2022 5th International Conference on Signal Processing and Information Security (ICSPIS 2022)

Virtual Conference
7-8 December 2022

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Wednesday, December 7

Wednesday, December 7 9:00 - 9:30 (Asia/Dubai)

OC: Opening Ceremony: Welcome Speech and Conference Briefing

Dr. Eesa Bastaki (Conference Chair), Dr. Hussam Al-Hamadi (IEEE UAE Section), Prof. Wathiq Mansoor (TPC Chair)

Wednesday, December 7 9:30 - 10:30 (Asia/Dubai)

KN1: Keynote Speech: AI in Medical Imaging: The Present and Future - Prof. Bradley Erickson

Prof. Bradley Erickson

Abstract : The presentation will focus on how AI is being applied to medical imaging and where it is likely to be further developed. In particular, some of the technical challenges and recent advances will be highlighted to help frame the likely trajectory. Some of the applications described will be for image segmentation, classification with particular attention to multi-modal AI, and applications for image reconstruction and improvement. Finally, considerations and options for clinical implementation will be discussed.

Bio : Bradley J. Erickson, M.D., Ph.D., is Professor of Radiology, with joint appointments in the Department of Quantitative Health Sciences and the Department of Biomedical Engineering and Physiology. He is a practicing neuroradiologist at Mayo Clinic. He also runs a lab with 17 post-doctoral fellows that focus on the application of artificial intelligence and deep learning to medical imaging. This research includes the development and validation of algorithms that can detect progression, regression or risk of disease, and the prediction of molecular markers from medical images. His work has been funded by the National Institute of Diabetes and Digestive and Kidney Disease; National Institute of General Medical Sciences; National Institute of Neurological Disorders and Stroke; and National Cancer Institute. He has developed numerous computer-based tools that have been put into clinical practice, including the clinical image viewer that has been used for more than 25 years. He also founded Teramedica which was one of the first vendor-neutral archive companies, and more recently FlowSIGMA, which applies intelligent process automation to clinical practice. He also has several AI-based tools that have been put into clinical practice.

Wednesday, December 7 10:30 - 10:45 (Asia/Dubai)

CB: Coffee Break

Wednesday, December 7 10:45 - 12:00 (Asia/Dubai)

PD: Panel Discussion: The Role of AI and Information Security in the Metaverse

Prof. Ernesto Damiani (Universitàdegli Studi di Milano, Italy and Khalifa University, UAE), Dr. Saeed Aldhaheri (University of Dubai, UAE), Dr. Moayad Alogaily (Moayad Alogaily, UAE), Moderator: Prof. Wathiq Mansoor (University of Dubai, UAE)

Wednesday, December 7 12:00 - 12:45 (Asia/Dubai)

LB: Lunch Break

Wednesday, December 7 12:45 - 14:45 (Asia/Dubai)

S1: Session 1

Chairs: Saad Amin, Claude Fachkha

13:45 *Design of an Automated Blockchain-Enabled Vehicle Data Management System..........22*

Debashis Das, Sourav Banerjee, Pushpita Chatterjee, Uttam Ghosh, Wathiq Mansoor and Utpal Biswas

14:00 *Comparison of Feature Extraction and Classification Techniques of PE Malware..........26*

Leena El Neel, Abigail Copiaco, Walid Obaid and Husameldin Mukhtar

14:15 *PbVmSP: A Priority-Based VM Selection Policy for VM Consolidation in Green Cloud Computing..........32*

Riman Mandal, Manash Kumar Mondal, Sourav Banerjee, Pushpita Chatterjee, Wathiq Mansoor and Utpal Biswas

14:30 *Magnetic and Piezoelectric Energy Harvesting for Autonomous Bionic Systems..........38*

Maisam Wahbah and Mohammad Sami Zitouni

Wednesday, December 7 14:45 - 15:00 (Asia/Dubai)
CB: Coffee Break
Wednesday, December 7 15:00 - 17:00 (Asia/Dubai)
S2: Session 2

Chairs: Hamzah Ali Alkhazaleh, Rida Gadhafi

15:00 *Smart Speed Camera Based on Automatic Number Plate Recognition for Residential Compounds..........42*

Tamim M AL-Hasan, Ahmed S Shibeika, Usama Attique, Faycal Bensaali and Yassine Himeur

15:15 *Classification of Cumin, Fennel and Carom Using Transfer Learning..........46*

Abdullah Ajaz Siddiqui, Shahab Saquib Sohail, Mohammad Areeb Qazi, Md Tabrez Nafis and Wathiq Mansoor

Thursday, December 8

Thursday, December 8 9:00 - 10:15 (Asia/Dubai)

KN2: Keynote Speech: Research and Operational Efforts For Immuning Cyber Space From IoT-centric Attacks - Dr. Elias Bou-Harb

