2023 12th International Conference on Software and Information Engineering (ICSIE 2023)

WORKSHOPS

2023 4th International Conference on Electronic Engineering and Signal Processing (EESP 2023)

2023 6th International Conference on Network Technology (ICNT 2023)

Sharm El-Sheikh, Egypt (GMT +2)

November 21-23, 2023

ZOOM

ZOOM ID: **832 6671 3502**

King Salman International University- Sharm El Sheikh Campus

جامعة الملك سلمان فرع مدينة شرم الشيخ

Add.: South Sinai Governorate, Qesm Sharm Ash Sheikh, Sharm El-Sheikh, Egypt

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Welcome Address

Dear Distinguished Delegates,

It is our pleasure to introduce the 12th International Conference on Software and Information Engineering (ICSIE 2023) and its workshops 2023 4th International Conference on Electronic Engineering and Signal Processing (EESP 2023), 2023 6th International Conference on Network Technology (ICNT 2023) will be held in Sharm El-Sheikh, Egypt, November 21-23, 2023. Initiated in 2012, ICSIE has been held in Phuket (Thailand), Chennai (India), Singapore, Dubai (UAE), Tokyo (Japan), Singapore, Cairo (Egypt) and as a virtual conference over the last 11 years. ICSIE 2023, co-organized by The British University in Egypt (BUE) and hosted by King Salman International University (KSIU) in Sharm El-Sheikh, Egypt. The keynote talks and parallel sessions were held online and onsite at KSIU. The conference achieved great success in exchanging valuable information and enjoying fruitful discussions on the research activities of participants.

For the conference general schedule, we were pleased to invite 3 keynote speakers to provide us with professional and distinguished speeches about their research. Keynote talks were provided by Prof. Leopoldo Angrisani (IEEE Fellow), University of Napoli, Federico II, Italy, by Prof. Hesham H. Ali, University of Nebraska, Omaha, USA, and by Prof. Sergei Gorlatch, University of Muenster, Germany.

The goal and feature of this conference is to bring academic scientists, engineers, and industry researchers together to exchange and share their experiences, knowledge, and research results, and to discuss the practical challenges encountered and the solutions adopted.

ICSIE 2023 provided a high-standard international forum for R&D exchanges in various fields of digital information, communications, network technology, multimedia, and other related areas. ICSIE 2023 offered an extensive program of interest to academia and industry and included a series of exciting speeches.

We truly believe the participants in ICSIE find the discussions fruitful and enjoy the opportunity for setting up future collaborations. It is our sincere hope that ICSIE will one day become the leading conference in this specific academic area.

Thank you to all the participants, speakers and authors for your support and sharing your knowledge and vast experience with the community. We would also like to thank all the committee members for their great efforts in organizing the event. Special thanks to the reviewers whose insightful reviews and timely feedback ensured the high quality of the accepted papers and the smooth flow of the conference. Finally, we would like express our sincere thanks and appreciation to BUE and KSIU adminstrations for their continuous support and dedication to this conference.

With warmest regards,

ICSIE 2023-Conference Chairs

Prof. Samir A. El-Seoud and Prof. Omar H. Karam

The British Ubiversity in Egypt (BUE)

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Guideline for Onsite Participation

- **Conference Venue**

King Salman International University- Sharm El Sheikh Campus
Add.: E105, ground floor, South Sinai Governorate, Qesm Sharm Ash Sheikh, Sharm El-Sheikh, Egypt
Post Code: 8761250
http://www.icsie.org/venue.html

How to reach Sharm El Sheikh
Sharm El-Sheikh is the city of adventures. It lies between the desert of the Sinai Peninsula and the Red Sea. The closest Airport is Sharm El Sheikh International Airport (SSH). The nearest hotel is approximately 15 minutes away from the airport and the farthest is about 40 minutes.

- **Registration & Material Collection**

Date: November 21, 2023
10:00-12:00

- **Instructions for Presentation**

- **Regular Oral Presentation:** 15 minutes (including Q&A). Get your presentation PPT or PDF files prepared. Please copy your presentation file to the desktop before session starts.
- **Devices Provided by the Conference Organizer:**
Laptop (with MS-Office & Adobe Reader), projector & screen, laser pointer

Agenda

All the schedule will process in Egypt Time (GMT+2).

