

2020 PMU International Conference on Industrial Revolution 4.0 in
Computing, Mobility, and Manufacturing
CMM 2020
08-10 December 2020, Khobar, Saudi Arabia

Virtual Conference Program



PROGRAM AT GLANCE

NOTE: Times and dates are in Khobar, Saudi Arabia (GMT+3)

Tuesday, 08 December 2020

Free Day

Wednesday, 09 December 2020

| | |
|---------------|-------------------------------|
| 09:00 - 09:15 | Welcome Speech |
| 09:15 - 10:15 | Keynote Lecture 1 |
| 10:15 - 11:15 | Keynote Lecture 2 |
| 11:15 - 13:00 | Lunch Break |
| 13:00 - 14:00 | Parallel Sessions |
| 14:00 - 14:15 | Coffee Break for Q&A Sessions |
| 14:15 - 15:15 | Parallel Sessions |
| 15:15 - 15:30 | Coffee Break for Q&A Sessions |
| 15:30 - 16:30 | Parallel Sessions |
| 16:30 - 16:45 | Q&A Sessions |

Thursday, 10 December 2020

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|---------------|-------------------------------|
| 09:00 - 10:00 | Keynote Lecture 3 |
| 10:00 - 11:00 | Keynote Lecture 4 |
| 11:00 - 12:00 | Lunch Break |
| 12:00 - 12:45 | Parallel Sessions |
| 12:45 - 13:00 | Coffee Break for Q&A Sessions |
| 13:00 - 13:45 | Parallel Sessions |
| 13:45 - 14:00 | Q&A Sessions |
| 14:00 - 14:15 | Closing Remarks |

DETAILED TECHNICAL PROGRAM

NOTE: Times and dates are in Khobar, Saudi Arabia (GMT+3)

Wednesday, 09 December 2020

Welcome Speech

Issa Alansari
Honorary Chair and PMU President

9:00 - 9:15 Auditorium

Keynote Lecture 1

IPR and applications to e-forensics and smart cities

9:15 - 10:15 Auditorium

Speaker: Patrick S.P. Wang
Chair: Mohammad Hussein Bashayreh

Keynote Lecture 2

Artificial intelligence for industrial and environmental applications

10:15 - 11:15 Auditorium

Speaker: Vincenzo Piuri
Chair: Jamal F. Nayfeh

11:15 – 13:00: Lunch Break

PARALLEL SESSIONS

Manufacturing: Numerical analysis & design

13:00 - 14:00, Room 1

ID #1: Numerical modeling the effects of chamfer and hone cutting edge geometries on burr formation

Muhammad Asad, Faramarz Djavanroodi, Hassan Ijaz, Muhammad Azhar Ali Khan, Muhammad Usman Rashid and Tarek Mabrouki

ID #25: Impact of partial slip and lateral walls on peristaltic transport of a couple stress fluid in a rectangular duct

Safia Akram

ID #37: Design of mechanism for reducing support structures in material extrusion additive manufacturing

Nassim Khaled, Rami Alkhatib, Anas Al-Shaghouri and Saja Khatib

ID #42: Tetra-parameter fish feeding machine

Computing: Data Processing

13:00 - 14:00, Room 2

13:00-13:15

ID #4: Optimizing particle systems through CUDA-assisted multithreading

Fadi Sibai, Andrew Potvin and Steven Ngo

13:15-13:30

ID #17: Analyzing the impact of soft errors in deep neural networks on GPUs from instruction level

Younis Ibrahim, Junyang Liu, Xuanxuan Yang, Hongwei Sha, Peng Li and Haibin Wang

13:30-13:45

ID #29: Building educational simulations using KSA open data

Patricia Davies, Phil Weir and Sarah Byrne

13:45-14:00

ID #50: An enhanced deep autoencoder-based approach for DDoS attack detection

*Ertie Abana, Maureen Baricaua,
Rochelle Joyce Casibang, Aldene
Paulino Babaran, Vincent Joseph
Gaspar and Fritz Gerald Puzon*

Samar Sindian and Samer Sindian

14:00 – 14:15: Coffee Break for Q&A Sessions

Computing: Intelligent systems

**Computing: Image and graph
analysis**

14:15 - 15:15, Room 1

14:15 - 15:15, Room 2

**ID #2: Towards handling incremental
load for anomalies in near real time
data warehouse**

*Mohammed Muddasir, Raghuveer K
and R Dayanand*

**ID #31: RES on power operation:
k-means clustering over elbow
approach**

*Ali Al-Mohammed and Mohammed
Abido*

**ID #36: Performance evaluation of
5G/WiFi-6 coexistence**

Aymen I. Zreikat

**ID #44: Intelligent bus application for
smart city based on LoRa technology
and RBF neural network**

*Linda Kanaan, Jamal Haydar, Mounir
Samaha, Ali Mokdad and Walid Fahs*

14:15-14:30

**ID #13: Quantum image
steganography using photon double
encoding**

Marius Nagy

14:30-14:45

**ID #23: Information fusion in
recognition of Saudi Arabia license
plates**

Hamdan Al-Harbi and Rami Al-Hmouz

14:45-15:00

**ID #27: A novel controller placement
using Petri-nets for SDNs**

Wael Hosny Fouad Aly

15:00-15:15

**ID #38: Data compression and
protection through representation
with combinations and spiral path**

*Elda Cina, Hiba Tabbara and Esmerald
Aliaj*

15:15 – 15:30: Coffee Break for Q&A Sessions

Mobility: Systems and control

Computing: Prediction and modeling

15:30 - 16:30, Room 1

15:30 - 16:30, Room 2

ID #26: Frequency security constrained energy management in an isolated power system

