2019 ICOASE

International Conference on Advanced Science and Engineering

2nd INTERNATIONAL CONFERENCE ON ADVANCED SCIENCE AND ENGINEERING

April 2 - 4, 2019

PROGRAM & ABSTRACTS BOOK

THE CONFERENCE IS JOINTLY ORGANIZED BY
THE UNIVERSITY OF ZAKHO AND DUHOK
POLYTECHNIC UNIVERSITY

IEEE COMMUNICATIONS SOCIETY Iraq Chapter

IEEE Computational Intelligence Society Iraq Chapter

IEEE raq section

Welcome Messages

Welcome to ICOASE 2019

Welcome to the 2nd International Conference on Advanced Science and Engineering 2019 (ICOASE2019). The conference is technically sponsored by IEEE which is represented by the IEEE Iraq Section.

The conference is jointly organized by the University of Zakho and Duhok Polytechnic University.

ICOASE 2019 attracts researchers, scientists, and technologists from universities, research firms and government agencies from around the world. All submitted papers were subjected to double-blind peer review and critical evaluation by conference committees. Acceptance decisions have been taken according to paper novelty, technical depth, and relevance to the conference scope. Accepted papers will be submitted by the conference operation department to either in IEEE Xplore digital library, Springer, or Science Journal of University of Zakho for publication and indexing.

Contents

Welcome Message from Honorary Chairman

I would like to express my gratitude to all of you for joining us at the 2nd International Conference on Advanced Science and Engineering 2019 (ICOASE 2019). To our guests who have come from other regional and international universities, I welcome you to our conference; we indeed honored to have you with us here.

In the current era, there is a critical need to develop and provide recommendations for promoting and elevating scientific level in higher education institutes. This can be performed through holding scientific conferences and workshops to share and spread the state of the art knowledge and experiences among researchers and leaders. Thus, I am confident that this conference will allow researchers, academicians and decision makers share their experiences and knowledge to generate innovative research with an efficient use of modern technologies and provide solutions to various issues of society and governance.

There is an exciting program at this conference that will allow members to reflect upon our next conference, renew friendships and extend our networks, and jointly explore current and future research directions.

Finally, I wish you a productive and enjoyable time at this very special conference, and I hope you will spend a pleasant time in Duhok and Zakho, and enjoy the beautiful nature of Kurdistan.

Asst. Prof. Dr. Lazgin A. Jamil
President,
University of Zakho

Welcome Message from Honorary Chairman

I am pleased to welcome you to the 2nd International Conference on Advanced Science and Engineering, it is great to have you all in this conference. The International Conference on advanced science and Engineering will highlights the remarkable contribution which science and engineering applications make in so many areas of our live. Through this conference, we would like to engage with all of you in an open and constructive dialogue and I am very confident that the conference will bring the best of the participants and to forester future collaboration between them.

Universities have always been part of innovation and development in societies, this conference was organized through a collaboration among Duhok Polytechnic University and University of Zakho, and IEEE Iraq section. We worked together as one team and we will maintain and extend this collaboration. I am pretty sure that you will benefit from the scientific discussions that will take place during the technical sessions, and hopefully you will utilize this opportunity.

Before closing, I have to extend further thanks to friends and colleagues at University of Zakho and Duhok Polytechnic who collaborated together to success this conference.

Finally, I would like to thank all of you once again for being part of this conference. I wish you enjoy your stay in Duhok and Zakho cities and I hope you will have fruitful scientific meetings and discussions during this conference.

Let me now close by wishing you a delightful and stimulating days.

Prof. Dr. Adnan Mohsin Abdulazeez
President,
Duhok Polytechnic University

Representative of IEEE Iraq Section

Prof. Dr. Eng. Sattar B. Sadkhan is a professor in Wireless Digital Communication and Information Security, Iraq, Babylon University. He is the Honorable Chair of IEEE IRAQ Section at IEEE, Chairman of IEEE ComSoc. IRAQ Chapter, Chairman of IEEE Computational Intelligence Iraq Chapter, and Chair of URSI Iraq Committee. He is an Honorable Research Director of IRAQ for (BRCORP) Institute and Member of International Association for Cryptologic Research. Dr. Sattar has Published more than (240) papers in International Conferences, and International Journals, Supervised (160) M.Sc. and Ph.D. Postgraduates since 1984.

He is Editor in Chief of (8) International Scientific Journals (in many countries), Associate Editor in Chief of other (6) International Scientific Journals (in many countries), Member of Editing Board of (32) International Journal (in many countries), Member of International Scientific Organization more than (20), and Member of International Scientific Committees more than (250) International Conferences committees.

Prof. Sadkhan has been a Keynote Speaker in Many International Conferences in Turkey, China, India, Pakistan, Malaysia, Jordan, and many local and International conferences in IRAQ.

Chair of ICOASE2019

Yaseen T. Mustafa is an assistant professor in applied statistics in remote sensing at the Faculty of Science, University of Zakho, Kurdistan region, Iraq. His research interests include the area of remote sensing, spatial statistics and contextual image analysis, including mathematical and statistical tools, such as Bayesian networks. Yaseen obtained his PhD from the Faculty of Geo-Information Science and Earth Observation (ITC), University of Twente, Enschede, The Netherlands, in 2012. Dr. Mustafa supervised several projects related to remote sensing and GIS. He is currently occupying the position of vice president for scientific affairs at University of Zakho. More information: http://yaseen.uoz.edu.krd.

Chair of ICOASE2019

Subhi R. M. Zeebaree received his B.Sc., M.Sc. and Ph.D from University of Technology, Baghdad, Iraq in 1990, 1995 and 2006, respectively. He has got Asst. Professor promotion in Computer Engineering in 2012. Dr. Zeebaree, supervised more than (30) M.Sc. and Ph.D. Postgraduates. He has authored and co-authored more than 30 papers in international journals and international conferences, and co-edited 1 book.

He has been a Keynote Speaker in international conference, Northern Technical University, Iraq. His research interests include distributed system and cloud computing. Dr. Zeebaree currently working as a Asst. Professor in Duhok Polytechnic University, Kurdistan Region-Iraq.

Chair of ICOASE2019

Karwan Jacksi obtained a B.Sc. in Computer Science from the University of Duhok, Kurdistan Region – Iraq, in 2007. In 2011, he obtained an M.Sc. in Computer Science at Uppsala University, Sweden. He earned his Ph.D. degree in Computer Science from the University of Zakho (UoZ) and Eastern Mediterranean University in a split-site program, in 2018.

He is a lecturer at the department of Compute Science, UoZ. He is teaching graduate courses and supervising several graduate students. He is an adjunct lecturer for graduate courses at several universities including Duhok polytechnic University, Ishik University and French Lebanese University. He is currently the director of the ICT & Statistics Center at the UoZ.

Dr. Jacksi served as program co-chair of the 2nd International Conference on Advanced Science and Engineering (ICOASE2019), and a technical chair of the International Conference on Advanced Science and Engineering (ICOASE2018), 5th International Engineering Conference on Developments in Engineering Applications (IEC2019), Science Journal of University of Zakho (SJUOZ), and Humanities Journal of University of Zakho (HJUOZ). He has been an active member for several national and international Journals, conferences, and workshops.

His areas of interest include semantic web, lined data, data science, information retrievals, and search engines. He has authored and co-authored 15 papers in international journals and conference proceedings.

More information about Dr. Jacksi can be found from his personal website: www.KarwanJacksi.net.

Conference Secretarlat of ICOASE2019

Dler A. Jameel has completed his B.Sc. from University of Duhok, Kurdistan Region-Iraq, in 2004. M.Sc. in Material Science from University of Duhok, Kurdistan Region-Iraq, in 2008. He received the Ph.D. degree in semiconductors and nanomaterials from The University of Nottingham, Nottingham, U.K., in 2016. He has authored and co-authored 19 papers in international journals and edited 1 book. He attended over 20 international conferences and workshops as invite speaker and poster presenter. His current research interests include thin-film deposition, III-V semiconductors, inorganic/organic semiconductors, and their electrical properties and applications to solar cells. Dr. Jameel currently is working as a lecturer in Department of General Science and Director of Training and Development Center, University of Zakho, Kurdistan Region-Iraq. He is supervising two M.Sc. postgraduates' students.

Conference Secretarlat of ICOASE2019

Ismael A. Ali is a computer science lecturer at the department of computer science and the director at the Directorate of the Postgraduate and Scientific Affairs at the University of Zakho (UoZ). Before joining the UoZ, Dr. Ismael Ali earned his BSc and MSc degrees in computer science from the University of Mosul (UOM) at 2007 and 2010 respectively. After that, he joined the UoZ as a faculty member in 2010, in the department of computer science, teaching programming and computer network courses.

In 2012, Dr. Ismael Ali has been awarded with the HCDP-KRG scholarship to study his PhD degree abroad. Afterward, he earned his PhD degree in computer science from the Kent State University (KSU) in Ohio-USA. Dr. Ismael Ali, has been an active organizer and workshop presenter for multiple international conferences and journals. His research of interest includes: semantic text mining, computational cognitive computing and modeling, graph data mining, semantic web and network security. Dr. Ismael Ali lives in Zakho City, spending his free time mostly on reading books, playing with his kids and enjoying the nature.

Keynotes

Cognition and the Future of Information Security

Prof. Dr. Eng. Sattar B. Sadkhan – SMIEEE

Cognitive science is the interdisciplinary, scientific study of the mind and its processes. It examines the nature, the tasks, and the functions of cognition (in a broad sense). Cognitive scientists study intelligence and behavior, with a focus on how nervous systems represent, process, and transform information.

The goal of cognitive science is to understand the principles of intelligence with the hope that this will lead to better comprehension of the mind and of learning and to develop intelligent devices. The cognitive sciences began as an intellectual movement in the 1950s often referred to as the cognitive revolution.

The information system security is critical issue for the organizations since it leads to big financial losses. The understanding of cyber security threats is not only an innovative requirement but also it is a conservative task. The rapid changes in technologies and services are major driving and leading concerns to the cyber security, requiring reassessment and renewal of standardized policies for counter measures to the resistant vulnerabilities.

The main aim of this talk is to improve the understanding and perception of latest security threats, security counter measures, and the future trends of Information security based on using the cognitive science in many aspects related to the Cryptology discipline.

Biography

Prof. Dr. Eng. Sattar B. Sadkhan is a professor in Wireless Digital Communication and Information Security, Iraq, Babylon University. He is the Honorable Chair of IEEE IRAQ Section at IEEE, Chairman of IEEE ComSoc. IRAQ Chapter, Chairman of IEEE Computational Intelligence Iraq Chapter, and Chair of URSI Iraq Committee. He is an Honorable Research Director of IRAQ for (BRCORP) Institute and Member of International Association for Cryptologic Research. Dr. Sattar has Published more than (240) papers in International Conferences, and International Journals, Supervised (160) M.Sc. and Ph.D. Postgraduates since 1984.

He is Editor in Chief of (8) International Scientific Journals (in many countries), Associate Editor in Chief of other (6) International Scientific Journals (in many countries), Member of Editing Board of (32) International Journal (in many countries), Member of International Scientific Organization more than (20), and Member of International Scientific Committees more than (250) International Conferences committees.

Prof. Sadkhan has been a Keynote Speaker in Many International Conferences in Turkey, China, India, Pakistan, Malaysia, Jordan, and many local and International conferences in IRAQ.

The Quest for the Correctness of Computer Systems: The Program Verification Approach

Prof. Dr. Parosh A. Abdulla

Parallel computer systems have become a critical part of the infrastructure of our society during the last decade. This is due to the emergence of modern platforms such as multicores and cloud technology. Nowadays, multicores are available on mobile phones, laptops, embedded systems, servers, and numerous other devices that are integral parts of our daily life. Furthermore, cloud technology is increasingly based on efficient storage and exchange of data across large-scale networks. Such networks include enterprise services (e.g., Google Cloud or Microsoft Azure), banking systems, online markets (e.g., Amazon), and social networks (e.g., Facebook). The ubiquity of parallel systems means that their efficiency and correctness are vital goals both from the security and economical points of view. However, the complexity of these systems implies that designers need to consider new challenges for which we currently lack satisfactory solutions.

In this presentation, I will describe a particular approach to the analysis of the correctness of computer systems in general and parallel systems in particular, namely that of program verification. I will introduce the main concepts behind program verification, and the new challenges that the program verification community is facing due to the emergence of the system paradigms mentioned above.

While the verification approach is highly technical both from the mathematical and the algorithmic point of views, my lecture will be self-content and should be understandable even to non-experts.

Biography

He was an undergraduate student one year at the University of Technology, Baghdad, two years at the University of Sulemani, and one year at Salahaddin University before obtaining a BSc in Electrical Engineering, in 1982. In 1990, he obtained a Ph.D. in the computer at Uppsala University, Sweden, and became a full professor at the same university in 2000.

His areas of interest include formal methods, automata theory, logic in computer science, program verification, program testing, and model checking. He has more than 200 publications in the DBLP database.

He is a recipient of the CAV award for his contributions in the area of verification of programs with infinite state spaces, and a recipient of the IEEE Logic in Computer Science (LICS) test-of-time award for his paper in 1996 on the verification of well quasi-ordered programs. He has received more than 10 best paper awards including ones from the European Association for software science and technology at ETAPS 2013, the European association for theoretical computer science at ETAPS 2010 and ICALP 2001, and the European Association for programming languages and systems at ETAPS 2000.

Contribution of Remote Labs to Engineering Education

Prof. Dr. Gustavo R. Alves

This keynote addresses the use of remote labs in Engineering Education. It explains what remote labs are and how they differ from both traditional and virtual labs. It provides examples in different Engineering areas, and then focus on one particular remote lab that supports the teaching and learning of electrical and electronic circuits. This remote lab, named Virtual Instruments Systems in Reality (VISIR), was developed by Prof. Ingvar Gustavsson, from the Blekinge Institute of Technology, Sweden, in 1999. VISIR obtained the Award for the Best Remote-controlled Laboratory in the world in 2015, given by the Global Online Laboratory Consortium (GOLC).