Day 1- Tuesday, November 21

Onsite Registration		
Time	Event	Venue
10:00-12:00	Onsite Registration	King Salman International University- Sharm El Sheikh Campus ADD: **E105, Ground Floor** South Sinai Governorate, Qesm Sharm Ash Sheikh, Sharm El-Sheikh, Egypt

Online Test Session		
Time	Presenters	ZOOM ID
9:00-11:30	Committee Members, Keynote Speakers and Session Chairs	**832 6671 3502** **https://us02web.zoom.us/j/83266713502**
9:00-10:00	Online Session 1 : EG016,EG019,EG026,EG036, EG2002-B	
10:00-10:30	SPECIAL SESSION : EG018,EG029,EG030	

Day 2- Wednesday, November 22

Opening Ceremony, Keynote Speeches

1. Onsite: [illegible] South Sinai Governorate, Qesm Sharm Ash Sheikh, Sharm El-Sheikh, Egypt
2. Online Session Zoom: **832 6671 3502**
https://us02web.zoom.us/j/83266713502

Time	Event
09:00-9:05 Opening Remarks	Prof. Samir A. El-Seoud (Conference Chair) The British University in Egypt, Egypt
09:05-09:10 Welcome Message	Prof. Ashraf Hussein (President of KSIU) King Salman International University, Egypt
09:10-09:15 Welcome Message	Prof. Omar Karam (Dean of the Faculty of Informatics and Computer Science) The British University in Egypt, Egypt
09:15-10:00 Keynote Speech I	Prof. Leopoldo Angrisani (IEEE Fellow) University of Napoli Federico II, Italy *Speech Title: Soft Growing Sensors: a context-aware evolution of Cyber-Physical Measurement Systems*
10:00-10:30	Group Photo & Coffee Break
10:30-11:15 Keynote Speech II	Prof. Hesham H. Ali University of Nebraska Omaha, USA *Speech Title: Exciting Recent Results in Big Data Analytics using Complex Networks and Population Analysis*
11:15-12:00 Keynote Speech III	Prof. Sergei Gorlatch University of Muenster, Germany *Speech Title: Future Applications Based on Mobile Cloud and Software-Defined Networks?*
12:00-14:00	Lunch & Break Restaurant: Ground Floor, near E105

Breakout Sessions

1. Onsite: E105, Ground Floor, South Sinai Governorate, Qesm Sharm Ash Sheikh, Sharm El-Sheikh, Egypt
2. Online Session Zoom: **832 6671 3502**
https://us02web.zoom.us/j/83266713502

Time	Online Room	Onsite Room	Event
14:00-15:45	ZOOM ID **832 6671 3502**	**E105, Ground Floor**	**Onsite Session 1 –Data Security and Computing Models in Software and Information Engineering** EG012,EG022,EG2003,EG2006,EG034,EG023,EG037
15:45-16:35	ZOOM ID **832 6671 3502**		**Special Session –Modern Technologies in Biomedical Engineering (MTBE)** EG029,EG018,EG030

Day 3- Thursday, November 23

Online Breakout Sessions

Time	Online Room	Event
9:00-10:15	ZOOM ID **832 6671 3502**	**Online Session 1 –Model-based software and system design and development** EG016,EG019,EG026,EG036, EG2002-B

Keynote Speaker

Prof. Leopoldo Angrisani (IEEE Fellow)
University of Napoli Federico II, Italy

9:15-10:00 (GMT+2) | Wednesday, November 22
Zoom ID: **832 6671 3502**
https://us02web.zoom.us/j/83266713502

Speech Title: Soft Growing Sensors: a context-aware evolution of Cyber-Physical Measurement Systems

Biography: Leopoldo Angrisani is Full Professor of Electrical and Electronic Measurements with the Department of Information Technology and Electrical Engineering of the University of Naples Federico II, Italy. He is also Chair of the Board of the Ph.D. Program ICTH - Information and Communication Technology for Health - and General Manager/Director of CeSMA – Center of Advanced Measurement and Technology Services - of University of Naples Federico II.

His research activity is currently focused on Internet of Things and cyber-physical measurement systems; green soft-growing sensors; measurement sustainability; measurement uncertainty; measurements for Industry 4.0; communication systems and networks test and measurement.

He was and is currently involved in many industrial research projects, in cooperation with small, medium and great enterprises, for which he played and is currently playing the role of scientific coordinator. He is currently the Coordinator of the Technical/Scientific Committee of MedITech – one of the eight Italian Competence Centers on I4.0 enabling technologies.

