



3rd INTERNATIONAL CONFERENCE ON SIGNAL PROCESSING AND INFORMATION SECURITY (ICSPIS 2020)

Virtual Conference, Hosted By University of Dubai, UAE. Date : November 25-26, 2020

Zoom Link Day 1 :
<https://www.icspis.com/day1>

Zoom Link Day 2 :
<https://www.icspis.com/day2>

Wednesday, November 25

09:00-09:30	OC: Opening Ceremony
09:30-10:30	KN1: Keynote Speech: The Superior Neuron Model
10:30-10:45	CB: Coffee Break
10:45-12:15	PD: Panel Discussion: COVID-19 and Signal Processing & Information Security Research
12:15-13:15	LB: Lunch Break
13:15-15:15	S1: Session 1
15:15-15:30	CB: Coffee Break
15:30-17:30	S2: Session 2

Thursday, November 26

09:30-10:30	KN2: Keynote Speech: Fingerprinting by Design: Authentication and Security
10:30-10:45	CB: Coffee Break
10:45-12:45	S3: Session 3
12:45-13:45	LB: Lunch Break
13:45-15:00	S4: Session 4
15:00-15:30	CS: Awards and Closing Ceremony

Wednesday, November 25, 9:00 - 9:30 (Asia/Dubai)

OC: Opening Ceremony

Dr. Eesa Bastaki (Conference Chair), H.E. Dr. Mohammed Al-Mualla (Invited Speech), Dr. Fatima Taher (IEEE UAE Chair), Prof. Wathiq Mansoor (TPC Chair)

Wednesday, November 25, 9:30 - 10:30 (Asia/Dubai)

KN1: Keynote Speech: The Superior Neuron Model

Prof. Moncef Gabbouj, FIEEE

Abstract: Operational Neural Networks (ONNs) are new generation network models targeting to address two major drawbacks of conventional Convolutional Neural Networks (CNNs): the homogenous network configuration and the "linear" neuron model that can only perform linear transformations over previous layer outputs. ONNs can perform any linear or non-linear transformation with a proper combination of "nodal" and "pool" operators. This is a great leap towards expanding the neuron's learning capacity in ONNs, requiring the use of a single nodal operator for all synaptic connections of every neuron. This restriction has recently been lifted by introducing a superior neuron called the "generative neuron" where each nodal operator can be customized during the training in order to maximize learning. As a result, the network is able to self-organize the nodal operators of its neurons' connections. Self-Organized ONNs (Self-ONNs) composed with superior generative neurons can achieve diversity even with a compact configuration. We shall explore several signal processing applications of neural network models equipped with the superior neuron.

Wednesday, November 25, 10:30 - 10:45 (Asia/Dubai)

CB: Coffee Break

Wednesday, November 25, 10:45 - 12:15 (Asia/Dubai)

PD: Panel Discussion: COVID-19 and Signal Processing & Information Security Research

Prof. Ahmad Al-Shimaa (Sharjah University), Engr. Saeed Al-Mansoori (MBRSC), Mr. Qitang Liu (Huawei), Dr. Rocky Termanini (Cybersecurity Consulting), Prof. Hussain Al-Ahmad (Moderator)

Wednesday, November 25, 12:15 - 13:15 (Asia/Dubai)

LB: Lunch Break

Wednesday, November 25 13:15 - 15:15 (Asia/Dubai)

S1: Session 1

Chairs: Amjad Gawanmeh, Christine Markarian

- **13:15** Introducing a Mobile App to Increase Cybersecurity Awareness in MENA
Hadeel Mohammed Jawad and Samir Tout
- **13:30** A Microservices Architecture for ADS-B Data Security Using Blockchain
Haitham Abu Damis, Dina Shehada, Claude Fachkha, Amjad Gawanmeh and Jamal A I-Karaki
- **13:45** Trusted Security Model for IDS Using Deep Learning
Khalid Makdi
- **14:00** Digital Forensics and Investigations of the Internet of Things: A Literature Review
Shehanaz Amiroon and Claude Fachkha
- **14:15** Performance Evaluation of a Lightweight IoT Authentication Protocol
Dina Shehada, Amjad Gawanmeh, Claude Fachkha and Haitham Abu Damis
- **14:30** Digital Forensic Analysis of Files Using Deep Learning
Mohammed Al Neaimi, Hussam Al Hamadi, Chan Yeun and M. Jamal Zemerly
- **14:45** Image Encryption Based on Chua Chaotic Oscillator
Farah Ali AlMutairi and Talal Bonny
- **15:00** A New Chaos-Based-Cryptosystem for Voice Encryption
Wafaa Al Nassan and Talal Bonny

Wednesday, November 25 15:15 - 15:30 (Asia/Dubai)