Biography

Gustavo R. Alves graduated in 1991 and obtained an MSc and a Ph.D. degree in Computers and Electrical Engineering in 1995 and 1999, respectively, from the University of Porto, Portugal. He is a professor at the Polytechnic of Porto – School of Engineering, since 1994. He has authored or co-authored +250 publications, including book chapters and conference and journal papers with a referee process, and also co-edited 2 books.

He was involved in 19 national & international research projects. His research interests include engineering education, remote experimentation, and design for debugging & test. He served as program co-chair of the 1st and 2nd International Conferences of the Portuguese Society for Engineering Education (CISPEE2013 and CISPEE2016), of the 3rd Experiment@ International Conference, and as general chair of the 11th Remote Engineering and Virtual Instrumentation (REV2014) conference and of the 3rd Technological Ecosystems for Enhancing Multiculturality (TEEM2015) conference, and also as a Program Committee member of several international conferences.

Dr. Alves is the present President of the Portuguese Society for Engineering Education (SPEE), a senior member of the Institute of Electrical and Electronics Engineers (IEEE), and the Global Online Laboratory Consortium (GOLC), the Portuguese Engineers Association (OE), the Association for Computing Machinery (ACM), and of the Virtual Instrumentation Systems in Reality – Special Interest Group (VISIR-SIG). He has served as the guest editor at the International Journal of Online

Engineering (iJOE), the International Journal of Engineering Pedagogy (iJEP), the IEEE Latin-American Learning Technologies Journal (IEEE-RITA), the European Journal of Engineering Education (EJEE), and Computers in Human Behavior (CHB). He currently serves as an Associate Editor for the IEEE Transactions on Learning Technologies.

Security in the Internet of Things

Dr.rer.nat. Riyadh Qashi

The ongoing digital change such as IoT has affected life, society, and economy more than any other technology developed before. Security in IoT is one of the most crucial questions in the world in economic competitiveness and IT-growth.

The development of new technologies such as machine learning, robotics, and artificial intelligence has exploded the concept of IoT has exploded in its complexity. What security requirements do we have in the IoT and what is currently the security of the IoT? how can be created and implement IoT security in processes often remains a challenge nowadays

Biography

A staff member in HTWK Leipzig. He has a Ph.D. in Computer Sciences. Involved in different international projects. Performs research in the area of computer networks, quality of service and routing protocols. He has experience with IT projects, e-learning systems, development and restructuring of computer networks. He was a Ph.D. student at the University of Leipzig from 2008-2011.

Dr. Qashi has more than 12 Journal and Conference Proceedings Papers in the field of Computer Science and manages more than 7 Earsmus+ projects in Capacity Building of Higher Education. Also, he supervised many Master and Diploma thesis.

Conference date and time

The conference date is April, 2nd –4th, 2019.

Venue

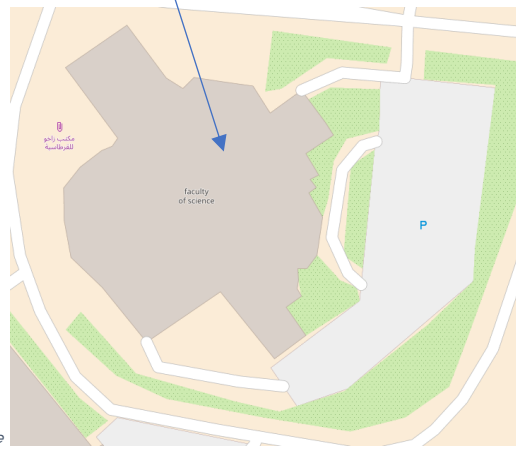
The first day of the conference will be held at conference hall at Faculty of Science of University of Zakho, Zakho City at 8:30.

The 2nd and 3rd days of the conference will be held at the presidency of Duhok Polytechnic University halls, Duhok City at 8:30.

Maps

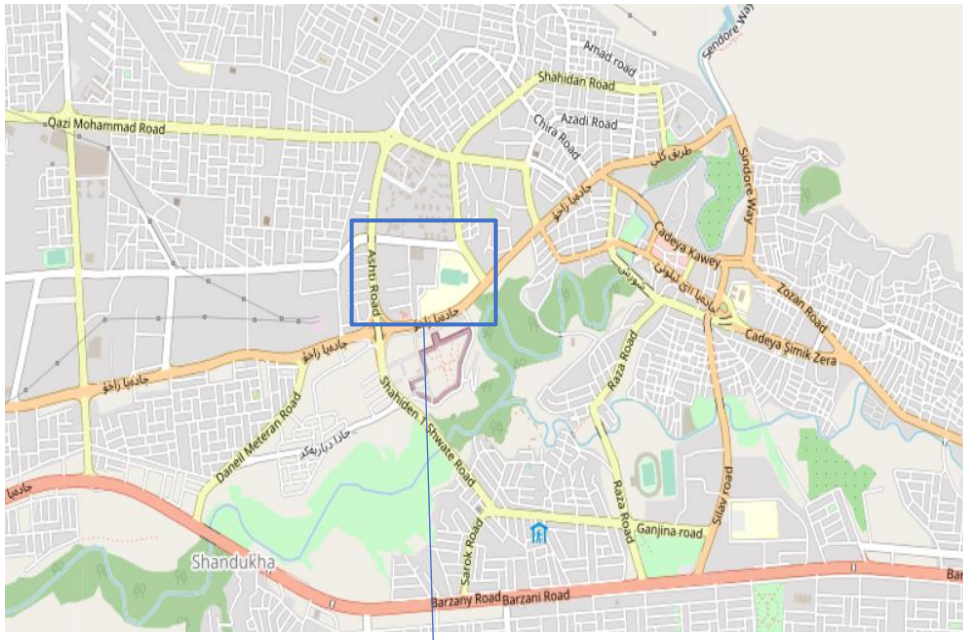
Locations of the first day of the conference

Uniuersity of Zakho



Faculty of Science

Location of the second and third days of the conference



Duhok City Map

Technical sessions in DPU

Hotels

JAMAL. Hotel & Rest.

Address:

Saleh Yousifi Str. –Zakho. Kurdistan Region of Iraq

Contacts:

Mobile (Hotel): +964-750-4572832. +964-750-4324905

http://bot.gov.krd/hotel/jamal-hotel

Jotyar Hotel

Address:

Azadi hospital St.. Duhok. Kurdistan Region of Iraq

Contacts:

Email: jotyarhotel@yahoo.com

Mobile: +9647504061005. Landline: +964627632005

http://bot.gov.krd/hotel/jotyar-hotel

Program at a glance

Day 1

Opening Ceremony

Time	Uniuersity of Zakho - Conference Hall
08:30- 16:30	Registration
10:00- 10:05	Opening Ceremony
10:05- 10:13	President Speech (Uniuersity of Zakho)
10:13- 10:20	President Speech (Duhok Polytechnic Uniuersity)
10:20- 10:30	MHE- KRG Speech
10:30- 10:35	Conference Chair Speech
10:35- 10:40	IEEE Representatiue Speech
10:40- 11:00	Keynote Speaker (Prof. Dr. Eng. Sattar B. Sadkhan) Cognition and the Future of Information Security
11:00- 11:30	Keynote Speaker (Prof. Dr. Parosh A. Abdulla) The Quest for The Correctness of Computer Systems: The Program Verification Approach
11:30- 12:00	Coffee Break
12:00- 12:30	Keynote Speaker (Prof. Dr. Gustauo R. Alues) Contribution of Remote Labs to Engineering Education
12:30- 12:50	Security in the Internet of Things
12:50- 13:00	Photo Session
13:00- 14:30	Lunch

Workshop Sessions

Time	Title	
15:00 -17:00	*Next Generation Sequencing (NGS) technology for DNA*	UoZ - Hall 1
	Info-Com Technologies and their important Applications	UoZ - Hall 2
	Graph Modeling: Concepts and Applications	UoZ - Hall 3
	Enagic's KANGEN TM WATER and theTRUE Power of Water for the Benefit of All	UoZ - Hall 4
	Using Remote Labs in Engineering Education: A Practical Workshop with VISIR	UoZ – CH Hall

Day 2

Technical Sessions

Time	DPU Hall 1	DPU Hall 2	DPU Hall 3	DPU Hall 4
08:30 - 16:30	Registration			
09:00 - 10:30	Session 01	Session 02	Session 03	Session 04
10:30 - 11:00	Coffee Break			
11:00 - 12:30	Session 05	Session 06	Session 07	Session 08
12:30 - 14:30	Lunch			
15:00 - 16:30	Session 09	Session 10	Session 11	Session 12

Day 3

Technical Sessions

Time	DPU Hall 1	DPU Hall 2	DPU Hall 3	DPU Hall 4
09:00 - 10:30	Registration			
09:00 - 10:30	Session 01	Session 02	Session 03	Session 04

Closing Ceremony

Time	Azadi Hall – DPU
11:00 - 11:10	Closing Ceremony
11:10 - 12:00	Distribution of Certificates
12:00 - 12:15	Best 3 Paper Awards
12:15 - 12:30	Best 3 Reviewers' Awards
12:30 - 13:00	Conference Conclusion
13:00 - 15:00	Lunch
15:00 - 18:00	A Trip to Zawa Mountain

Workshop Sessions

Tuesday, April 2

Tuesday, April 2 (15:00 – 17:00)

Enagic's KANGEN TM WATER and theTRUE Power of Water for the Benefit of All

Isabelle Poche & Evelyne Sibut, Paris, France

Room: University of Zakho – Hall 4

Since 1974, Enagic® has pioneered the way of continuous Kangen Water® Generating Systems. In addition, it integrates the latest scientific research and superior Japanese craftsmanship with nature's most vital resource for life to produce Enagic® Kangen Water® machines. Besides, its mission is to provide true health and wellness internationally with our Gold-Standard product line.

- The Mighty 8-Plate Anti-Oxidizer
- The Ultimate Home Use Model (Platinum)
- The Ultimate Home Use Model (Original)
- For Super Heavy Use
- The Junior Model
- The Starter Model
- Mineral ION Water Spa
- Kangen Ukon™urmeric Supplement
- Kangen Ukon™ea – Produced in Okinawa

.

Theme and Topics

- Kangen Water English Demo
- Enagic Kangen water Factory Japan Osaka
- ENAGIC Product
- ENAGIC Business

Speaker

- Isabelle Poché , Distributrice Internationale Kangen- France
- Evelyne Sibut, Distributrice Internationale Kangen- France

Schedule

- 14:30 – 15:00 Registration
- 15:00 – 16:30 Opening the Workshop & Starting
- 16:30 – 17:00 Discussions, Notes, and Closing

Next Generation Sequencing (NGS) technology for DNA

Dr. Dhia M. Sulaiman, Duhok Polytechnic University

Room: University of Zakho – Hall 1

In the clinical next-generation sequencing several laboratory techniques were used and have been described in numerous reviews; proposed guidelines for their application to diagnostic testing have been published. A clinical next-generation sequencing test can be designed to target a panel of selected genes, the exome (all known genes, or approximately 1 to 2% of the genome), or the entire genome. Gene panels target curated sets of genes associated with specific clinical phenotypes. Phenotypes may be narrow, with 4 genes in the panel for familial hypercholesterolemia, or broad, with more than 1000 genes in the panel for intellectual disability. Clinical exome sequencing targets approximately 22,000 protein-coding genes. Clinical genome sequencing is untargeted, generating sequence data from a region that is 50 to 100 times as large as that covered by exome sequencing and that includes regulatory, intronic, and intergenic regions. Clinical decision making about which test to order is an area of active research. Genome sequencing generates more uniform sequencing in some regions than does exome sequencing. Emerging analytic approaches can use genome sequencing to detect structural variants and expansion of short nucleotide repeats associated with disease. However, bioinformatic tools for genome sequencing are overall less developed than those available for exome sequencing. In addition, the cost of genome sequencing remains higher than that of exome sequencing, partly because of the cost of data management and analysis. The goals of this workshop are to provide the excellent opportunity to present updates on (Next Generation Sequencing (NGS) technology for DNA) and demonstrate wide ranges of analytic approaches which can be used for genome sequencing in order to detect structural variants and expansion of short nucleotide repeats associated with disease.

Theme and Topics

- History and future of DNA sequencing
- Workflow
- Different platforms
- Quality scores in sequencing
- Applications
- Run types
- Data analysis
- Considerations.

Speaker

- Dr. Dhia M. Sulaiman, Duhok Polytechnic University

Schedule

- 14:30 – 15:00, Registration
- 15:00 – 16:30, Opening the Workshop & starting presentation
- 16:30 – 17:00, Discussions, Notes, and Closing

Info-Com Technologies and their important Applications

PROF. DR. ENG. SATTAR B. SADKHAN, UNIVERSITY OF BABYLON

Room: University of Zakho – Hall 2

Info-Communications (Info-Com) is the natural expansion of telecommunications with information processing and content handling functions including all types of electronic communications (fixed and mobile telephony, data communications, media communications, broadcasting, etc.) on a common digital technology base, mainly through Internet technology. The (Info-Com) including manufacturers, service providers, regulatory authorities and international organizations to clearly express their participation in the convergence process of the telecommunications and information technology sectors. The convergence process is triggered by the huge scale development of digital technology. Digital technology has unified, Internet technology radically reshaped telecommunications, integrated information processing and content management functions.

Theme and Topics

- Internet of thing (IoT) and its main status and applications, and challenges.
- Software Defined Networks (SDN) and their applications and main challenges.
- Chaotic Key generations and their main support to the Information Security in the Info-Comm. applications.
- Vehicle-to-Vehicle Wireless Networks and their applications and challenges.
- Multidisciplinary Perspectives and the main role paid in supporting the Info-Comm.
- Wireless Sensor Networks (WSN) supporting task to the different applications of (Info-Com).