He is Fellow Member of the IEEE Instrumentation and Measurement and Communications Societies, Chair of the IEEE Instrumentation & Measurement Society Italy Chapter, Honorary Chairman of the first (M&N 2019) and second (M&N 2022) edition of the IEEE International Symposium on Measurements & Networking, General Chairman of the second edition (MetroInd4.0&IoT 2019) of the IEEE International Workshop on Metrology for Industry 4.0 and IoT, and General Chairman of the first edition (IEEE MeAVeAS 2023) of the IEEE International Workshop on Measurements and Applications in Veterinary and Animal Sciences. He is vice-chair of the Italian Association "GMEE-Electrical and Electronic Measurements Group", and corresponding member of the Accademia Pontaniana in Naples, the oldest Italian academy, with almost 600 years of history, which has always brought together renowned Neapolitan scholars.

In 2009, he was awarded the IET Communications Premium for the paper entitled "Performance measurement of IEEE 802.11b-based networks affected by narrowband interference through cross-layer measurements" (published in IET Communications, vol. 2, No. 1, January 2008).

The IEEE Instrumentation & Measurement Society Italy Chapter, which he has been chairing since 2015, was awarded in 2016 the prestigious recognition "I&M Society Best Chapter Award" by the IEEE Instrumentation & Measurement Society, in 2017 the prestigious recognition "Most Improved Membership Chapter for 2016" by the IEEE Italy Section, in 2018 the prestigious recognition "Most Innovative Chapter 2018" by the IEEE Italy Section, and in 2021 the prestigious recognition "Chapter of the Year 2021" by the IEEE Region 8 (Europe, Middle Est, Africa).

In 2021, he was awarded the prestigious recognition "2021 IEEE Instrumentation and Measurement Society Technical Award" with the following citation "For contributions in the advancement of innovative methods and techniques for communication systems test and measurement".

Abstract: The fourth industrial revolution has brought a plethora of technological advancements that are transforming not only manufacturing processes but also the lives of individuals. At the core of this technological innovation is the concept of Cyber-Physical System (CPS), which combines communication and information technologies with physical processes and machinery to create highly automated and interconnected production environments.

In this framework, Measurement and Monitoring Systems (MMS) have traditionally been viewed as subordinate elements that provide a source of information for CPS without actively participating in any higher-level actions, such as decision making. However, in recent years, the suitable adoption of the 4.0 enabling technologies has resulted in a paradigm shift in this perspective. CPS and MMS are now considered as intrinsically coexisting entities, leading to the development of Cyber-Physical Measurement Systems (CPMS). They holistically integrate sensing, actuation, computation, and communication to enable highly accurate and responsive measurement and control. CPMS are capable of providing granular and detailed measurements of various phenomena, ranging from industrial machinery behavior to smart city's people and goods movement.

On these bases, in this talk, I will introduce a relevant practical evolution of CPMS, namely Soft-Growing Sensors, also stemming from a special measurement focus on soft robotics and its interaction with 4.0 technologies. By extending its body through a pneumatically-enabled eversion mechanism, inspired by the growth patterns of plants and vines, a soft-growing sensor can access and navigate constrained environments and seamlessly learn from them. This unique feature, in addition to the sensing of the environment, can assure contextual and self-awareness capabilities also through artificial intelligence solutions. These attributes are essential for making self-adapting, proactive, and reliable decisions during task execution. Consequently, this paves the way for achieving more precise measurements and reducing the uncertainty arising from challenging environmental conditions.

Keynote Speaker

Prof. Hesham H. Ali
University of Nebraska Omaha, USA

10:30-11:15 (GMT+2) | Wednesday, November 22
Zoom ID: **832 6671 3502**
https://us02web.zoom.us/j/83266713502
Onsite: E105, Ground Floor, South Sinai Governorate, Qesm Sharm Ash Sheikh, Sharm El-Sheikh, Egypt

Speech Title: Exciting Recent Results in Big Data Analytics using Complex Networks and Population Analysis

Biography: Hesham H. Ali is a Professor of Computer Science and the director of the University of Nebraska Omaha (UNO) Bioinformatics Core Facility. He served as the Lee and Wilma Seemann Distinguished Dean of the College of Information Science and Technology at UNO between 2006 and 2021. He has published numerous articles in various IT areas including scheduling, distributed systems, data analytics, wireless networks, and Bioinformatics. He has also published two books in scheduling and graph algorithms, and several book chapters in Bioinformatics. He has been serving as the PI or Co-PI of several projects funded by NSF, NIH and Nebraska Research Initiative in the areas of data analytics, wireless networks and Bioinformatics. He has also been leading a Research Group that focuses on developing innovative computational approaches to model complex biomedical systems and analyze big bioinformatics data. The research group is currently developing several next generation big data analytics tools for analyzing large heterogeneous biological and health data associated with various biomedical research areas, particularly projects associated with infectious diseases, microbiome studies, early childhood development and aging research. He has also been leading two projects for developing secure and energy-aware wireless infrastructure to address tracking and monitoring problems in medical environments, particularly to study mobility profiling for advancing healthy aging research and personalized healthcare.

