid Storage System for Controlling Wind Uncertainty

## Technical Sessions

### Session 3: Modeling, Control & Simulation

#### **Paper ID: 73**

Fall Detection System using Novel Median Deviated Ternary Patterns and SVM

Babar Younis, Ali Javed and Farman Hassan

#### **Paper ID: 74**

Predicting Nodes for Effectively Spreading Vaccine Awareness: An Influence Maximization Approach

Mithileysh Sathiyarayanan

#### **Paper ID: 76**

Black Box System for Car/Driver Monitoring to Decrease the Reasons of Road Crashes

Mohammed Karrouchi, Ismail Nasri, Hajar Snoussi, Ilias Atmane, Abdelhafid Messaoudi and Kamal Kassmi

#### **Paper ID: 82**

Adaptive Fine-tuning for Deep Transfer Learning based Traffic Signs Classification

Ismail Nasri, Abdelhafid Messaoudi, Kamal Kassmi, Mohammed Karrouchi and Hajar Snoussi

#### **Paper ID: 91**

Air Quality and Nuclear Radiation Monitoring in Bangladesh - A Part of Smart City Planning

Md. Sazal Miah, Md. Atiqur Rahman and Md.Mosaaraf Hossain

#### **Paper ID: 135**

Arduino Based PI Control for a Nonlinear TITO System using LabVIEW

Kalyan Chakravarthi M., Pavan Kumar Y. V., John Pradeep D., Pradeep Reddy Ch., A. Vaishnavi and N. S. Greeshma Reddy

#### **Paper ID: 139**

ARIMA Based Forecasting of Stream Flows of Three Georges Dam for efficient Water Resource Planning and Management

Dola Gupta, Amlan Chakrabarti and Jyoti Gautam

# Technical Sessions

## Session 3: Modeling, Control & Simulation

### **Paper ID: 140**

A Nonlinear Regression-Based Approach for Estimating the Relaxation Parameters of GPR Traces

Saeed Aljabri and Dr. Mohamed Deriche

### **Paper ID: 97**

Analysis of the Acceleration of Deep Learning Inference Models on a Heterogeneous Architecture based on OpenVino

Fatima Zahra Guerrouj, Mohamed Abouzahir, Mustapha Ramzi and El Mehdi Abdali

### **Paper ID: 118**

Viral Pneumonia Detection Using Modified GoogleNet through Lung X-rays

Muhammad Saad Ullah, Huma Ayub and Farman Hassan

### **Paper ID: 123**

Quantitative Analysis on Open-Loop PI Tuning Methods for Liquid Level Control

Sandeep Rao K., John Pradeep D., Pavan Kumar Y. V., Kalyan Chakravarthi M. and Pradeep Reddy Ch.

### **Paper ID: 125**

Detecting Port Scan Attacks using Logistic Regression

Qasem Abu Al-Haija, Eyad Saleh and Mohammad Alnabhan

### **Paper ID: 126**

Heterogenous Mouse Phantom with Water Tumor Model for Ionizing Imaging Machines

Norah Alqahtani, Lujain Alsubaie, Latifa Aljaafari, Rand Aljurais, Lama Alagil and Gameel Saleh

# Technical Sessions

## Session 4: Emerging Technologies & Applications

### Paper ID: 11

Aerodynamic Performance of Advanced Ingenuity and Dragonfly Drones for Future Mars and Titan Space Missions

Osama Ata

### Paper ID: 17

Wideband LNA in 0.18  $\mu\text{m}$  CMOS Technology

Amit Patel, Jitendra Chaudhari, Hiren Mewada, Keyur Mahant, Jawad F. Al Asad and Alpesh Vala

### Paper ID: 21

Toward Agriculture 4.0: Smart Farming Environment based on Robotic and IoT

Ayad Soheyb, Telli Abdelmoutia and Labib Sadek Terrissa

### Paper ID: 35

Concatenated Image Compression and Encryption

Abdulaziz Alshaya and Saleh Komies

### Paper ID: 43

Using COVID-19 Masks Dataset to Implement Deep Convolutional Neural Networks for Facial Emotion Recognition

Salem Tegani and Abdelmoutia Telli

### Paper ID: 47

{UE} Current Consumption on MIMO in {LTE-A} Systems

Alvaro Javier Ortega, Weskley Vinicius Fernandes Mauricio, Heitor De Freitas Viera and Paulo Thiago Marreiros Santos

### Paper ID: 51

Machine Learning Algorithms Evaluation for Phishing URLs Classification

Amine Berqia and Habiba Bouijij

# Technical Sessions

## Session 4: Emerging Technologies & Applications

### Paper ID: 61

Predicting Quality of Life using Machine Learning: Case of World Happiness Index

Ayoub Jannani, Sael Nawal and Faouzia Benabbou

### Paper ID: 62

Developing an Indoor Location Guidance System for a College Campus Environment

Thamer Alkhamis, Patricia Davies, Saifullah Shafiq and Ahmed Hussain

### Paper ID: 77

Evaluation of Transfer Learning based Deep Learning Architectures for Waste Classification

Sukhendra Singh, Jyoti Gautam, Sursingh Rawat, Vimal Gupta, Gyanendra Kumar and Lal Pratap Verma

### Paper ID: 78

Title: Car Detection and Recognition using Deep Learning Techniques

Sursingh Rawat, Jyoti Gautam, Sukhendra Singh, Vimal Gupta, Gyanendra Kumar and Lal Pratap Verma

### Paper ID: 100

A Framework of Multi-point Infrared Temperature Screening System for COVID-19 Pandemic

Mehmet Cem Catalbas

### Paper ID: 52

IoT-based Farming Robot

Mohammed Khory, Ibrahim Al Zuwaid, Ahmed Al Motawa, Ahmed Hussain, Nizar Tayem and Samir El-Nakla

### Paper ID: 111

Arabic Sign Language Using Deep Machine Learning

Wael Suliman, Mohamed Mohandes, Mohamed Deriche, Hamza Luqman and Craig Codrington



# Technical Sessions

## Session 4: Emerging Technologies & Applications

### **Paper ID: 117**

Covid-19 Detection based on the Fine-Tuned MobileNetv2 through Lung X-rays

Maria Yaqoob, Huma Ayub and Farman Hassan

### **Paper ID: 101**

A Novel Graphical Password Authentication Scheme with Improved Usability

Touraj Khodadadi, Faranak Rabiei, Mazdak Zamani, Yashar Javadianasl, Mojtaba Alizadeh and Saman Shojae Chaeikar

### **Paper ID: 104**

Stretchable Wearable Crowd Monitoring System

Jhonathan Rojas, Alaa Hussein, Hussein Alzaher and Mohamed Mohandes

### **Paper ID: 106**

Fraud Prediction in Pakistani E-commerce Market

Muhammad Sabih, Khurram Karim Quershi, Muhammad Usman Asad and Umar Farooq