List of Speaker

- Dr. Rana Saad Mohammed – MIEEE- Al-Mustansyriah University- Education College.
- Dr. Mahmood Shukuer Mahmood- MIEEE- Al-Mansour University College.
- Dr. Alyaa Mahmood Nori –MIEEE- Baghdad University- Science College.
- Dr. Ahmed Baheej Al-Khalil- MIEEE – Duhok University- Science College.

- Dr. Ahmed Hussain Alkhajat- MIEEE – Islamic University- Alnajet.
- Khalid Ali Hussain – Mustansyriah University- Education colleqe
- Rafal Naser Salih – Almustansyriah University- Education Colleqe
- Rusul Sattar Bader – Almustaqbal University Colleqe- Babil

Schedule

- 14:30 – 15:00. Registration
- 15:00 – 16:30. Openinq the Workshop & startinq presentation
- 16:30 – 17:00. Discussions, Notes, and Closinq

Graph Modeling: Concepts and Applications

Dr. Ismael A Ali, University of Zakho

Room: University of Zakho – Chemistry Hall

Graphs, from discrete mathematics, are everywhere in the universe, all the way from galaxies down to molecules and atoms. As an efficient tool; graphs can represent, formulate, analyze and solve many of the real-life problems in our every-day life. For instance, they help us going places using the GPS gadget, booking flights, finding friends on social networks, analyzing financial and security crises, finding proper drugs for our illness symptoms. But what are graphs? Why really to use them? When to use them? How to use them? This workshop will help you find proper answers for these questions. Furthermore, it will present needed concepts of graph modeling, which is how to reduce your research problem into a graph theory problem, with two life demo examples from field of Social Network Analysis and Semantic-Based Text Mining, respectively the problems of Finding Communities in Facebook and Topic Modeling in newsletter text corpora. Finally, the workshop will present and discuss open problems and potential research collaborations for the subject of the graph modeling among participants.

Theme and Topics

- Graph Theory
  - Basic Concepts
  - Applications
- Doing Graph Modeling
  - Algorithmic Graph Theory: Main Problems and Solutions
  - When to Use Graph Theory?
  - Reduction of Your Research Problem to a Graph Theory Problem: Graph Modeling
- Connecting Points: Life Demos on Graph Modeling
  - Text Mining:
    - Graph Theory of Text Semantics
    - Text Semantic Problem of Topic Modeling
  - Social Science
    - Graph Theory of Social Network Analysis (SNA)
    - SNA Problem of Community Detection
- Discussions, Open Problems and Potential Research Collaborations.

List of Presentations and Speaker

1. (Graph Theory) Lecturer, Dr. Ismael A Ali, University of Zakho, Department of Computer Science
2. (Doing Graph Modeling) Lecturer, Dr. Ismael A. Ali, University of Zakho, Department of Computer Science
3. (Connecting Points: Life Demos on Graph Modeling) Lecturer, Dr. Ismael Ali Ali, University of Zakho, Department of Computer Science

Schedule

- 14:30 – 15:00, Registration
- 15:00 – 16:30, Opening the Workshop & starting presentation
- 16:30 – 17:00, Discussions, Notes, and Closing

Using Remote Labs in Engineering Education: A Practical Workshop with VISIR

Prof. Dr. Gustavo R. Alves, Polytechnic of Porto

Room: University of Zakho – Chemistry Hall

Experimental activities with real components are an essential part of all courses including or devoted to electrical and electronic circuits theory and practice. The knowledge triangle composed of hand-written exercises, simulations and traditional lab experiments has been enriched with the possibility for students to conduct real experiments over the Internet, using remote labs. This workshop is devoted to one such remote lab named Virtual Instrument Systems in Reality (VISIR). The Global Online Laboratory Consortium (GOLC) elected VISIR as the best remote-controlled laboratory in the world. At the end of this workshop, attendees are expected to know and use the VISIR remote lab for experimenting electrical and electronic circuits. Also, to understand the limitations of real test and measurement instruments.

Theme and Topics

- Introduction to the VISIR remote lab;
- Experiments with simple electrical circuits (resistors' assiociations)
- Experiments with Operational Amplifiers;
- Experiments dealing with the bandwidth of test and measurement instruments (harmonics).

List of Presentations and Speaker

Dr. Gustavo R. Alves

Schedule

- 14:30 – 15:00. Registration
- 15:00 – 16:30. Opening the Workshop & starting presentation
- 16:30 – 17:00. Discussions, Notes, and Closing

Technical Sessions

Wednesday, April 3

Wednesday, April 3 (8:30 – 16:20)

Session 01

Room: Duhok Polytechnic University – Hall 1

Session Chair: Adel Eesa

9:00 EEGs Feature Extraction by Multi-Level DWT with Different Numbers of Principal Components

Eman Khoursheed, Ahmed and Adel Eesa

9:20 Augmented Reality Electric Circuit Experiment

Ahmed A. H. Alkurdi

9:40 Secure IOT System based on chaos- modified lightweight AES

Jolan Rokan Naif, Ghassan H. Abdul-Majeed AND Alaa K. Farhan

10:00 What is Difficult in Learning Programming Language based on Problem-solving Skills?

Abdulmalik Ahmad Lawan, Abdo Sulaiman Abdi, Mohammed Salim Khalid, and Anas Ahmad Abuhassan

Session 02

Room: Duhok Polytechnic University – Hall 2

Session Chair: Ramadhan H. Suleiman

9:00 Risk Assessment of Dangerous Natural Processes and Phenomena in Mining Operations

Elena Kulikova

9:20 Hydro Geopolitics of the Tigris and Euphrates

Nadhir Al-Ansari

9:40 Dendroclimatological Analysis of Pinus Brutia Ten. Grown in Swaratoka, Kurdistan Region - Iraq

Tariq K. Salih, Muzahim Saeed Younis and Salih T. Wali

10:00 Application of Computational Fluid Dynamics in The Simulation of Carbon Monoxide Distribution, a Case Study: Sayad Underground Tunnel in Tehran

Hazhir Karimi, Borhan Riazi and Mokhtar Mahmoodi

Session 03

Room: Duhok Polytechnic University – Hall 3

Session Chair: Hamid S. Kachel

9:00 Extraction of Hydrogen Sulfide from Water of Duhok Dam by Industrial Open Pilot Plant

Salah A. Naman and Lazgin A. Jamil

9:20 A new ecological risk assessment method of heavy metals in sediment and soil

Emad Mohammed Salih Al-Heety

9:40 Potential ecological risk assessment of heavy metals in Iraqi soils: case studies

EMAD MOHAMMED SALIH AL-HEETY and Wahran Monem Saod

10:00 The Incidence of Intestinal Parasites among Children in Hivi Pediatric Hospital, Duhok, Iraq

Azad Abdullah Meerkhan and Jehan Nori Hussein

Session 04

Room: Duhok Polytechnic University – Hall 4

Session Chair: Omar Ali

9:00 Numerical Simulation of Natural Convection and Radiation on Performance of Uniform Fins Geometry

Omar Rafae Alomar, Qais Abid Yousif and Ibrahim Atiya Mohamed

9:20 Detecting Kissing Disbond Defect in Adhesively Bonded Structures: A Review

Fady E. F. Samann

9:40 Shape Restoration of Deformed Egg-Shaped Single Layer Space Frames

Najmadeen Saeed, Ahmed Manguri, Shna Abdulkarim and Ali Shekha

10:00 Experimental Investigation to Retrofit HCFC-22 Window Air Conditioner with R-407C

Ibrahim F. Abdulqadir, Badran M. Salim and Omar M. Ali

Session 05

Room: Duhok Polytechnic University – Hall 1

Session Chair: Idrees S. Hussein

11:00 Optic Disc Detection and Segmentation in Retinal Fundus Image

Hawkar Kheder Shaikha and Amira B. Sallow

11:20 Green Cloud Framework for Reducing Carbon Dioxide Emissions in Cloud Infrastructure

Mustafa Ibrahim Khaleel and Awder Mohammed Ahmed

11:40 Effect of Wavelet Decomposition on Database Size Reduction for Face Recognition Rate

Eyad I. Abbas and Mohammed E. Safi

12:00 Smart Home Management System Based on Face Recognition Index in Real-time

Shakir Fattah Kak, Firas Mahmood Mustafa and Riyadh Qashi

Session 06

Room: Duhok Polytechnic University – Hall 2

Session Chair: Nawzat Ahmed.

11:00 Facial Expression Classification Based on SVM, KNN and MLP Classifiers

Hivi Ismat Dino and Maiwan Bahjat Abdulrazzaq

11:20 Design and simulation of High-Speed Parallel/Sequential Simplified DES code breaking based on FPGA

Subhi R. M. Zeebaree, Amira B. Sallow, Bzar Khidir Hussan and Sundos Mohammad Ali

11:40 Unsupervised Learning Approach-Based New Optimization K-Means Clustering for Finger Vein Image Localization

Dawlat Mustafa Sulaiman, Adnan Mohsin Abdulazeez, Habibollah Haron and Shereen S. Sadiq

12:00 Machine learning and Region Growing for Breast Cancer Segmentation

Diyar Qader Zeebaree, Habibollah Haron, Adnan Mohsin Abdulazeez and Dilovan Asaad Zebari

Session 07

Room: Duhok Polytechnic University – Hall 3

Session Chair: Shavan K. Askar.

11:00 A Survey of Routing Algorithms in Vehicular Networks

Hassan Hadi Saleh and Saad Talib Hasson

11:20 Radiation Pattern of Spherical Slotted Antenna Coated by Dielectric Material and Plasma

O. Dautov, M. AL- Abadi and Riyadh Khlf Ahmed

11:40 MCRP: Multiple Chain Routing Protocol for Energy Efficiency in Homogeneous Wireless Sensor Networks

Husam Kareem, Shaiful Hashim, Aduwati Sali, Omer W. Taha, Issraa J. Kazim and Shaimaa Shukri

12:00 A Planar Self-Complementary Fractal Triangular Antenna for UWB Applications

Yasser A. Fadhel and Haval N. Alsofi

Session 08

Room: Duhok Polytechnic University – Hall 4

Session Chair: Haval Mohammed.

11:00 New types of Pattern formations in a new Reaction-diffusion model using numerical methods

SHAKER MAHMOOD RASHEED

11:20 Soft Js-Spaces and Strong Soft Js-Spaces

RAMADHAN A. MOHAMMED AND OSAMA R. SAYED

11:40 Study of Optical Properties of a Pinhole Nanorod

PSHTIWAN M. A. KARIM, SHAKER MAHMOOD RASHEED AND DIYAR AHMED SAYB SADIQ

12:00 Improvement of the Efficiency of Dyed Mono Crystalline Silicon Solar Cell by Covering it with Natural Plants Pigments

ASEEL MOHAMMED ALI ZAKAR, SALAH A. NAMAN AND SABAH M. AHMED

Session 09

Room: Duhok Polytechnic University – Hall 1

Session Chair: Masoud Mohammed Hassan.

15:00 Optimized FPGA Implementation of the CRC Using Parallel Pipelining Architecture

NOOR NAJEEB QAQOS

15:20 Different Model for Hand Gesture Recognition with a Novel Line Feature Extraction

MAYYADAH RAMIZ MAHMOOD AND ADNAN MOHSIN ABDULAZEEZ

15:40 A Comparison of Three Classification Algorithms for Handwritten Digit Recognition

MAIWAN BAHJAT ABDULRAZZAQ AND JWAN NAJEEB SAEED

16:00 Diagnosis of the Parkinson Disease Using Enhanced Fuzzy Min-Max Neural Network and OneR Attribute Evaluation Method

OSAMA NAYEL AL SAYAYDEHA AND MOHAMMAD FALAH MOHAMMAD

Session 10

Room: Duhok Polytechnic University – Hall 2

Session Chair: Maiwan Bahjat Abdulrazzaq.

15:00 Combining Best Features Selection Using Three Classifiers for Intrusion Detection System

Azar Abid Salih and Maiwan Bahjat Abdulrazzaq

15:20 Enhance the Mammogram Images for Both Segmentation and Feature Extraction Using Wavelet Transform

Dilovan Zebari, Habibollah Haron, Subhi R. M. Zeebaree and Diyar Qader Zeebaree

15:40 Performance Measurement for Distributed Systems using 2TA and 3TA based on OPNET Principles

Bishar Rasheed Ibrahim, Subhi R. M. Zeebaree and Bzar Khidir Hussan

16:00 Trainable Model Based on New Uniform LBP Feature to Identify the Risk of the Breast Cancer

Diyar Qader Zeebaree, Habibollah Haron, Adnan Mohsin Abdulazeez and Dilovan Asaad Zebari

Session 11

Room: Duhok Polytechnic University – Hall 3

Session Chair: Nidhal Mohammed.

15:00 Improvement Viscosity Index of Lubricating Engine Oil Using Low Molecular Weight Compounds

Shinwar Ahmed Idrees, Lawand Luqman Mustafa and Sabah Sardar Saleem

15:20 Modeling the Effect of Reservoir Fluid Properties on Abundance of (H2S) Evolved From Oil Wells and Dissolved in Reservoir Fluids

Ibtisam Kamal, Keyvan Amjadian, Namam Salih, Bryar Ahmad and Rebwar Haidar

15:40 Hydrocarbon Degradation of Oil Pipeline Blockage by Thermophilic Fungi Isolated from Tawke Field

Yousif A. AlBany, Anwer N. Mamdoh and Mohammad I. Al-Berfkani

16:00 Using a Mix of Three Microbial Strains on Fermentation and Aerobic Stability of Grass Silage

VAHEL JALADET TAHA

Session 12

Room: Duhok Polytechnic University – Hall 4

Chairs: Firas Mahmood Mustafa

15:00 Dual-band Millimeter-Wave Microstrip Patch Array Antenna for 5G Smartphones

CHOMAN KHALID ALI AND MOHAMMED HASSAN ARIF

15:20 Optimum Design for Campus Network with Efficient Rate of Delay and Throughput

SULAIMAN M. S. ABDUALLAH

15:40 Land Use Land Cover Change in Zakho District, Kurdistan Region, Iraq: Past, Current and Future

YASEEN T. MUSTAFA AND DILOVAN RAMADHAN ISMAIL

Thursday, April 4

Thursday, April 4 (9:00 – 10:30)

Session 01

Room: Duhok Polytechnic University – Hall 1

Chair: Razwan M.S. Najimaldeen .