Abstract: We live in data-rich societies. The availability of all types of data in many application domains continues to grow, and data collection mechanisms continue to expand in number and sophistication. In such scenario, researchers who try to mine knowledge from the available data continue to play the catchup game and struggle to get the most out of the raw data. It may be argued that extracting useful, and in some cases critical, knowledge from the available raw data can be considered as the single most outstanding research problem of our generation. Developing innovative data integration and mining techniques along with clever computational methods to implement them will be critical in addressing such problem and taking advantage of the many associated opportunities. This talk demonstrates how graph modeling and population analysis can be used to model heterogenous data and solve complex problems in various applications. Exciting recent results from three case studies are presented to validate this claim and show how using graphs/networks can be applied to address major challenges in numerous scientific domains. The talk will include case studies related to critical applications domains in biomedical informatics and healthcare, wireless sensors and wearable devices, and safety of engineering infrastructures.

Keynote Speaker

Prof. Sergei Gorlatch
University of Muenster, Germany

11:15-12:00 (GMT+2) | Wednesday, November 22
Zoom ID: **832 6671 3502**
https://us02web.zoom.us/j/83266713502

Speech Title: Future Applications Based on Mobile Cloud and Software-Defined Networks

Biography: Sergei Gorlatch is Full Professor of Computer Science at the University of Muenster (Germany) since 2003. Earlier he was Associate Professor at the Technical University of Berlin, Assistant Professor at the University of Passau, and Humboldt Research Fellow at the Technical University of Munich, all in Germany. Prof. Gorlatch has more than 200 peer-reviewed publications in renowned international books, journals and conferences. He was principal investigator in several international research and development projects in the field of software for parallel, distributed, Grid and Cloud systems and networking, funded by the European Commission and by German national bodies.

Abstract: We consider an emerging class of challenging software applications called Real-Time Online Interactive Applications (ROIA). ROIA are networked applications connecting a potentially very high number of users who interact with the application and with each other in real time, i.e., a response to a user's action happens virtually immediately. Typical representatives of ROIA are multiplayer online computer games, advanced simulation-based e-learning and serious gaming. All these applications are characterized by high performance and QoS requirements, such as: short response times to user inputs (about 0.1-1.5 s); frequent state updates (up to 100 Hz); large and frequently changing numbers of users in a single application instance (up to tens of thousands simultaneous users). This talk will address two challenging aspects of software for future Internet-based ROIA applications: a) using Mobile Cloud Computing for allowing high application performance when a ROIA application is accessed from multiple mobile devices, and b) managing dynamic QoS requirements of ROIA applications by employing the emerging technology of Software-Defined Networking (SDN).

Onsite Session 1

Time: 14:00-15:45 (GMT+2)
Wednesday, November 22

Location: E105, ground floor, South Sinai Governorate, Qesm Sharm Ash Sheikh, Sharm El-Sheikh, Egypt

Online ROOM: 832 6671 3502 https://us02web.zoom.us/j/83266713502

Topic: Data Security and Computing Models in Software and Information Engineering

Chaired by: Dr. Nabil Kamal, King Salman International University, Egypt

EG012 — A Review of Human Factors in Remote Software Project Management
MR. TAMUNOEMI F. OCKIYA, DR. RUSSELL LOCK
14:00-14:15 Presenter: Tamunoemi Ockiya, Loughborough University, UK

Abstract: The post-COVID era witnessed disrupted human communication, adversely affecting psychological wellbeing and mental health as the severe repercussions of lockdown, quarantine, social distancing, alienation, and isolation. Seligman's positive psychology, a holistic approach with multicultural, interdisciplinary, and integrative insights, lighted the mainstream dialogues by shifting from problem-orientated discourses to human strengths in communication. Here in this invited speech, I provide an overview of positivity in human communication that can enhance the individual's efficacy, resilience, and optimism via intra/interpersonal relationships. Relational behavior is determined by physical needs, emotions, and situational stimuli as the individual seeks pleasure and avoids pain. Positive communication acts as the buffers against mental illness, social conflicts, anxiety, depression, and stress. It can generate courage, future-mindedness, optimism, equilibrium, motivation, perseverance, and the capacity for flow and insight in building a balanced life. In the post-COVID era, people need to be reminded of the significance of the positive, supportive relationship that can empower them in fighting against probable future misfortunes and direct them to a flourishing future in the totality of social involvement and engagement.