Umer Akram, Mithulananthan Nadarajah, Rakibuzzaman Shah and Saifullah Shafiq

15:30-15:45

ID #39: Predicting loan approval of bank direct marketing data using ensemble machine learning algorithms

Hossam Meshref

ID #51: Low cost electronic braille

Zaynab Zeineddine, Samar Sindian, Nour Al Hoda Ahmad and George Ismail

15:45-16:00

ID #45: Data model for evaluation of audience feedback in lectures

Ahmad Koubeissi and Hawraa Al Abedi

ID #52: Trajectory planning of a cable-based parallel robot robot using reinforcement learning and soft actor-critic

Dinh-Son Vu and Ahmad Alsmadi

16:00-16:15

ID #60: An agent-based simulation of the SIRD model of COVID-19 spread

Norah Alsaeed, Eman Alqaissi and Muazzam Siddiqui

ID #54: Formation flight control of multi-UAV system using neighbor-based trajectory generation topology

Batool Ibrahim and Hassan Noura

16:15-16:30

ID #61: Source fabrication detection model based on key value variables in reactive protocols of VANET

Fadlallah Chbib, Walid Fahs, Jamal Haydar, Lyes Khoukhi and Rida Khatoun

16:30 – 16:45: Q&A Sessions

Thursday, 10 December 2020

Keynote Lecture 3

9:00 - 10:00

Auditorium

Quantifying stability in deterministic and stochastic complex networks and its application to power grids

Speaker: Jürgen Kurths

Chair: Muhammad Waqar Ashraf

Keynote Lecture 4

10:00 - 11:00

Auditorium

Human face tracking and facial expression recognition based on tensor decomposition

Speaker: Hong Yan

Chair: Fadi Sibai

11:00 – 12:00: Lunch Break

Computing: Soft computing and signals

12:00 - 12:45, Room 1

ID #53: Soft topological spaces induced via soft relations

Saeid Jafari, Abd El-Fattah A. El-Atik, Raja Mohammad Latif and Mostafa Kamel Abdel-Moneim El-Bably

ID #56: Sum of sine modeling approach as a new processing technique for a biometric system based on ECG signal

Abbas Abou Ahmad, Mohammad Ayache and Alaa Daher

ID #64: How varying the dipole lengths of a uniform linear array affects the performance of an ESPRIT-based direction finding algorithm

Gerald Pacaba Arada

Computing: Image recognition and energy

12:00 - 12:45, Room 2

12:10-12:15

ID #32: Evaluating the impact of dataset size on signature recognition

Malak Rabie Rabah, Layan Allam Mourad, Mona Saleem Alshaqra, Jasmine Hassan Al-Madi and Majid Khan

12:15-12:30

ID #40: ISO/IEC 25010 based evaluation of rice seed analyzer: a machine vision application using image processing technique

Benedict Sy and Ertie Abana

12:30-12:45

ID #41: Electricity generating water faucet with three-inflow pipes generator

Marion James, Ertie Abana, Francis Nicholas Escobar, Rhanny Cureg, Maricel Domingo, Jomar Baruzo, Jerome Saunar and Eduardo Baratas

12:45 – 13:00: Coffee Break for Q&A Sessions

AI in law

13:00 - 13:45, Room 1

ID #14: The evolution of Jordanian legislation in artificial intelligence

Noor Alhendi

Computers in commerce and finance

13:00 - 13:45, Room 2

13:00-13:15

ID #9: Regulating cyberspace: the Saudi national approach to e-commerce & the need of enhanced protection

Rabai Boudershem

ID #18: The need for a legal standard of care in the AI environment

Mohammad Bashayreh, Amer Tabbara and Fadi N. Sibai

13:15-13:30

ID #28: Preparedness of regulation in facing financial technology (Fintech) in Indonesia

Etty Mulyati, Helza Nova Lita and Nun Harrieti

ID #21: Uber, artificial intelligence and natural language processing: exploring the boundaries of legal research

Federico Fusco

13:30-13:45

ID #22: Arabic braille recognition using deep learning techniques*

Shurouq Alufaisan, Wafa Albur, Shaikha Alsedrah, Ghazanfar Latif

* presentation added out of session

13:45 – 14:00: Q&A Sessions

Closing Remarks

Faisal Yousif Al Anezi

General Co-Chair and PMU Vice President for Academic Affairs

14:00 - 14:15, Auditorium