9:00 ***Effect of quantization Error and SQNR on the ADC using Truncating method to the nearest integer bit***

Alaaldin Hasso, Karwan Jacksi and Kevin Smith .

9:20 ***Design and Analysis of Proposed Remote Controlling Distributed Parallel Computing System Over the Cloud***

Zryan Najat Rashid, Subhi R. M. Zeebaree and Abdulkadir Şengur.

9:40 ***Image Steganalysis in Frequency Domain using Co-Occurrence Matrix and BPNN***

Isamadeen A. Khalifa, Subhi R. M. Zeebaree, Musa Ataş and Farhad M. Khalifa.

10:00 ***Term Weighting for Feature Extraction on Twitter: A Comparison between BM25 and TF-IDF***

Ammar Ismael Kadhim

Session 02

Room: Duhok Polytechnic University – Hall 2

Chair: Ahmad Baheej Al-Khalil

9:00 ***High Speed Parallel RC4 Key Searching Brute Force Attack Based on FPGA***

Riyadh Zaghlool Mahmood and Ahmed Fehr Fathil

9:20 ***Influence Maximization Problem Approach to Model Social Networks***

Saad Talib Hasson and Ebtihal Akeel

9:40 Building a Noisy Multipath Channel Emulator for Single or Multicarrier Communication Systems

Ghadeer H. Eskandar, Ahmed N. Jabbar and Ibrahim A. Murdas

10:00 Multi- Component Current Control of a Single Phase Power Converter: A Model Predictive Approach

Riyadh Toman Thahab

Session 03

Room: Duhok Polytechnic University – Hall 3

Chair: Ramadhan J. Mstafa

9:00 Prevention Techniques Employed In Wireless Ad-Hoc Networks

Ravi Tomar and Yogesh Kumar Awasthi

9:20 Video Information Hiding Based on Feature Points and Arnold Cat Algorithm

Younis M. Younis, Ramadhan J. Mstafa and Muhsin Atto

9:40 Hybrid Method to Implement a Parallel Search of the Cryptosystem Keys

Sattar B. Sadkhan and Basim S. Yaseen .

Session 04

Room: Duhok Polytechnic University – Hall 4

Chair: Wijdan Mohmad Salih. Mero

9:00 Electrochemical Degradation of Alizarin Black Dye in Aqueous Medium Using Fe/Al Electrode

Haydar A. Mohammad Salim, Shinwar Ahmed Idrees, Sabir Ayob Mohammed Salih and Reving Abdulazeez Rashid

9:20 Determination of Dissociation Constants of Malonic Acid in (Ethylene glycol-Water)X% Mixed Solvent at Different Temperatures Using Electromotive Force Measurements

Soleen Saeed Ahmed and Lazgin A. Jamil

9:40 *Gastrointestinal larval nematodes on pastures grazed by small ruminants of Duhok area*

Adnan M. Abdullah Al-Rekani, Ronak Abdulaziz Meshahbaz, Abdulrehman Abdulhamid Yousif and Fatah Majeed Khalaf

10:00 *Kinetic of Ascorbic Acid Dissolution in Local Pomegranate Juices Simple Environmental Treatments for Heat Transfer of Building Ceilings*

Rajab Ibrahim Hameed Dosky

10:20 *Extracting Cellulose Fibers from Rice Husks to Prepare a pH Sensitive Hydrogel with Sodium Alginate*

Alarqam Zyaad Tareq, Mohammed Salim Hussien, Asaad Mohammed Mustafa and Ahmed Raoof Mahmood

Abstracts

Computer and Information Technology Paper ID: 1570513369

EEGs Feature Extraction by Multi-Level DWT with Different Numbers of Principal Components

Eman Khoursheed. Ahmed
Dept. of Computer Science
University of Zakho
Zakho. Kurdistan Region-Iraq
emanak2004@gmail.com

Adel Eesa
Dept. of Computer Science
University of Zakho
Zakho. Kurdistan Region-Iraq
adelsabryissa@gmail.com

Abstract

An electroencephalogram (EEG) is a measure used to record the electrical activity in the brain by attaching electrodes to the patient's scalp. An Epileptic seizure is a result of anomalous electrical activity in the brain, which is usually detected by EEG signals. In this work, we proposed a feature extraction method using different DWT levels and different numbers of principal components for the classification of seizure and normal EEG signals. First features are extracted from the different DWT levels the results then are used as an input to the PCA in order to reduce their dimension. As a dimensional reduction process, the different number of PCs are tested and evaluated using SVM classifier. The experimental results show that the use of 80-PCs obtains better result when it compared to the other number of PCs which reaches 100% in term accuracy and F-measure. In addition, the classification rates achieved in this research outperform several numbers of existent EEG seizure detection techniques published in the literature.

KEYWORDS— *SEIZURE DETECTION, EEG, PATTERN RECOGNITION, DWT, PCA.*

Computer and Information Technology Paper ID: 1570513586

Augmented Reality Electric Circuit Experiment

Ahmed A. H. Alkurdi
Department of Computer Science
Nawroz University
Duhok, Kurdistan Region–Iraq
ahmad_ala89@nawroz.edu.krd

Abstract

The advancement of hardware technology, specifically in mobiles devices, has provided great computational power for running and creating sophisticated large programs such as, virtual reality, augmented reality and neural network based programs. Augmented reality (AR) is one of the finest and most exciting technologies nowadays. AR enables creating computerized objects and blending them with the real world. Which can be applied to enhance and simplify many aspects in a variety of disciplines. In result, instead of reading text and imagining experimentation it is possible to simulate the experiments through equipment and experiments as same as in real world scenarios, which can be much understandable and comprehensible. In the past decade, several institutions have adopted technological methods of teaching and learning. These instructional technologies can be used by some institutions that cannot provide enough time or proper equipment to students. This is where augmented and virtual reality are mostly favorable. In result, instead of reading text and imagining experimentation it is possible to simulate the experiments through equipment and experiments as same as in real world scenarios, which can be much understandable and comprehensible. In this paper, a model of an electric circuit is created to simulate the motion of electrons and how electric current runs through a wire and provides power for different tools. The creation of such a model involves design, modeling, simulation and animation of the model. This is done by relying on several software and frameworks such as Maya3D, Unity3D, ARKit, etc..

KEYWORDS— *AUGMENTED REALITY, ARKIT, MAYA3D, UNITY3D, ELECTRIC CIRCUIT.*

Secure IOT System based on chaos-modified lightweight AES

Jolan Rokan Nait
informatics institute for postgraduate studies
Iraqi commission for computers & informatics
Baghdad .Iraq
newjolan@gmail.com

Ghassan H. Abdul-Majeed
Director General (RDD)
Ministry of Higher Education
Baghdad .Iraq
ghassan@rdd.edu.iq

Alaa K. Farhan
dept. of computer sciences
University of Technology
Baghdad. Iraq
dralaa_cs@yahoo.com

Abstract

The increasing The Internet of Things objects and entities in the famous applications causes a needing to provide an unique and secure identifiers with ability to protected data transferring through the network. Secure IoT communication becomes more urgent issue for important IOT entities that content computing-devices and embedded-sensor subsystems used in unofficial industrial machine to machine (M2M) communications, smart energy-grids, home or buildings and other computing devices. In this paper we proposed a secure system by using chaotic system combinate with the modified lightweight AES. The 5-D chaos system (hybrid from logistic and Lorenz chaotic system) was used to generate the sequences chaos keys used in the lightweight AES and SHAKE128. The Lightweight AES was modified to reduce the processing complexity of AES with decreased the processing time (have 145% speed more). The output of modified lightweight AES encryption System has the good statistical tests near to original AES that can avoid many attacks.

KEYWORDS— IoT security, modified AESL, Lightweight AES, Chaos.

Computer and Information Technology Paper ID: 1570517733

What is Difficult in Learning Programming Language based on Problem-solving Skills?

Abdulmalik Ahmad Lawan
Department of Computer Science
Kano University of Science and Technology
Wudil, Nigeria;
Department of Computer Information Systems
Near East University
Nicosia, Cyprus
aaltofa2000@gmail.com

Abdo Sulaiman Abdi
Department of Computer Information Systems
Near East University Nicosia, Cyprus
Duhok Polytechnic University
Duhok KRG, Iraq
abdo.abdi@dpu.edu.krd

Mohammed Salim Khalid
Department of Computer Information Systems
Near East University
Nicosia, Cyprus
20168793@std.neu.edu.tr

Anas Ahmad Abuhassan
Department of Computer Information Systems
Near East University
Nicosia, Cyprus
anas.abuhassan@gmail.com

Abstract

Problem-solving skills are paramount to university students while learning programming languages. Many researchers have identified a lack of problem-solving skills among university students across various disciplines, but little is known on how certain subjects could ease the acquisition of these skills and vice versa. Educational researchers should focus on exploring the role problem-solving skills could play in preparing students toward standard approaches to learning programming languages. This paper provides an understanding of the difficulties faced by university students while learning programming language using problem-solving skills. The questionnaire used in the study has 32 items categorized into four dimensions of Analysis, Design, Coding and Testing. Data were collected randomly from 113 voluntary participants from Information Technology and Engineering Departments of Near East University, Cyprus. Statistical analysis applied to the data revealed a significant correlation between all the dimensions and existence of a level of difficulties above average on all the dimensions. This research will augment related literary findings and help academicians situate the best practices in teaching problem-solving skills as well as a programming language.

KEYWORDS— *PROBLEM- SOLVING SKILLS, LEARNING DIFFICULTIES, LEARNING, PROGRAMMING LANGUAGE, UNIVERSITY STUDENTS.*

Computer and Information Technology Paper ID: 1570518262

Optic Disc Detection and Segmentation in Retinal Fundus Image

Hawkar Kheder Shaikha
Dept. of Computer Science/College of Science
University of Zakho
Zakho, Kurdistan Region-Iraq
haookar@gmail.com

Amira B. Sallow
College of Computer and Information Technology
Dept. of Computer Science
Nawroz University
Duhok, Kurdistan Region-Iraq
amo_bibo@yahoo.com

Abstract

Segmentation of Optic Disc (OD) is one of the significant steps in automatic Diabetic Retinopathy (DR) detecting. Thus, DR detecting needs to eliminate the OD pixels. In this paper, a new technique is presented for OD segmentation that depends on the histogram template matching algorithm and OD size. The template matching algorithm is used for finding the center of the OD. In this step, the histogram of each RGB (Red, Green, and Blue) planes is found and then the cross-correlation is found between the template and the original image, OD location is the point with maximum cross-correlation between them. The OD size varies according to the camera field of sight and the resolution of the original image. The rectangle size of OD is not the same for various databases, the estimated size for the DRIVE, STARE, DIARTDB0, and DIARTDB1 are 80×80, 140×140, 190×190, and 190×190 respectively. After finding the OD center and rectangle size of OD, a binary mask is created with Region of Interest (ROI) for segmenting the OD. The DIARTDB0, DIARTDB1 and DRIVE are used to evaluate the proposed technique, the result was robust and vital with an accuracy of 96%, 98% and 98% respectively.

KEYWORDS— OD DETECTION, OD ROI SEGMENTATION, HISTOGRAM MATCHING, TEMPLATE MATCHING.

Computer and Information Technology Paper ID: 1570518967

Green Cloud Framework For Reducing Carbon Dioxide Emissions in Cloud Infrastructure

Mustafa Ibrahim Khaleel
Department of Computer
College of Science, University of Sulaimani
Sulaimani, Iraq
mustafa.khaleel@univsul.edu.iq

Awder Mohammed Ahmed
Communication Engineering Department
Technical College of Engineering, Sulaimani
Polytechnic University
Sulaimani, Iraq
awder.ahmed@spu.edu.iq

Abstract

The increasing deployment of datacenters and cloud resources around the globe escalated by higher electricity prices advanced energy cost, cooling and communication cost, and carbon dioxide consumption. To curb such ever-increasing problem complexity, we have formulated a scientific workflow-based cost-effective paradigm based on rigorous mathematical model. Multiple techniques have been considered to increase system utilization rate within acceptable performance bounds. First, we have applied Dynamic Voltage and Frequency Scaling (DVFS) approach to scale down the power consumption by cloud servers via calculating the best near-optimal frequency. Then, we have reused cloud-based VMs to execute as many scientific workflows as possible using fewer cloud servers which conserves a tremendous amount of energy cost including carbon dioxide emission consumption and electricity cost. This has been done through eliminating the overhead of sharing multiple VMs the same server's capacity. Moreover, the aforementioned objectives have been achieved without degrading the Quality of Service (QoS) specified in Service Level Agreement (SLA). However, we have simulated our heuristic using open source CloudSim and compared with algorithms such as the Rank and EARES-D. The results have showed that our paradigm model is better than other heuristics with an average energy reduction of 70%.

KEYWORDS— CARBON DIOXIDE, SCIENTIFIC WORKFLOW, ENERGY CONSUMPTION.

Computer and Information Technology Paper ID: 1570520128

Effect of Wavelet Decomposition on Database Size Reduction for Face Recognition Rate

Eyad I. Abbas
Department of Electrical Engineering
University of Technology
Baghdad, Iraq
30013@uotechnolog.edu.iq

Mohammed E. Safi
Department of Electrical Engineering
University of Technology
Baghdad, Iraq
30165@uotechnolog.edu.iq

Abstract

This paper presents the effect of the discrete wavelet decomposition on the database reduction, which is used in biometric face recognition. The Olivetti and Oracle Research Laboratory is own face databases for training and testing. The first level wavelet decomposition was applied to the training and testing faces made the size of database decreasing by 75% out of original size. Both databases are treated by principal component analysis algorithm to get the effect of that on face recognition rate. Principal component analysis algorithm is biometric face recognition. The experiment results appeared the reduction in face recognition rate between original and reduced database is 2%. This approach is more efficient for reduced the database, and computational load with a maintaining an acceptable proportion of recognition rate.