EG022 — Offline Digital Signature Validation Model with Enhanced Time-Stamping
Kamel Magdy Elias, Basheer Abd-El Fattah Youssef
14:10-14:30 Presenter: Kamel Elias, Cairo University, Egypt

Abstract: The growing advantage of digital signature has raised an increasing interest in government entities as well as in enterprises to integrate digital signature within their workflows specially with the Egyptian government plans of digital transformation, however this transformation is faced by many challenges, in this paper we will focus on two of the main technical challenges and threats facing digital signature systems the first challenge is offline environments , some government entities and highly secured facilities enforce security regulations that prevent users from having access to the internet , that is a huge challenge when it comes to digital signature validation. Another challenge is the lack of a technically viable way to determine the exact time- of the digital signature creation with accurate precision. This paper is an approach for addressing these two problems

EG2003 — Employing Frequency Independent Structure for Ultra-Wide Band Antenna
Mostafa M. Salah, Hassan A. Ragheb
14:30-14:45 Presenter: Mostafa M. Salah, The British University in Egypt

Abstract: The paper presents a novel and compact design for an ultra-wideband antenna based on frequency independent ethos. It consists of a Log-Periodic monopole structure with specific angle for the radiating patch with a defected ground plane. The antenna is fed using microstrip line feed and is designed on an FR4 substrate with a thickness of 1.6 mm, a relative permittivity of 4.4, and a loss tangent of 0.02. The Finite Element Method (FEM) of the Ansoft HFSS software is used during the design process. The proposed antenna covers the frequency range from 5.3 GHz up to 14 GHz for multiple frequency bands such as, WLAN, IEEE802.11a band (5.15-5.825GHz), C-band (4-8GHz), and X-band (8 to 12GHz). The antenna provides an omnidirectional radiation pattern, directivity and the efficiency of the antenna is about 70%. The dimensions of the antenna were optimized to realize compactness, high band width, and good matching impedance. Our design was fabricated , test and the measured results found to be in an excellent agreement with the simulation results. Proposed antenna will be useful for 5G applications, military applications, Healthcare applications, Smart homes, IoT and industrial automation.

EG2006 — **14:45-15:00**

Deep Recurrent Neural Network Approach with LSTM Structure for Hand Movement Recognition Using EMG Signals

HajarY.Alimam , Wael A.Mohamed , Ayman S.Selmy
Presenter: HajarY.Alimam, Benha Faculty of Engineering, Egypt

Abstract: Due to the increasing number of amputees and the need to use prosthetics that simulate human limbs, an improved technique is proposed to classify hand gestures using Deep Recurrent Neural Networks (DRNN) based on the surface Electromyographic (sEMG) signal on the forearm. The implemented models are built on FeedForward Neural Networks (FFNN), Deep Recurrent Neural Networks (DRNN), and Long Short-Term Memory Networks (LSTM) using two types of datasets. They were recorded for four and seven motions, respectively. Both were written by MYO armband, and the conception of the technique is divided into two main phases applied to the two types of datasets. Two DRNN models are implemented, the First is a multi-classifications DRNN with all dataset files imported simultaneously. Each data file is then imported separately as input to the second binary classification DRNN model. Classification results for the multi-DRNN classifier and binary one is compared according to both datasets separately. Results show that the average accuracy for multi-classifications was (95%, and 86%) for both datasets while binary classification was 99% accurate for each model. Additionally, precision, recall, and f1-score were determined for both datasets, yielding better results..