CB: Coffee Break

S2: Session 2

Chairs: Sabina Abdul Hadi, Saad Amin

- **15:30** - A Comparative Study of Meningioma Tumors Segmentation Methods from MR Images : Mohanad Alkhodari, Omnia Hassanin and Salam Dhou
 - **15:45** - Skin Cancer Classification Model Based on VGG19 and Transfer Learning
Nour Aburaed, Alavikunhu Panthakkan, Mina Al-Saad, Saad Amin and Wathiq Mansoor
 - **16:00** - An Application for Dementia Patient Monitoring with Sound Level Assessment Tool - Abigail Copiaco, Christian H Ritz, Stefano Fasciani and Nidhal Abdulaziz
 - **16:15** - Accurate Prediction of COVID-19 (+) Using AI Deep VGG16 Model
Alavikunhu Panthakkan, Saeed Al Mansoori, S M Anzar and Hussain Al-Ahmad
 - **16:30** - The Effect of Obstructive Sleep Apnea on the Cardiovascular Variability
Shahrokh Sani
 - **16:45** - Automatic Detection of Sleep Apnea Using Sub-Band Features from EEG Signals
Ritika Gupta, Tehreem Fatima Zaidi and Omar Farooq
 - **17:00** - EfficientNet for Retinal Blood Vessel Segmentation
Alavikunhu Panthakkan, S M Anzar and Mili Rosline Mathews
 - **17:15** - Functional Annotation and Identification of Putative Drug Target in VV
Yashbir Singh, Deepa S and Wathiq Mansoor
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Thursday, November 26 9:30 - 10:30 (Asia/Dubai)

KN2: Keynote Speech: Fingerprinting by Design: Authentication and Security

Prof. Brian M. Sadler, FIEEE

Abstract: Fingerprints are commonly understood as traits that uniquely identify an individual, an object, or a message, and can be exploited to detect and prevent impersonation, fraud, or unlawful duplication. In this talk we consider the intentional introduction of fingerprints to provide security in wireless communications. This addresses the fingerprint design, and its embedding into a communications waveform, so that it has several desired properties including stealth, security, and predictable performance. The framework draws on communications, signal processing, cryptographic hashing, and information theory, enabling control of performance trade-offs by design. Privacy and security analysis quantify the limited ability of an eavesdropper to detect and estimate the fingerprint or to impersonate a legitimate user. Fingerprints provide a message, and a secret codebook design is described that enables secure side-channel communications through fingerprint coding.

Thursday, November 26 10:30 - 10:45 (Asia/Dubai)

CB: Coffee Break

Thursday, November 26 10:45 - 12:45 (Asia/Dubai)

S3: Session 3

Chairs: Diana Dawoud, Rida Gadhafi

- **10:45** - Indoor Localization in Multi-Path Environment Based on AoA with Particle Filter
Aysha Alteneiji, Ubaid Ahmad, Kin Fai Poon, Nazar Thamer Ali and Nawaf Almoosa
- **11:00** -A New Discrete-Time Model of Fractional-Order PLL
Reyad El-Khazali
- **11:15** -Low-Overhead Channel Estimation for Diffusive Molecular Communication
Abdollah Masoud Darya and Saeed Abdallah
- **11:30** -A Study of Steganography Based on Error Correction Code and Secret Sharing Scheme - Kaito Onuma and Sumiko Miyata
- **11:45** - Impact of Channel Estimation Error on the Performance of Time-Domain Interleaved OFDM Systems - Tasnim Nazzal and Husameldin Mukhtar

- **12:00** - Design of a Secure Blockchain-Based Smart IoV Architecture
Debashis Das, Sourav Banerjee, Wathiq Mansoor, Utpal Biswas, Pushpita Chatterjee and Uttam Ghosh
 - **12:15** - Vulnerability Assessment for IoT Nodes Using OpenBTS and Software Defined Radios - Jose Rugeles and Edward Guillen
 - **12:30** - Traffic Dynamics Estimation Based on the IDM Using EKF and ARX Modeling
Joy Carpio
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Thursday, November 26 12:45 - 13:45 (Asia/Dubai)

LB: Lunch Break

Thursday, November 26 13:45 - 15:00 (Asia/Dubai)

S4: Session 4

Chairs: Claude Fachkha, Alavikunhu Panthakkan

- **13:45** - Reading Political Sentiment and Mood of the Electorate Through Twitter Data
Piyush Maheshwari, Abhirup Khanna and Agarwal Amit
 - **14:00** - Fighting Deepfake by Residual Noise Using Convolutional Neural Network
Marwa Chendeb El Rai, Dina Hejji, Omar M Gouda, Manar AbuTalib, Qassim MH Nasir and Hussain Al-Ahmad
 - **14:15** - Artificial Intelligence Platform for Low-Cost Robotics
Kiyana Afsari and Maha Saadeh
 - **14:30** - RAASID: A Multipurpose Crowd Sensing Smart System with Sentimental Analysis - Maha Al Hosani, Hamda Al Marzouqi, Shoug Al Junaibi, Amna Al Hmoudi, Jamal A I-Karaki and Amjad Gawanmeh
 - **14:45** - Skin Diseases Detection Using Image Processing and CNN
W. G. Malaka Dananjaya, B. R. I. S. Gunatileka, M . S. Y Peiris and R. K. M. S. K Karunanayake
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Thursday, November 26 15:00 - 15:30 (Asia/Dubai)

CS: Awards and Closing Ceremony