KEYWORDS— *PRINCIPAL COMPONENT ANALYSIS, DISCRETE WAVELET TRANSFORM, FACE RECOGNITION.*

Computer and Information Technology Paper ID: 1570522156

Smart Home Management System Based on Face Recognition Index in Real-time

Shakir Fattah Kak
Duhok Polytechnic University
Duhok, Iraq
shakir.fattah@dpu.edu.krd

Firas Mahmood Mustafa
Nawroz University
Duhok, Iraq
firas.mustafa@ieee.org

Riyadh Qashi
Leipzig University of Applied Science
Leipzig, Germany
Riydah.qashi@htwk-Leipzig.de

Abstract

The present study aims to use the smart home application practically to enhancing control management of the home, security, increase comfortably, and decrease energy consumption using biometric technique and cloud services. At the first stage, the proposed system works to identify member identification by using the face recognition method as a tool to enhance the home security, and home control management. The recognition procedure captures a member face image in a controlled environment by using a digital camera as a test image. The AdaBoost technique is utilized to detect and extract a member's faces for the train, and test member images. DWT with PCA methods have used to extract image features and dimension reduction. At the classified procedure, Euclidean distance method has been used for the matching process to verify home member's identification index. As well as, a special MATLAB procedure has been used to transmit the member's index to the cloud server. The cloud server analyses the received member identification in order to retrieve the verified member's profile, which contains specified appliances for each individual member. The home appliances are controlled by the highest priority member who has been registered in real time at home by the recognition stage. Then, the cloud server transmits a home member's privilege to the microcontroller through a Wi-Fi network submitting the required actions. The designed proposed smart home system provides a secure, energy reduced, and cost- effective design that automatically responds to the home member's needs.

Keywords— *Face Recognition, Cloud services, Internet of Things (IoT), Microcontroller, Home Automation System.*

Computer and Information Technology Paper ID: 1570522979

Optimized FPGA Implementation of the CRC Using Parallel Pipelining Architecture

Noor Najeeb Qaqos
Information Technology Department
Duhok Polytechnic University
Duhok, Iraq
noor.qaqos@dpu.edu.krd

Abstract

Cyclic Redundancy Check (CRC) plays a major role in data storage, communication systems and networking environment fields to detect errors. The speed of transmitting data with optimized hardware utilization are the main challenges nowadays. Thus, CRC calculation becomes a bottleneck for the system implementations. The aim of this paper is to design and implement the CRC5 and CRC8 systems that are used for USB token packet and ATM protocols, respectively. A parallel pipelining method is used to implement the proposed CRC architecture for both CRC encoder and decoder systems to achieve high throughput data with optimized hardware resources. A proposed architecture doesn't base on Look-Up Table (LUT) to store pre-calculated CRC values or F-matrix in its implementation as in the previous works. The system designed and implemented based on Spartan-3E FPGA chip. Very High-Speed Integrated Circuit Description Language (VHDL) used to write the related code. The whole proposed architecture is functionally simulated and verified using the Xilinx ISE 9.2i simulator.

KEYWORDS— CRC, OPTIMIZED IMPLEMENTATION, PARALLEL-PIPELINING, FPGA, SPARTAN 3E-KIT, VHDL, XILINX.

Different Model for Hand Gesture Recognition with a Novel Line Feature Extraction

Mayyadah Ramiz Mahmood
Department of Computer
University of Zakho
Zakho, Kurdistan Region-Iraq
mayyada.mahmood@uoz.edu.krd

Adnan Mohsin Abdulazeez
Duhok Polytechnic University
Duhok, Kurdistan Region-Iraq
president@dpu.edu.krd

Abstract

Hand gestures are commonly used for communication between both impaired community and normal people. Sign languages stand for the human languages of deaf people. They form the most growing domain of research worldwide. A number of techniques was developed in this area lately. It is recognized by means of deducing the features involved in the use of hand gesture. As a matter of fact, various approaches, namely the vision-based, the data-glove-based, the colored-marker and the Electromyogram (EMG) approaches have been utilized by researchers to recognize the different hand gestures implemented in many different fields such as the whole approaches which can be divided into four main categories, viz. Data Collection, Image Processing, Feature Extraction and Gesture Recognition. Only few of those categories have been discussed in this paper to be compared between the accuracy rates by applying Artificial Neural Network (ANN) classification. This classification is based on different models and a novel method for Real-Time Hand Gesture Recognition System (RTHGRS). The latter has used one line (fifty features) extracted from black and white processed images to recognize the numbers from (1-10) in Kurdish Sign Language (KurdSL) using one hand only with accuracy 98%.

KEYWORDS— *Sign Language, Hand Gesture Recognition, Kurdish Sign Language (KurdSL), Artificial Neural Network, Feature Extraction.*

A Comparison of Three Classification Algorithms for Handwritten Digit Recognition

Maiwan Bahjat Abdulrazzaq
Department of Computer Science
University of Zakho
Zakho, Kurdistan Region-Iraq
maiwan.abdulrazzaq@uoz.edu.krd

Jwan Najeeb Saeed
Department of Information Technology
Duhok Polytechnic University
Duhok, Kurdistan Region-Iraq
jwan.najeeb@dpu.edu.krd

Abstract

Handwritten digits recognition is considered as a core to a diversity of emerging application. It is used widely by computer vision and machine learning researchers for performing practical applications such as computerized bank check numbers reading. However, executing a computerized system to carry out certain types of duties is not easy and it is a challengingmatter.Recognizing the numeral handwriting of a person from another is a hard task because each individual has a unique handwriting way.The selection of the classifiers and the number of features play a vast role in achieving best possible accuracy of classification.This paper presents a comparison of three classification algorithms namely Naive Bayes (NB), Multilayer Perceptron (MLP) and K_Star algorithm based on correlation features selection (CFS) usingNIST handwritten dataset. The objective of this comparison is to find out the best classifier among the three ones that can give an acceptable accuracy rate using a minimum number of selected features. The accuracy measurement parameters are used to assess the performance of each classifier individually, which are precision, recall and F-measure. The results show that K_Star algorithm gives better recognition rate than NB and MLPas it reached the accuracy of 82.36%.

KEYWORDS— *HANDWRITING DIGIT RECOGNITION, NAIVEBAYES, MULTILAYER PERCEPTRON, K-STAR, AND CLASSIFICATION ALGORITHMS.*

Diagnosis of The Parkinson Disease Using Enhanced Fuzzy Min-Max Neural Network and OneR Attribute Evaluation Method

Osama Nayel Al Sayaydeha
Faculty of Computer Systems & Software Engineering
Universiti Malaysia Pahang
26300 Gambang, Pahang, Malaysia
osamasayaydeh@hotmail.com

Mohammad Falah Mohammad
Faculty of Computer Systems & Software Engineering
Universiti Malaysia Pahang
26300 Gambang, Pahang, Malaysia
falah@ump.edu.my

Abstract

Parkinson's disease is a dangerous disease that attacks the nervous system and affects it negatively over time. Early diagnosis of this disease is necessary for identifying the most appropriate treatment for preventing the disease from worsening. It can be diagnosed by examining the symptoms of the patient. Recently, researchers have used voice disorders to diagnose Parkinson' s disease by extracting attributes from audio recordings of affected people and using classification techniques to provide accurate diagnoses. In this paper, an enhanced fuzzy min–max neural network with the OneR attribute evaluator (EFMM-OneR) is proposed as a hybrid model for diagnosing Parkinson's disease. The proposed model consists of two stages: In the first stage, feature selection is used to identify and remove irrelevant, redundant, or noisy features from the provided dataset. In the second stage, the enhanced fuzzy min–max (EFMM) neural network is used for the classification process. The results demonstrated the ability of the EFMM-OneR model to improve the classification accuracy as compared to other classifiers from the literature.

KEYWORDS— *FUZZY MIN–MAX, PATTERN CLASSIFICATION, FUZZY NEURAL NETWORK, PARKINSON'S DISEASE.*

Computer and Information Technology Paper ID: 1570523510

Facial Expression Classification Based on SVM, KNN and MLP Classifiers

Hivi Ismat Dino
Dept. of Computer Science
University of Zakho
Zakho, Kurdistan Region-Iraq
hivi.dino@gmail.com

Maiwan Bahjat Abdulrazzaq
Dept. of Computer Science
University Of Zakho
Zakho, Kurdistan Region-Iraq
maiwan1967@gmail.com

Abstract

Facial Expression Recognition (FER) has been an active topic of papers that were researched during 1990s till now, according to its importance, FER has achieved an extremely role in image processing area. FER typically performed in three stages include, face detection, feature extraction and classification. This paper presents an automatic system of face expression recognition which is able to recognize all eight basic facial expressions which are (normal, happy, angry, contempt, surprise, sad, fear and disgust) while many FER systems were proposed for recognizing only some of face expressions. For validating the method, the Extended Cohn-Kanade (CK+) dataset is used. The presented method uses Viola-Jones algorithm for face detection. Histogram of Oriented Gradients (HOG) is used as a descriptor for feature extraction from the images of expressive faces. Principal Component Analysis (PCA) applied to reduce dimensionality of the Features, to obtaining the most significant features. Finally, the presented method used three different classifiers which are Support Vector Machine (SVM), K-Nearest Neighbor (KNN) and Multilayer Perceptron Neural Network (MLPNN) for classifying the facial expressions and the results of them are compared. The experimental results show that the presented method provides the recognition rate with 93.53% when using SVM classifier, 82.97% when using MLP classifier and 79.97% when using KNN classifier which refers that the presented method provides better results while using SVM as a classifier.

Keywords— face expression recognition, Histogram of oriented gradients, Principle component analysis, Support vector machine, K-nearest neighbor, Multi-layer perceptron.

Design and simulation of High-Speed Parallel/Sequential Simplified DES code breaking based on FPGA

Subhi R. M. Zeebaree
Technical College of Informatics
Duhok Polytechnic University
Duhok, Iraq
Tishk University-College of Engineering-Erbil, Iraq
subhi.rafeeq@dpu.edu.krd

Amira B. Sallow
Department of Computer Science
Nawroz University
Duhok, Iraq
amo_bibo@yahoo.com

Bzar Khidir Hussan
Department of ISE
Technical Engineering College-
Erbil Polytechnic University
Erbil, Iraq
bzar.hussan@epu.edu.iq

Sundos Mohammad Ali
Department of Computer Science
Nawroz University
Duhok, Iraq
Sundoszebary3d@gmail.com

Abstract

Abstract—High performance Field Programmable Gate Array (FPGA) devices have the capability of implementing parallel computing by building parallel Processing Elements (PEs) called virtual processors. One important reason is that FPGAs are special purpose devices. Hence, implementing any system based on these devices will give faster and more precise results than those given by using PCs, even if parallel processing approaches been applied by PCs. In this paper, two systems based on FPGA devices have been built for High Performance Computing (HPC). Code breaking for Simplified Data Encryption Standard (DES) algorithm was depended as case study. The first system consists of one FPGA device operated in a sequential way. One FPGA device contains one PE works in sequential fashion. This PE represents one simplified DES algorithm with two complete rounds. While the second system is a parallel one, also it consists of one FPGA device, but programmed to be implemented in parallel manner. The FPGA device contains 512 PEs operated in a parallel fashion. Each PE represents two completed rounds of simplified DES algorithm. In the second system, FPGA device works in much higher speed than the first one, because of that it works in parallel manner. Hence, reflecting great effect toward reducing the code breaking time and providing better results.

Keywords— DES Algorithm, FPGAs, VHDL, parallel system, Code breaking.

Unsupervised Learning Approach-Based New Optimization K-Means Clustering for Finger Vein Image Localization

Dawlat Mustafa Sulaiman
IT Dept., (Akre Technical College of Informatics)
Duhok Polytechnic University
Duhok City, KRG-Iraq
dawlat.mustafa@dpu.edu.krd

Adnan Mohsin Abdulazeez
IT Dept., (Akre Technical College of Informatics)
Duhok Polytechnic University
Duhok City, KRG-Iraq
presidentdpu@gmail.com

Habibollah Haron
Applied Industrial Analytics
Universiti Teknologi Malaysia
81310 UTM Johor Bahru
habib@utm.my

Shereen S. Sadiq
IT Dept., (Akre Technical College of Informatics)
Duhok Polytechnic University
Duhok City, KRG-Iraq
shireen.saleem@dpu.edu.krd

Abstract

Today, finger vein recognition attracts a lot of attention as a promising approach of biometric identification framework. It still a big challenge since it is not capable to localize and extract finger vein, since most of the datasets have a lot of noise and redundant unwanted object in the background. Image thresholding it seems to be a suitable approach for the binarization stage that is utilized into some exact finger vein image detection and extraction. In this paper, a new optimization methodology was proposed based on an unsupervised learning framework for the purpose of designing a new clustering algorithm that replaces the distance criteria into intensity level majority for group similar image pixels in one cluster. The propose system for finger vein image localization based optimized clustering algorithm has many stages such as using some significant pre-processing steps to enhance the finger vein images such as Wiener filtering, image smoothing and image sharpening for edge detection. Cluster stabilization, cluster random initialization, optimized objective function are the most significant points that have been solved. One of the most challenges dataset is that the finger vein images are not biased, and the images have more background noise and details. The experimental results of the finger vein localization based on an optimized clustering algorithm show that it much faster than the other clustering algorithms such as k-means, FCM by consuming an average time (2.83 sec.) while the k-means and FCM consumed (26.27sec.), and (80.36 sec.) respectively.