EG034 — **15:00-15:15**

Data Security and Computing Models in Software and Information Engineering

Sara G. Fahmy, Rana Khalil, Hebat allah adel moukhtar, Doaa S. Elzanfaly, Khaled M. Abdelgaber
Presenter: Sara Gamil, The British University in Egypt. Rana Khalil, The British University in Egypt

Abstract: This paper presents a new information diffusion model that studies the impact of trendy topics on the diffusion process based on content analysis. The suggested model ($SItw\ R$) extends the SIR model by adding the topic weight (tw) that mirrors the topic significance reflected on the infection rate. In which the new infection rate (λtw) will be calculated by multiplying the normal infection rate (λ) with the topic weight (tw). An experimental study has been conducted on trendy and non-trendy topics and the results are compared to the classical SIR model. The simulation results of the $SItw\ R$ model using Mathematica show the early diffusion of the trendy topics. It has been concluded that the number of infected accounts will accelerate within a shorter time due to the impact of the trendy topics. Therefore, the proposed model ($SItw\ R$) better reflects the diffusion process in the presence of trendy topics.

EG023	**A New Graph-Based Reinforcement Learning Environment for Targeted Molecular Generation and Optimization**
	Amgad Abdallah MAhmoud
15:15-15:30	**Presenter: Amgad Abdallah MAhmoud , the British University in Egypt , Egypt**

Abstract: Wireless Body Area Networks have severe challenges in energy management to enhance the longevity of the system. Specifically, for a WBAN system that operates by ambient energy sources. The system combines energy scavenging modules integrated into the sensors carried by patients, enabling data transmission to a personal device. Our approach does not rely on previous information as the characteristics of the scavenged and consumed energy are stochastic. To optimize user utility, a formulation of an optimization problem by employing the Grey Wolf Optimization technique (GWO) compared to previousworks that used different optimization techniques, to decompose it into three sub-problems: battery management, collecting rate control, and transmission power allocation. To achieve our goals, we apply the GWO to the introduced online resource allocation algorithm that serves two primary purposes: (1) balancing energy scavenging and consumption of network nodes to ensure system stability, and (2) maximizing user utility. Through simulation results, we validate the effectiveness and optimization capabilities of the algorithm while applying a different optimization technique from the previous works maintained.

EG037	**A Noval Optimized Resource Allocation Algorithm using GWO Optimization Technique for WBAN**
	Amira Olayan, Albashir A. Youssef, M. Samir Abou El-Seoud
15:30-15:45	**Presenter: Mrs. Amira Olayan, Arab Academy for Science, Technology and Maritime Transport, Egypt**

Abstract: "Generating a new molecule that satisfies certain desirable objectivesor optimizing an existing molecule to meet additional requirementscontinues to play a crucial part in the important area of computeraideddrug design. Many research studies have been conductedto improve this process in order to reduce time and all costs associated with proposing a new drug to markets. Moreover, any progress in generating or optimizing useful molecules would help reduce the risk of clinical trials and prevent potential side effects including possible severe consequences. In this paper, we propose MolGraphEnv, a new multi-objective molecular generation and optimization environment that models the process of generating and/or optimizing molecules as a Markov Decision Process (MDP) and provides a smooth integration with graph machine learningframework PyTorch Geometric (PYG) and RDKit [2, 7, 15]. In theproposed environment, molecules are modeled using graphs where atoms are represented by nodes and bonds are represented by edges.The observations are stored as a PYG Data object that accounts forthe computed features for each node (atom) and each edge (bond).Some of these features are obtained from the chemical domain, such as Hybridization and atomic numbers, while other features are obtainedfrom pure graph theory such as node degrees. By integratingsuch features from both the chemistry and the graphs' domain, weensure a better representation of the atoms and their interrelationships. The action space is multi-discrete and inherited from the gymnasium for better functionality. We show that the proposed environment provides a smooth and flexible experience for the end user by designing a reward system to intelligently bias the searching process toward desired properties, such as obtaining molecules with higher QED (Quantitative Estimate of Drug-likeness) and ensuring chemical and structural validity. MolGraphEnv represents asignificant step forward in computer-aided drug design, providing a powerful platform for generating and optimizing molecules with specific objectives. It is a seamless integration with established graph machine-learning tools and cheminformatics frameworksmakes it a valuable resource for researchers in the field."