Dr. Elias Bou-Harb

Abstract: At least 20 billion devices will be connected to the Internet by 2023. Many of these devices transmit critical and sensitive system and personal data in real-time. Collectively known as "the Internet of Things" (IoT), this market represents a $267 billion

per year industry. As valuable as this market is, security spending on the sector barely breaks 1%. Indeed, while IoT vendors continue to push more IoT devices to market, the security of these devices has often fallen in priority, making them easier to exploit. This drastically threatens the privacy of the consumers and the safety of mission-critical systems. While a number of research endeavors are currently taking place to address the IoT security problem, several challenges hinder their success. These include the lack of IoT monitoring capabilities once such devices are deployed, the shortage of remediation techniques when they are compromised, and the inadequacy of methodologies to permit the comprehension of the underlying IoT malicious infrastructures. To this end, this talk will shed the light on research, development and operational security efforts that are taking place at the Cyber Center for Security and Analytics at the University of Texas at San Antonio. Specifically, we will discuss how the research community can benefit from rare empirical data to shed light on Internet-scale IoT exploitations. We will also elaborate on an operational cyber security capability that have been developed to address the IoT security pandemic. Last but not least, this talk will pinpoint a few research endeavors that we are currently involved in. This talk hopes to stimulate multidisciplinary research, while enabling cyber security collaborations between academia, private industry and the public sector.

Bio: Dr. Elias Bou-Harb is currently the Director of the Cyber Center For Security and Analytics at UTSA, where he leads, directs and organizes university-wide innovative cyber security research, development and training initiatives. He is also a tenured Associate Professor at the department of Information Systems and Cyber Security specializing in operational cyber security and data science as applicable to national security challenges. Previously, he was a senior research scientist at Carnegie Mellon University (CMU) where he contributed to federally-funded projects related to critical infrastructure security and worked closely with the Software Engineering Institute (SEI). Dr. Bou-Harb holds a Ph.D. degree in computer science from Concordia University in Montreal, Canada, which was executed in collaboration with Public Safety Canada, Industry Canada and NCFTA Canada. His research and development activities and interests focus on operational cyber security, attacks' detection and characterization, malware investigation, cyber security for critical infrastructure and big data analytics. Dr. Bou-Harb has authored more than 130 refereed publications in leading security and data science venues, has acquired significant state and federal cyber security research grants, and is the recipient of 5 best research paper awards, including the prestigious ACM's best digital forensics research paper.

Thursday, December 8 10:15 - 10:30 (Asia/Dubai)

CB: Coffee Break

Thursday, December 8 10:30 - 12:15 (Asia/Dubai)

S3: Session 3

Chairs: Sabina Abdul Hadi, Sudad Muammar

10:30 *Breast Cancer Detection Using Federated Multicriteria Machine Learning..........80*

Marco Repetto and Davide La Torre

10:45 *A Study on Seizure Detection Performance in an Automated Process by Extracting Entropy Features..........86*

Sricheta Parui, Debasis Samanta, Nishant Chakravorty, Wathiq Mansoor and Uttam Ghosh

11:00 *Piezoelectric Energy Harvesting for Wearable and Implantable Devices..........92*

Mohammad Sami Zitouni and Maisam Wahbah

11:15 *DeepSkinNet: A Novel Deep Learning Model for Skin Cancer Detection..........97*

Alavikunhu Panthakkan, Anzar S M and Abhiram A p

11:30 *Extracting Drug-Related Tweets in COVID-19 Pandemic..........103*

Narges Abbasi, Hamed Vahdat-Nejad, Wathiq Mansoor and Fatemeh Salmani

11:45 *Predicting Cardiovascular Disease in Patients with Machine Learning & Feature Engineering Techniques..........107*

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12:00 *A Correlational Investigation of Personal Medical Data Safety and Blockchains..........113*

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Thursday, December 8 12:15 - 13:00 (Asia/Dubai)

LB: Lunch Break

Thursday, December 8 13:00 - 14:45 (Asia/Dubai)

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13:15 *Comparison of Food Calorie Measurement Using Image Processing and Machine Learning Techniques..........123*

Boshra Alshujaa, Fatima AlNuaimi, Wathiq Mansoor and Shadi Atalla

13:30 *Measuring Employee Productivity Through Copresence Using RFID Within the Workplace..........129*

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13:45 *Deep Neural Networks for Transmission Impairment Mitigation in Long-Reach 5G Access Networks..........134*

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14:00 *Neural NILM Learning Paradigms: From Centralized to Decentralized Learning..........138*

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Thursday, December 8 14:45 - 15:00 (Asia/Dubai)

CB: Coffee Break

Thursday, December 8 15:00 - 16:30 (Asia/Dubai)

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Chairs: Yasmin Halawani, Yassine Himeur

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15:15 *An Efficient Model for Horizontal Slicing in 5G Network Using Practical Simulations..........158*

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15:30 *Learning Analytics and Machine Learning..........164*

Aisha Almaazmi, Elham Karmastaji, Shadi Atalla, Hamzah Ali Alkhazaleh and Wathiq Mansoor

15:45 *Recommendation System Towards Residential Energy Saving Based on Anomaly Detection..........169*

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16:00 *Enhanced Extra Trees Classifier for Epileptic Seizure Prediction.....175*

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16:15 *A Two-Stage Energy Anomaly Detection for Edge-Based Building Internet of Things (BIoT) Applications..........180*

Yassine Himeur, Abbes Amira and Fodil Fadli