KEYWORDS— *UNSUPERVISED LEARNING, CLUSTERING, K-MEANS, FINGER VEIN, LOCALIZATION.*

Machine learning and Region Growing for Breast Cancer Segmentation

Diyar Qader Zeebaree
School of Computing
Faculty of Engineering
University Teknologi Malaysia
Johor, Malaysia
dqszeebaree2@live.utm.my

Habibollah Haron
Department of Computer Science
Faculty of Computing
Universiti Teknologi Malaysia
Johor, Malaysia
habib@utm.my

Adnan Mohsin Abdulazeez
Presidency of Duhok Polytechnic
University
Duhok, Kurdistan Region-Iraq
Adnan.mohsin@dpu.edu.krd

Dilovan Asaad Zebari
School of Computing
Faculty of Engineering
University Teknologi Malaysia
Johor, Malaysia
damzebari2@live.utm.my

Abstract

One of the main causes of increased mortality among women is breast cancer. The ultrasound scan is the most widely used method for diagnosing geological disease i.e. breast cancer. The first step for identifying the abnormality of the breast cancer (malignant from benign), is the extraction of the region of interest (ROI). In order to achieve this, a new approach to breast ROI extraction is proposed for the purpose of reducing false positive cases (FP). The proposed model was built based on the local pixel information and neural network. It includes two stages namely, training and testing. In the training stage, a trained model was built by extracting the number of batches from both ROI and background. The testing stage involved scanning the image with a fixed size window to detect the ROI from the background. Afterwards, a distance transform was used to identify the ROI and remove non-ROI. Experiments were conducted on the on-data set with 250 ultrasound images (150 benign and 100 malignant) the preliminary results show that the proposed method achieves a success rate of about 95.4% for breast contour extraction. The performance of the proposed solution also has been compared with the existing solutions that have been used to segment different types of images.

KEYWORDS— *BREAST CANCER, ULTRASOUND IMAGE, SEGMENTATION, MACHINE LEARNING, TRAINABLE SEGMENTATION.*

Computer and Information Technology Paper ID: 1570523730

Combining Best Features Selection Using Three Classifiers in Intrusion Detection System

Azar Abid Salih
Department Information Technology Management
Duhok Polytechnic University
Duhok, Iraq
azar.abid@dpu.edu.krd

Maiwan Bahjat Abdulrazaq
Department of Computer Science
University of Zakho
Duhok, Iraq
maiwan.abdulrazzaq@uoz.edu.krd

Abstract

Nowadays, with the development of internet technologies service in the world, the intruders have been increased rapidly. Therefore, the advent of Intrusion Detection System (IDS) in the security of networks field prevents intruders from having access to the information. IDS plays an important role of detecting different types of attacks. Because network traffic dataset has many features, the process of feature selection and removing irrelevant features increase the performance of the classification algorithms accuracy. This paper provides three various methods which are: Firstly, Information Gain. Secondly, Gain Ratio. Thirdly, Correlation Feature Selection. These techniques are used for selecting and ranking features then select combine the best top ranking features. Only six features were selected out of 41 features. These features are tested on three classifiers (K-Nearest Neighbor, Naïve Bays and Neural Network based Multilayer Perceptron) for classification and detect intrusion. The outcome illustrates that a high level of attacks classification accuracy can be accomplished by combing best different features selection. Moreover, K-Nearest Neighbor gets high accuracy classification for IDS. The proposed model has been applied on KDD data set and ten cross validation process used to assess the classification performance.

KEYWORDS— *KEYWORDS—INTRUSION DETECTION, COMBINE FEATURE SELECTION, CLASSIFICATION, NAÏVE BIAS, GAIN RATIO..*

Computer and Information Technology Paper ID: 1570523732

Enhance the Mammogram Images for Both Segmentation and Feature Extraction Using Wavelet Transform

Dilovan Zebari
(Universiti Teknologi Malaysia & UTM, Malaysia)
dilo.asaad@gmail.com

Habibollah Haron
(Universiti Teknologi Malaysia & UTM, Malaysia)
habib@utm.my

Subhi R. M. Zeebaree
(Duhok Polytechnic University & DPU, Iraq)
subhi.zeebaree@gmail.com

Diyar Zeebaree
(University Technology Malaysia (UTM), Malaysia)
diyar.apple4455@gmail.com

Abstract

Breast cancer (BC) is a main killer disease for women and men. It can be cured and controlled only if it is detected at its early detection. BC initial identification can be realized by the help of computer support identification approaches. From the detailed study on previous researches, it is found that, there is no system producing high accuracy because of one or more reasons. Absence of effective preprocessing is the discussed reason that obstructs the detection accuracy of Computer-aided diagnosis (CAD) method. Noise removal and contrast enhancement are the two types of preprocessing. There is no system performs the preprocessing on mammogram image. This work is an attempt to develop an enhanced preprocessing method for CAD of breast cancer by incorporating suitable noise reduction and contrast enhancement methods in the conventional CAD system. Contrast enhancement after noise reduction double enhances the mammogram image and the proposed methods MSE value for the mammogram image mdb072 has been 1.44% reduced. Reduction in MSE increases the PSNR to 0.16%. Many mammogram images have been tested and the result shows that, increase in contrast, decrease in mean square error and increase in peak signal to noise ratio when comparing to existing methods.

Keywords— *Mammogram image, Computer- aided diagnosis, wavelet transform, Noise reduction.*

Trainable Model Based on New Uniform LBP Feature to Identify the Risk of the Breast Cancer

Diyar Qader Zeebaree
School of Computing
Faculty of Engineering
University Teknologi Malaysia
Johor, Malaysia
dqszeebaree2@live.utm.my

Habibollah Haron
Department of Computer Science
Faculty of Computing
Universiti Teknologi Malaysia
Johor, Malaysia
habib@utm.my

Adnan Mohsin Abdulazeez
Presidency of Duhok Polytechnic
University
Duhok, Kurdistan Region-Iraq
adnan.mohsin@dpu.edu.krd

Dilovan Asaad Zebari
School of Computing
Faculty of Engineering
University Teknologi Malaysia
Johor, Malaysia
damzebari2@live.utm.my

Abstract

In developing countries breast cancer has been found to be one of the diseases that threatens the lives of women, and that is why finding ways of detecting efficiently is of great importance. The detection of breast cancer at an early stage through self-examination is very difficult. In this study, we proposed a new descriptor that can help to identify the abnormality of the breast by enhancing the features of LBP texture and enhance the LPB descriptor by using a new threshold that can help to identify the important information for the detection of abnormal cases. In the next stage, the significant features are extracted from the breast tumours images that have been segmented. Such features could be found in frequency or spatial domain. The extracted features for diagnosing tumour automatically, are additional and different from those features which the radiologist extracts manually. The proposed method demonstrates the possibility of using the LBP based texture feature with the new proposed method for categorizing ultrasound images, which registered a high accuracy of 96%, the sensitivity of 94%, specificity of 97%.

KEYWORDS— *BREAST CANCER, ULTRASOUND IMAGE, SEGMENTATION, MACHINE LEARNING, TRAINABLE SEGMENTATION.*

Computer and Information Technology Paper ID: 1570524028

Effect of Quantization Error and SQNR on the ADC Using Truncating Method to the Nearest Integer Bit

Alaaldin Hasso
Department of Computer Science
University of Zakho
Zakho, Kurdistan Region, Iraq
alahasso@yahoo.com

Karwan Jacksi
Department of Computer Science
University of Zakho
Zakho, Kurdistan Region, Iraq
Karwan.Jacksi@uoz.edu.krd

Kevin Smith
University of Westminster
London, UK.
kqsmithuk@live.co.uk

Abstract

This paper considers the effects of the quantization error and Signal Quantization Noise Ratio (SQNR) on the performance of an Analog Digital Converter of the sine signal using the Truncating method to the nearest integer bit. This Truncating method assigns each sample of the sine signal to the quantization level below it. By using MATLAB program, the experimental $SQNR_{Truncating}$ was always lower than the theoretical value as the number of bits increased in the digital word. This was expected because truncating the data leads to less accurate quantization of the signal and a lower SQNR. StatGraphics software was used to analyze simple regressions of the quantization error, and compare between Standard Deviation and Mean Absolute Deviation of the quantization error. StatGraph Plus program has been used to analyze the effect of the correlation coefficient statistic for truncating. Analysis Regression – Linear model using the StatGraph Plus program has been performed, then analysis of the effect of the statistic correlation coefficient and the equation of the regression line of dependent value $(SQNR)_{Truncating}$ on the independent value 'number of bits (n)': is accomplished. Results show that increasing the value of (n) by one bit in digital word, the value of SQNR increases by 6 Decibels (dB).

KEYWORDS— *ADC, $(SQNR)_T$, QUANTIZATION ERROR, STANDARD DEVIATION, MEAN ABSOLUTE DEVIATION, CORRELATION COEFFICIENT $(R)_T$ AND REGRESSION EQUATION OF $(SQNR)_T$*

Computer and Information Technology Paper ID: 1570524946

Design and Analysis of Proposed Remote Controlling Distributed Parallel Computing System Over the Cloud

Zryan Najat Rashid
IT Dept.– Technical Colleqe of Informatics
Duhok Polytechnic University
Sulaimani Polytechnic University
zryan.rashid@spu.edu.iq

Subhi R. M. Zeebaree
IT Dept.– Technical Colleqe of Informatics
Duhok Polytechnic University
Scientific Rresearch and Development Center
Nawroz University
subhi.rafeeq@dpu.edu.krd

Abdulkadir Şenqür
Technical Education Faculty
Firat Univesitisi
ksenqur@qmail.com

Abstract

Cloud computinq is one of the technoloqies that has qreat applications in this era, especially when it is supplemented by distributed computinq and parallel processinq then its benefits will be rocketed. The combination of these different technoloqies qives as the opportunity to access huqe computinq power remotely from liqht processinq devices such as a normal personal computer, laptop, or even a smartphone. In this paper we proposed requirements and an analysis of a system design for a platform to combine and applyinq distributed parallel processinq via distributed cloud computinq that can solve some specific and huqe client problems which needs unusual processinq power and solvinq them in a minimum time. Our design consists of number of servers for processinq client's tasks in different qeoqraphical locations. These tasks related to perform parallel processinq operations for distributed loads amonq the servers, based on cloud computinq principles. It is proposed to install some servers in Iraq: Duhok Polytechnic University (DPU) and Slaimani Polytechnic University (SPU), while some others to be located in Turkey: Firat University. The system is totally automated, it means the servers can reqister their selves automatically on a central server that works like an intermediate link between all servers and clients. Then the clients can qet benefit from the provided processinq power by the reqistered servers. The clients can specify tasks to be processed by the servers, they also be able to specify number of servers to participate in data processinq. Finally, the client qets results a detailed report about the amount of time and CPUs usaqes of participated servers with more information that are mentioned in the compinq sections.

KEYWORDS— *DISTRIBUTED SYSTEMS, PARALLEL COMPUTING, REMOTE CONTROLLING, PARALLEL PROCESSING, CLOUD COMPUTING AND CLIENT/SERVER.*

Term Weighting for Feature Extraction on Twitter: A Comparison between BM25 and TF-IDF

Ammar Ismael Kadhim
Department of Computer Science
College of Medicine
University of Baghdad
ammarusm70@gmail.com
Baghdad, Iraq

Abstract

Feature extraction is to transform a text document from any format into a list of features that can be easily processed by text classification techniques. Feature extraction is one of significant preprocessing techniques in data mining and text classification that computes features value in documents. Hence, efficient feature extraction techniques like the BM25 and term frequency-inver se document frequency (TF-IDF) techniques are normally utilized in term weighting. Nevertheless, BM25 is not a single function that is utilized to exceedingly correct very long documents. This problem cannot denote the helpfulness or importance of confident features, and decreases the efficiency of classification. This paper presents a comparative study of feature extraction techniques. Two techniques were evaluated BM25 and TF-IDF to weight the terms on Twitter. In this paper, TF-IDF feature extraction technique is presented to compare between the two techniques. The experiments show that TF-IDF improves the performance evaluation of feature extraction according to the maximum value of F1-measure is 89.77 for TF-IDF and 89.16 for BM25.

KEYWORDS— *FEATURE EXTRACTION, TEXT CLASSIFICATION, TERM WEIGHTING, TF-IDF, BM25.*

High Speed Parallel RC4 Key Searching Brute Force Attack Based on FPGA

Riyadh Zaghlool Mahmood
Software Engineering Department
University of Mosul
Mosul, Iraq
Riyadh_1970@yahoo.com

Ahmed Fehr Fathil
Computer Science Department
University of Mosul
Mosul, Iraq
Ahmedfehr@uomosul.edu.iq

Abstract

A parallel brute force attack on RC4 algorithm based on FPGA (Field Programmable Gate Array) with an efficient style has been presented. The main idea of this design is to use number of forecast keying methods to reduce the overall clock pulses required depended to key searching operation by utilizes on-chip BRAMs (block RAMs) of FPGA for maximizing the total number of key searching unit with taking into account the highest clock rate. Depending on scheme, 32 key searching units and main controller will be used in one Xilinx XC3S1600E-4 FPGA device, all these units working in parallel and each unit will be searching in a specific range of keys, by comparing the current result with the well-known cipher text if its match the found flag signal will change from 0 to 1 and the main controller will receive this signal and stop the searching operation. This scheme operating at 128-MHz clock frequency and gives us key searching speed of 7.7 x 106 keys/sec. Testing all possible keys (40-bits length), requires only around 39.5h.

KEYWORDS— DNA COMPUTING, THREE- STEP ALGORITHM, BINARY MODIFIED SIGNED DIGIT (BMSD), MOLECULAR BEACON MB, DNA STRAND.