Special Session

Time: 15:45-16:35 (GMT+2)
Wednesday, November 22
Online ROOM: 832 6671 3502 https://us02web.zoom.us/j/83266713502
Topic: Data Security and Computing Models in Software and Information Engineering
Chaired by: Prof. Doru URSUTIU, University "TRANSILVANIA" from Brasov - AOSR, Romania

EG029	Student Solutions - Soft and Hard in Magnetic Sensing Applications Doru Ursuțiu, Cornel Samoil, Horia Alexandru Modran, Tudorache (Nistor) Roxana Iuliana, Petru Epure
15:45-16:05	Presenter: Prof. Doru URSUTIU, University "TRANSILVANIA" from Brasov - AOSR, Romania

Abstract: The actual paper was developed some flexible solutions for students training in magnetic measurements based on the new AICHII magnetic sensor table to detect low levels in the range of nT and was used by our team in Magnetic Measurements in the Master on Melotherapy. Based on our research and expertise, we selected and used LabVIEW (Laboratory Virtual Engineering Workbench) from National Instruments in many applications. For hardware, we selected the EmStat pico Development Kit (from PalmSens) equipped with a proven, tested, and calibrated potentiostat module. The presented systems (NI ELVIS, new devices, LabVIEW tools) have been well used in Creativity Laboratories at "Transylvania" university for many years now with many applications that focus on HIGH SCHOOL – UNIVERSITY – INDUSTRY cooperation. The selected hardware can generate many educational devices and simultaneously be used for interesting industrial applications using the high sensibility of the AICHII magnetic sensors.

EG018	Instruments for sound therapy vs. music therapy for teenager's emotional development Valentina M. Pomazan
16:05-16:20	Presenter: Valentina Mihaela Pomazan, Ovidius University of Constanta, România

Abstract: Sound and music therapy has been used to cope with changes during this period of life. This study was conducted to determine and compare the effect of two types of therapeutic interventions. It aimed to compare the efficiency of sound therapy (passive listening), and active music therapy, for emotional state improvement in teenagers. A prospective, comparative, qualitative randomized-controlled study was carried out between September 2022 and December 2022. The study sample consisted of 28 teenagers, enrolled in public secondary education (10 in the sound group, 8 in the active music therapy group and 10 in the control group). Sound was played by the researcher to the subjects in the intervention group in a total of 12 sessions of 20 minutes, for eight weeks. Group active music therapy sessions were conducted for the music therapy group, for the same number of sessions and time duration. The data were collected using an information form and scored against the subject's scale. The posttest scores of the teenagers in the music group were higher than those in the sound group, without a statistically significant difference between the groups ($P > 0.05$). Comparison of the post-test scores of the participants in the music and control groups revealed a significant decrease in the aggression scores among the members in the music group ($P = 0.035$). Comparison of the pretest and posttest differences between the participants showed a statistically significant decrease in the aggression/ verbal violence and sadness scores among the teenagers in the music group after the intervention.

EG030

16:20-16:35

Exploring the relationship between music, medicine, and physics. Why pluralism is necessary in music therapy.

Mădălina Dana Rucsanda, Alexandra Belibou, Alexandra Ioana Rucsanda

Presenter: Alexandra Belibou, Transilvania University of Brasov, Romania

Abstract: A variety of fields, including music, psychology, neuroscience, and medicine, are naturally incorporated into music therapy. In this article, we will discuss the intersection of music therapy with physics and medicine, which are two of the realms that potentiate the effects of music interventions in supporting health. The present research does not claim to be exhaustive but discusses the issues that underpin a significant body of research on pluralism and interdisciplinarity in music therapy. Thus, by discussing the connection between three domains (music, physics, and medicine), we propose a comprehensive perspective through which music therapy can become effective in the process of assessment, treatment and evaluation. The goal of this study is to show how the effects of therapy can be quantified by explaining the way vibrational sound treatment, filtered music therapy, and the entrainment phenomena, and also the use of functional MRI scans, EEG recordings, diffusion tensor imaging, provide support in the process of music therapy.

Online Session 1

Time: 9:00-10:15 (GMT+2)
Thursday, November 23
ONLINE ROOM: 832 6671 3502 https://us02web.zoom.us/j/83266713502
Topic: Model-based software and system design and development
Chaired by: Dr. Ayman Shabrawy, King Salman International University, Egypt

EG016
9:00-9:15

Assertive Wiki: An Experience Report In The Industry on the Redesign of Software Requirements Documentation
Rhuan Claudio Medim Viana, Rebecca Christina Serrão de Souza, Wilson Clei Costa Silva, Flávia Camila Morais de Oliveira, Leonardo de Albuquerque Tiago, Lennon Correa Chaves
Presenter: Rhuan Claudio Medim Viana, Sidia Institute of Science and Technology, Brazil