Image Steganalysis in Frequency Domain using Co-Occurrence Matrix and BPNN

Isamadeen A. Khalifa
Networks Department
Bardarash Technical Institute,
Duhok Polytechnic University
Duhok, Kurdistan Region-Iraq
Isamadeen.khalif@dpu.edu.krd

Subhi R. M. Zeebaree
Duhok Polytechnic University
Duhok,Iraq
Tishk University-College of
Engineering-Erbil, Iraq
subhi.rateeq@dpu.edu.krd

Musa Ataş
Department of Computer Engineering
Engineering Faculty, Siirt University
Siirt, Turkey
musa.atas@siirt.edu.tr

Farhad M. Khalifa
Networks Department
Bardarash Technical Institute,
Duhok Polytechnic University
Duhok, Kurdistan Region-Iraq
farhad.khalifa@dpu.edu.krd

Abstract

In the last two decades, steganalysis has become a fertile research area to minimize the security risks left behind by Misuse of data concealment in digital computer files. As the propagation of hidden writing increased, the need for the steganalysis emerged and grew to a large extent necessary to deter illicit secret communications. This paper introduces a steganalysis system to detect hidden information in images through using co-occurrence matrix, frequency domain transform, the first three moments, and back propagation neural network (BPNN). Four varieties of the system implemented. Firstly, the co-occurrence matrix calculated for the input image, which suspected to be a carrier of hidden secret information. Second, three levels of discrete wavelet transform (DWT) are applied resulting in 12 subbands. Then, those subbands along with the original image are transformed by discrete Fourier transform (DFT) or discrete cosine transform (DCT) to produce 13 subbands. After that, the first three moments are calculated resulting feature vector with 39 features. Finally, BPNN is used as a classifier to determine whether the image is containing hidden information or not. The system is tested with and without co-occurrence matrix, each of them once using DFT and another time using DCT. The results have shown that using co-occurrence matrix with DFT has the highest performance, which was 81.82% on the Hiding Ratio of 0.5 bit per pixel. This work demonstrates a good effect comparing to previous works.

KEYWORDS— *STEGANALYSIS, CO-OCCURRENCE MATRIX, DWT, DFT, DCT, BPNN.*

Performance Measurement for Distributed Systems using 2TA and 3TA based on OPNET Principles

Bishar Rasheed Ibrahim
Department of Networks
Bardarash Technical Institute
Polytechnic University
Duhok, Iraq
Bashar.rashid@dpu.edu.krd

Subhi R. M. Zeebaree
Duhok Polytechnic University
Duhok, Iraq
Tishk University-College of Engineering-
Erbil, Iraq
subhi.rateeq@dpu.edu.krd

Bzar Khidir Hussan
Department of ISE
Technical Engineering College-Erbil
Polytechnic University
Erbil, Iraq
bzar.hussan@epu.edu.iq

Abstract

This paper presents a comparative study of two designs and analysis: Two Tier Architecture (2TA) and Three Tier Architecture (3TA). By using Optimized Network Engineering Tool (OPNET) modeler network-efficiency is done evaluation. OPNET, a professional simulation tool, is relied on to check the system with many clients from networks for both 2TA and 3TA. The outcomes demonstrate that 3TA is more capable than 2TA in term of data assessment is done utilizing OPNET modeler, which gives a convenient and easy-to-utilize platform for simulating extensive criterion networks. So, it will give more achievement when extended with many clients from networks with eight or sixteen clients. The models are utilized to study how the performance of the network is influenced by the different design decisions that are made to upgrade the system. This paper likewise examines ways in which the OPNET modules have been produced so that students could learn computer network concepts, and not exactly how to use OPNET software.

Keywords— Network, distribute, OPNET, Simulation, Design, 2TA, 3TA.

Influence Maximization Problem Approach to Model Social Networks

Saad Talib Hasson
University of Babylon
College of Information Technology
saad.aljebori@gmail.com

Ebtihal Akeel
University of Babylon
College of Information Technology
ebtehal82@gmail.com

Abstract

One of the significant problems in Social Networks (SN) analysis is how to find the best influential members. This problem was proved to be non-deterministic polynomial (NP-hard). The influence maximization (IM) problem in SNs aims to maximize the spread of influence in the network. It represents an optimization problem. IM is a fundamental research problem in social networks. Influence maximization problem is the problem of assigning a subset of k users as (seed nodes) in a graph that could maximize the spread of influence by maximizing the expected number of influenced users. It represents a key algorithmic problem in social influence analysis. In this study, centrality-based methods are utilized to select top k nodes of high centrality values. The degree centrality is used to select the opinion leaders, while the betweenness and Eigenvector centrality is used to select the early adopters. The degree discount (as a heuristic approach) is proposed to replace the Greedy algorithms applied in other studies to avoid the time complexity. A mixed diffusion model (replacing the linear threshold and independent cascade) is utilized to be main diffusion model in this study.

Keywords—Graph, Social networks, Influence Maximization, Information Diffusion, Seed nodes.

Earth Science and Geoscience Paper ID: 1570513969

Risk Assessment of Dangerous Natural Processes and Phenomena in Mining Operations

Elena Kulikova
Department Construction of Underground Structures and Mining Enterprises, De.Sc., Prof.
National University of Science and Technology MISIS,
Moscow, Russia
fraqrante@mail.ru

Abstract

One of the main factors that characterize the conditions of mining operations in the mines of the North of Russia is a sharp increase in the disturbance of ores and rocks in the exposed areas of minefields with increasing depth of development. The presence of permafrost, salt layers, aggressive and pressure groundwater, strongly fractured and prone to swelling rocks, significant tectonic disturbance of rock mass can lead to deformation of the lining. All this is associated with the emergence and development of geological and, above all, geodynamic risks. The main indicators of geological risk assessment, allowing to conduct a reasonable comparative analysis of possible emergencies and measures to prevent them, are differentiated and integrated characteristics of the specific economic and individual risk of loss for 1 year. Full values of such risks are used as additional indicators. The results of the geological risk assessment are the basis for determining the need, composition, sequence of implementation and socio-economic efficiency of measures to prevent natural emergencies caused by the development of geological hazards, as part of the project documentation. The paper is aimed on the investigation of geodynamic danger zone around ultra-deep shaft; the level of risk of its structural failure; the main parameters, control of which should be required in the construction of deep mine shafts in the permafrost and tectonic instability; monitoring of emergency situations during the whole period of the shaft existence.

KEYWORDS— *UNDERGROUND CONSTRUCTION, RISK, HAZARD, MONITORING, MINING OPERATION*

Earth Science and Geoscience Paper ID: 1570517549

Hydro Geopolitics of the Tigris and Euphrates

Nadhir Al-Ansari
Lulea University of Technology
Lulea, Sweden
nadhir.alansari@ltu.se

Abstract

Rivers Euphrates and Tigris are in southwest Asia. The main utilizers of the water of these rivers and tributaries are Turkey, Syria, Iran and Iraq. These rivers rise in Turkey, which makes it the riparian hegemon. Some of the tributaries of the Tigris and Shat Al-Arab Rivers rise in Iran, which makes it the riparian hegemon for these rivers. The lower countries in the catchments are Iraq and Syria and for this reason, they always to ensure the quantity of water required to satisfy their requirements. All these countries are in the Middle East (ME), which characterized by its shortage of water resources. Since the 1970s conflict between riparian counties were noticed due to shortage of available water required, high population growth rate and food security, energy requirements, economic and technological developments and political fragmentation. In addition, there is no public awareness program in all riparian countries and the water management practices are so old leading to high rate of losses. This caused tensions, which sometimes escalated to the verge of war. A mediator is required that is capable to bring all countries concerned to the negotiation table. Syria and Iraq are to give Turkey and Iran some incentives to cooperate. Furthermore, strategic plan based on comprehensive resources development to ensure good water management, minimum water loses, and waste must be adopted by the countries within the basins. This due to the fact that modeling studies of the future suggest that water shortage problem will intensify.

KEYWORDS— *HYDROLOGY, SHAT AL- ARAB, RIVER BASINS RISK, GEOGRAPHY*

Earth Science and Geoscience Paper ID: 1570523777

Dendroclimatological Analysis of Pinus Brutia Ten. Grown in Swaratoka, Kurdistan Region - Iraq

Tariq K. Salih
College of Agriculture
University of Duhok
Duhok, Kurdistan Region-Iraq
Tariq.k.salih@hotmail.se

Muzahim Saeed Younis
College of Agriculture
University of Duhok
Duhok, Kurdistan Region-Iraq
muzahimsaeedyounis@gmail.com

Salih T. Wali
College of Agriculture &
Forestry
University of Mosul
Mosul, Iraq
stwali@uod.ac

Abstract

It is well known that there is a strong relationship between the amount of precipitation and radial growth of the trees, but it is not known up to which extent they depends on each other. On the other hand, the data about the amount of precipitation is available from 1976 in Duhok governorate in general. One of the problems studied here is to estimate the quantity of the precipitation using the width of annual ring for the periods prior to 1976, in order to see the trend of rain and snow fall in the region. The data used in this study came from 387 sample pairs of precipitation and diameter growth. These data were undergone data processing for the purpose of developing of regression equations between the width of diameter growth as dependent variable and the amount of yearly precipitation as independent variables in regression equations. Accordingly, thirteen regression equations were developed; two of them were simple regression equations, one polynomial, and the rest of equations were nonlinear. These equations were undergone several measures of precision for the purpose of selecting the most appropriate one which fits our data set. Ultimately the non-linear regression equation: $D_q = 0.293781 + 0.0000371 \times p^{1.40698}$ was selected, with an adjusted R^2 of 76.22, standard error of estimate of 0.1283 and DW of 1.88 The selected equation can be used to estimate the amount of radial growth of a tree in the region by substituting the amount of precipitation in the equation.

KEYWORDS— *ANNUAL RING, DENDROCHRONOLOGY, PRECIPITATION, INCREMENT BORER, DIAMETER GROWTH*

Earth Science and Geoscience Paper ID: 1570524215

Application of Computational Fluid Dynamics in the Simulation of Carbon Monoxide Distribution, a Case Study: Sayad Underground Tunnel in Tehran

Hazhir Karimi
Department of Environmental Science Faculty of Science
University of Zakho
Zakho, Kurdistan Region-Iraq
hazhir.karimi25@gmail.com

Borhan Riazi
Department of Environmental Science Islamic Azad University
Tehran Branch, Iran
briazi@pmz.ir

Mokhtar Mahmoodi
Department of Mechanical Engineering
College of Engineering
University of Tehran
Tehran, Iran
mokhtar.ml370@gmail.com

Abstract

Vehicular emissions can easily contaminate the air quality of the traffic tunnel especially during traffic congestion or low vehicle speeds, which would pose serious health hazards to passengers and drivers. In this study, Carbon Monoxide (CO) concentration was simulated using a computational fluid dynamic inside the Sayad Tunnel in Tehran. Three-dimensional simulation of CO concentration was carried out to investigate the effect of tunnel geometry, the speed of the vehicles, the ventilation systems, and the fuel types using CFX. For making accurate simulating the geometry of the tunnel was divided into grids and transmitted to the Ansys CFX. The result showed that the maximum concentration of CO for the top and bottom floors were 47.13ppm and 42.47ppm respectively. These levels are not higher than the 8-hour standard limit (109 ppm) for human health. In conclusion, using a three-dimensional CFD model for CO simulation is a suitable method in particular in the closed spaces.

KEYWORDS— COMPUTATIONAL FLUID DYNAMICS, CO, SAYAD TUNNEL

Earth Science and Geoscience Paper ID: 1570525566

Land Use Land Cover Change in Zakho District, Kurdistan Region, Iraq: Past, Current and Future

Yaseen T. Mustafa
Department of Environmental Science
Faculty of Science
University of Zakho
Zakho, Kurdistan Region-Iraq
yaseen.mustafa@uoz.edu.krd

Dilovan Ramadhan Ismail
Department of Geography
College of Humanities
University of Duhok
Duhok, Kurdistan Region-Iraq
dilovanismail87@gmail.com

Abstract

Past and current status of the land is significant for productive environmental management. This can especially be observable in regions that are affected by climate variability and human activities such as Zakho district. The present study illustrates the spatio-temporal dynamics of land use/cover (LUC) in Zakho district, Kurdistan Region-Iraq. Moreover, an attempt is made to predict LUC of the study area for year 2050. Landsat satellite imageries of two different time periods, i.e., Landsat Thematic Mapper (TM) of 1989 and Landsat Operational Land Imager (OLI) of 2014 were acquired and the changes in Zakho over a period of 25 years were quantified. Maximum Likelihood Algorithm is used to classify the satellite image. The satellite images were classified into 8 classes namely dense forest, sparse forest, grass, rock, soil, crop, built-up and water body. The results showed that during the last 25 years, build-up land has been increased from 9 km^2 (1989) to 47 km^2 (2014). Crops, rocks and water body lands have been increased as well by about 97 km^2, 16 km^2, and 4 km^2 respectively. In other hand, dense forest, spare forest, grass and soil lands have been decreased by 93 km^2, 9 km^2, 52 km^2, and 1 km^2, respectively. In addition, the major transformed LUC for the year 2050 was soil by 0.9, and followed by the grass by 0.78. This study concluded that change in Zakho district land happened in a negative trend in regarding natural environment.

KEYWORDS— *LAND COVER CHANGE, REMOTE SENSING, GIS, ZAKHO*

Electrical Engineering Paper ID: 1570516205

Building a Noisy Multipath Channel Emulator for Single or Multicarrier Communication Systems

Ghadeer H. Eskandar
Department of Electrical Engineering
College of Engineering
University of Babylon
Hilla, Babylon, Iraq
qhadeermancy@yahoo.com

Ahmed N. Jabbar
Department of Electrical Engineering
College of Engineering
University of Babylon
Hilla, Babylon, Iraq
Ahmed_AlJafari@yahoo.com

Ibrahim A. Murdas
Department of Electrical Engineering
College of Engineering
University of Babylon
Hilla, Babylon, Iraq
dr.ibrahim_ba@yahoo.com

Abstract

This paper suggests a method for a cheap and easy to use practical multipath noisy channel emulator to evaluate a communication system. The circuitry for the channel are realized and implemented using the FPGA technology due to its flexibility and parallelism. The user can simply modify the design to meet the requirement for any channel without any complicated procedures using Simulink/System Generator package. Building such a test bench is crucial to examine the behavior of the communication system over the specified channel to inspect its efficiency and signal quality. This test bench can be used to study a complicated wireless communication system like the Orthogonal Frequency Division Multiplexing (OFDM). The OFDM is considered complicated compared to other single carrier systems because the OFDM symbol's power changes at every instance. Therefore, an efficient, cheap and flexible equipment are important to analyze the OFDM by the scholars who cannot afford the expensive laboratory equipment. The test bench can be, easily, modified to work with other single carrier systems. The flexibility of the suggested system comes from the simplified control bus (only 1 bit is required) and the generalized approach for the channel design to satisfy the necessities for various communication systems. The tested OFDM system has a 64 level QAM and 16 subcarriers. A gray scale image is used as a test data source transmitted over the ITU outdoor channel model.