Abstract: The development of requirements documentation in the software life cycle process is a crucial step in requirements engineering. However, due to excessive documentation, multiple databases for reference, and difficulties in understanding requirements, the testing process can become exhaustive. Existing literature already demonstrates that well-written documentation results in higher-quality product delivery. In summary, the industry focuses on clarity and objectivity in business rules, but does not address the issues of excessive documentation and multiple requirement databases. The aim of this study is to highlight the value of developing usable and useful documentation within the context of SIDIA, an Institute of Science and Technology. To achieve this, the Assertive Wiki was developed, comprising 45 wikis that document requirements based on the application of UX/UI Design and A/B Testing techniques. Through qualitative research conducted with a software testing team at SIDIA, it is demonstrated that 90% of the testers agree that the utilities and databases built in this manner are useful. Thus, it can be concluded that the applied requirements documentation process, through the use of Assertive Wiki, led to testers satisfaction with testing activities

EG019
9:15-9:30

A Model-Based Standardized Testing Approach for Low-Cost Mechanical Ventilator
Amr Khamis, Ahmed Shoier, Riham Zeineldin
Presenter: Riham Zeineldin, Arab Academy for Science, Technology and Maritime Transport (AASTMT), Egypt

Abstract: "This paper introduces a standardized testing approach specifically designed for low-cost mechanical ventilators. The primary objective is to ensure that these ventilators are safe, reliable, and perform optimally. Given the surge in demand for affordable ventilators during the COVID-19 pandemic, it is imperative to address the inadequate testing and validation procedures associated with these devices. The proposed approach encompasses different types of testing, including functional, performance, and safety testing. By incorporating models into the testing process, this approach provides enhanced test coverage, early detection of defects and systematic generation of test cases."

EG026 Research and implementation on automatic test verification technology for trust root and trust function

YANFANG SU , YANLING WANG
Presenter: YANLING WANG , Beijing Huatech Trusted Computing Information Technology Co., Ltd., Beijing , China

9:30-9:45

Abstract: Trusted Computing technology is the basic key technology in cybersecurity. Trusted Computing is based on trusted root of TPCM, Equal Protection 2.0 has make clear requirements for trusted verification, but lack of testing methods and tools for the capabilities of trust root and trust functions. This paper analyzes the characteristics and test points of trusted verification technology, proposed a detected method with the fusion of scene simulation exhaustive testing, automated scripts, hardware serial port output and other test technologies, established a testing tool system of trusted function, realized to test of trusted functions such as resource isolation mechanism, trust chain construction and active measurement, supported for testing and assessment work, improved the development of Trusted Computing products.

EG036 Visualization Dashboard for Recommending Attack Patterns Using Topic Modeling

Jairen Gilmore, Uriah Moore, Xiahong Yuan, Taylor Headen, Mounika Vanamala
Presenter: Uriah Moore, North Carolina Agricultural and Technical State University, USA

9:45-10:00

Abstract: The Common Attack Pattern Enumeration and Classification (CAPEC) database is a great resource that software developers can consult to gain a deeper understanding of techniques used by attackers to exploit the vulnerabilities of a software. Attack patterns define the steps and perquisites needed for an attacker to exploit a system and include mitigations for the given attack pattern. However, the time required to manually search and find relevant attack patterns can quickly become a time-consuming process. We utilize topic modeling to recommend attack patterns relevant to software requirement specifications. This paper introduces a visualization dashboard for recommending CAPEC attack patterns using topic modeling. The tool allows the user to upload a software requirements specification document, and select the topic modeling algorithm. The most relevant attack patterns will be returned to the user through visualization. This tool helps developers make use of CAPEC attack pattern efficiently.

EG2002-B Security Issues in the Deep and Dark Web: What to know?

A Tubaishat and A R Maramara
Presenter: Dr. Abdallah Tubaishat is an associate professor in the College of Technological Innovation at Zayed University, UAE

10:00-10:15

Abstract: Anything beyond Surface Web is defined as the Deep Web. In the literature, several researchers use the terms Deep Web and Dark Web interchangeably, but this is a misperception. The latter is a subpart of the deep web, and needs special software to access - the most popular of which is the Tor browser. None of these layers were developed for malicious objectives, however, in the same way that any tool can be utilized for completely different purposes than what it was initially intended for, their functionalities have been exploited and used illicitly. This paper aims to shed light on both oftenmisunderstood parts of the web, particularly on the security issues that surrounds them. The deep web and the dark web are defined herein, their uses and benefits outlined, and some security issues in these unindexed spaces are presented.