Keywords— *Multipath, AWGN, Nonlinear channel, OFDM, Digital Communication Channel, FPGA, Single carrier channel*

Electrical Engineering Paper ID: 1570523322

Multi- Component Current Control of a Single Phase Power Converter: A Model Predictive Approach

Riyadh Toman Thahab
Electrical Engineering
Departement
University of Babylon
Hillah. Iraq
riyadhtomanth.toman@wmich.edu
eng.riath.toman@uobabylon.edu.iq

Abstract

In this work a single phase voltage converter is operated to supply controlled current components into a distribution grid utility. The approach is based on implementing a model predictive controller (MPC) for each component of current supplied by the converter to a multi-feeder grid. The feeders are considered to be loaded by linear and/ or no-linear loads. Current components from the grid and converter sides are determined. A number of model predictive controllers are implemented corresponding to each current component supplied by the converter. The component control is implemented as sinusoidal quantities without the need to perform transforms such as αβ/dq. To observe the effect of switching frequency for each component, the number of switch commutations are counted for each MPC. The results shows that a separate controller acting on each component can be feasible and provide flexibility in controlling the targeted current component.

KEYWORDS— *DISTRIBUTED ENERGY SOURCE, MODEL PREDICTIVE CONTROL, POWER CONVERTER*

A Survey of Routing Algorithms in Vehicular Networks

Hassan Hadi Saleh
College of Information Technology
University of Babylon
Babylon, Iraq
hassan@sport.uodiyala.edu.iq

Saad Talib Hasson
College of Information Technology
University of Babylon
Babylon, Iraq
Saad.aljebori@gmail.com

Abstract

Vehicular Ad hoc Network (VANET) is an advanced style and subcategory of a Mobile Ad hoc Network (MANET), the main objective of VANETs is to create an Intelligent Transport System (ITS). The routing in VANET has attracted many attentions during the last few years. Highly mobility of vehicles, irregular communication between the vehicles and the necessities of real time applications are some of the major challenges of multi-hop message delivery in VANETs. Because of the frequent changing topology of VANET it becomes difficult to route the packets effectively. In this research, we are focusing on the routing concept for the VANET i.e. principles for routing, decomposition of the routing function and requirement for Forwarding protocols unicast (Geographic based, Trajectory based and Link Stability based) and Probabilistic (Distance based) routing protocols in VANETs. To analyse the performance of the most suitable routing protocols and to determine the best efficient protocol for VANET environment.

KEYWORDS— *VANET, MANET, ITS, UNICAST, ROUTING*

Electronics and Communication Engineering Paper ID: 1570521038

Radiation Pattern of Spherical Slotted Antenna Coated by Dielectric Material and Plasma

O. Sh. Dautov
Electronics, radio engineering and communication systems
University of KAI
Kazan, Russia
dautov_kstu@mail.ru

M. S. Al-Abadi
Electronics, radio engineering and communication systems
University of KAI
Kazan, Russia
msmhhjk@yahoo.com

Riyadh Khlf Ahmed
College Of Engineering
University of Diyala
Diyala, Iraq
riyadhkhlf@gmail.com

Abstract

The interaction of the radio emission of the spherical slotted antenna coated by a dielectric material and a layer of plasma is analyzed numerically in this paper. By utilizing the Integra-functional equations method, the influence of plasma layer as a density and the influence of the dielectric shelter tangent are analyzed by MATHCAD. It is found that these parameters (plasma density and tangent dielectric cover) can cause in general changes in the directivity of the pattern and in special values can cause changes in the level of the radiation pattern.

KEYWORDS— *SPHERICAL SLOTTED ANTENNA; PLASMA; RADIATION PATTERN; TANGENT OF THE DIELECTRIC COVER; INTEGRA- FUNCTIONAL EQUATION*

Electronics and Communication Engineering Paper ID: 1570521044

MCRP: Multiple Chain Routing Protocol for Energy Efficiency in Homogeneous Wireless Sensor Networks

Husam Kareem
Directorate of Baghdad
Education Karkh 3
Ministry of Education of Iraq
Baghdad, Iraq
husam.kar@gmail.com

Shaiful Hashim
Faculty of Engineering
University Putra Malaysia
Selangor, Malaysia
sjh@upm.edu.my

Aduwati Sali
Faculty of Engineering
Universiti Putra Malaysia
Selangor, Malaysia
aduwati@upm.edu.my

Omer W. Taha
Department of Computer
Techniques Engineering
AlMustafa University College
Baghdad, Iraq
Omer.alfdani@gmail.com

Issraa J. Kazim
Department of Computer
Techniques Engineering
AlMustafa University College
Baghdad, Iraq
issraajwad555@yahoo.com

Shaimaa Shukri
Department of Computer
Techniques Engineering
AlMustafa University College
Baghdad, Iraq
shaimaa.shukri@yahoo.com

Abstract

Wireless sensor networks (WSNs) comprise a wide variety of applications. In most of the applications, the sensor nodes are distributed in a hostile area and nodes in WSNs are energy constrained, once it is installed, it would be difficult to recharge the energy source of those sensor nodes. There are many solutions that can be used to overcome the energy limitation issue and one of the main solutions is the routing algorithm used in the network. Routing algorithms in WSNs are responsible for maintaining and discovering the suitable routes in the networks. Therefore, this research presents a Multiple Chain Routing Protocol for Energy Efficiency in Homogeneous Wireless Sensor Networks (MCRP). The major objectives of the MCRP protocol are to increase the lifetime of WSNs by reducing the data transmission path to minimize energy consumption in WSN, and to maximize the network stability period by distributing the load evenly among all nodes. The MCRP works within two stages: the initialization stage and the data transmission stage. Simulation results demonstrate that the presented algorithm MCRP achieves its design goals and outperforms the existing work such as Chain-Chain based routing protocol (CCBRP), and Two-stage chain routing protocol (TSCP) algorithms in terms of Network lifetime, FND and LND (first node and last node died), Network stability period, and Energy consumption.

KEYWORDS— *ROUTING ALGORITHMS, WIRELESS SENSOR NETWORKS, NETWORK LIFETIME, ENERGY CONSUMPTION, LOAD MANAGEMENT*

Electronics and Communication Engineering Paper ID: 1570526362

Optimum Design for Campus Network with Efficient Rate of Delay and Throughput

Sulaiman M. S. Abduallah
Duhok Polytechnic University
Duhok, Kurdistan Region-Iraq
Sulaiman.Muhammed@dpu.edu.krd

Abstract

Information Communications Technology ICT Nowadays, has become a very important part of our life, due to its useful facilities and activities in various area. However, campus network has been considered as a branch of ICT applications that serve universities and institutes in communications and academic learning. Designing a useful network for campus leads to improvement of performance and scientific research of any university, through campus network new laboratories will be available, online library for books and software, as well as, building VoIP communications between the departments of universities. In this paper, a new campus network model has been proposed for Zakho university, Copper and fiber mediums were suggested as communication mediums, also. The designed network provides a number of services such as electronic mail (Email), web browsing, E-learning, and file transfer service. Each one is provided by a dedicated server at the data center of the university. The model is simulated by utilizing an OPNET simulator program (OPNT IT Guru 14.5) Network performance was evaluated in term of throughput, delay, and utilization with different load scenarios namely, (light load, medium load, and heavy load). The result showed that the proposed network is highly efficient even with heavy load scenario, resulted average throughput rate was more than 60Mbps without packet filtering technique while it was 50Mbps with packet filtering, whereas in current wireless Network , it is 2 Mbps Results showed that delay in the wireless mode is 72ms, while the wired test resulted of 13ms delay Furthermore, this model supports many network applications in future like voice over IP (VOIP) and (E-Learning).

KEYWORDS— *CAMPUS NETWORK, DESIGN, DELAY, THROUGHPUT*

Electronics and Communication Engineering Paper ID: 1570523608

A Planar Self-Complementary Fractal Triangular Antenna for UWB Applications

Yasser A. Fadhel
Electrical and Computer Engineering Dept.
University of Duhok
Duhok, Kurdistan Region-Iraq
yasser.fadhel@uod.ac

Haval N. Alsofi
Electrical and Computer Engineering Dept.
University of Duhok
Duhok, Kurdistan Region-Iraq
haval.alsofi@gmail.com

Abstract

Enhancement of planar triangular monopole antenna (PTMA) has been introduced here via applying the self-complementary principle on its first iteration fractal configuration to produce a self-complementary fractal triangular dipole antenna (SCFTDA). The modification suggested here is directly applied on a predesigned fractal PTMA to compare the efficiency of improvement of PTMA antenna by using each of these two different techniques; the fractal and self-complementary. Simulation results shown that the fractal design gives more resonating at 2.45 GHz, but almost the response at other frequencies hasn't been changed obviously. Unlike the SCFTDA antenna, which has a very clear improvement, especially at those frequencies above 3 GHz. This improvement enables that antenna to be used for UWB applications. The return loss curve of SCFTDA antenna has been reduced below the level of -10 dB for a range of frequencies start from 4 GHz to more than 11 GHz, which almost covers the entire UWB range (3.1-10.6 GHz) except the first 0.9 GHz of this band (3.1-4 GHz). This improvement extended to include the gain performance as well, which validates the overall improvement, and almost without affecting the omnidirectionality of its radiation pattern.

KEYWORDS— *UWB ANTENNA, SELF- COMPLEMENTARY, FRACTAL, PTMA, TRIANGULAR MONOPOLE*

Electronics and Communication Engineering Paper ID: 1570523739

Dual-band Millimeter-Wave Microstrip Patch Array Antenna for 5G Smartphones

Choman Khalid Ali
Communcation Department
Sulaimani Polytechnic University
Sulaimani, Kurdistan Region-Iraq
choman.ali@spu.edu.iq

Mohammed Hassan Arif
Information Technology Department
Duhok Polytechnic University
Duhok, Kurdistan Region-Iraq
mohammed.arif@dpu.edu.krd

Abstract

In this paper, we present a low-profile design for dual-band microstrip patch antenna array that works at millimeter wave band with resonance frequencies of 28 GHz, 24.9 GHz and bandwidths of 0.9 GHz, 0.3 GHz respectively. The design was simulated by CST software, where the peak gain of 8.42 dBi is achieved using a small array antenna size of dimensions "9mm*8mm*0.64mm" [Length*Width*Height]; this model can be a promising candidate for future 5G smartphones. Two series of substrates materials have been investigated and RO3210 has been selected due to its good performance with this design.

Keywords— *Fifth generation (5G), Millimeter- wave(mm- Wave), Smartphone, Microstrip antenna, Patch antenna, Array antenna,28 GHz, Bandwidth, Antenna gain.*

Information Security Paper ID: 1570524383

Video Information Hiding Based on Feature Points and Arnold Cat Algorithm

Younis M. Younis
Dept. of Computer Science
University of Zakho
Zakho, Kurdistan Region-Iraq
younis.younis@staff.uoz.edu.krd

Ramadhan J. Mstafa
Dept. of Computer Science
University of Zakho
Zakho, Kurdistan Region-Iraq
ramadhan.mstafa@uoz.edu.krd

Muhsin Atto
Dept. of Computer Science
University of Zakho
Zakho, Kurdistan Region-Iraq
muhsin.atto@uoz.edu.krd

Abstract

Information hiding has brought a lot of attention in recent years. In much of this research tasks, different techniques were considered where data could be prevented from stealing. This will avoid any possible risk it may happen to our data. Due to the challenges involved in designing different security algorithms using hiding based aspects such as the nature of wireless communication, literature has proposed new algorithms in order to increase the security of the data. Steganography has been used to hide data using media cover to deal with the right target. However, these techniques have different issues regarding the visual quality, capacity, and robustness. Based on this, we proposed a new method of steganography to make the balance between all factors by using the feature points. The proposed method also improves the layer of security for the hidden data due to applying Arnold Cat algorithm on secret message prior to the embedding stage.

KEYWORDS— *INFORMATION HIDING, STEGANOGRAPHY, CRYPTOGRAPHY, FEATURE POINTS, ARNOLD CAT.*

Information Security Paper ID: 1570513968

Prevention Techniques Employed In Wireless Ad-Hoc Networks

Ravi Tomar
School of Engineering & Technology
(Department of CS)
Shobhit Institute of Engineering &
Technology
Meerut, India
ravistcl@gmail.com

Yogesh Kumar Awasthi
School of Engineering & Technology
(Department of CS)
Shobhit Institute of Engineering &
Technology
Meerut, India
yogesh@shobhituniversity.ac.in

Abstract

The advancement of hardware technology, specifically in mobiles devices, has provided great computational power for running and creating sophisticated large programs such as, virtual reality, augmented reality and neural network based programs. Augmented reality (AR) is one of the finest and most exciting technologies nowadays. AR enables creating computerized objects and blending them with the real world. Which can be applied to enhance and simplify many aspects in a variety of disciplines. In result, instead of reading text and imagining experimentation it is possible to simulate the experiments through equipment and experiments as same as in real world scenarios, which can be much understandable and comprehensible. In the past decade, several institutions have adopted technological methods of teaching and learning. These instructional technologies can be used by some institutions that cannot provide enough time or proper equipment to students. This is where augmented and virtual reality are mostly favorable. In result, instead of reading text and imagining experimentation it is possible to simulate the experiments through equipment and experiments as same as in real world scenarios, which can be much understandable and comprehensible. In this paper, a model of an electric circuit is created to simulate the motion of electrons and how electric current runs through a wire and provides power for different tools. The creation of such a model involves design, modeling, simulation and animation of the model. This is done by relying on several software and frameworks such as Maya3D, Unity3D, ARKit, etc..

KEYWORDS— MANET, VANET, ARTIFICIAL BEE COLONY, GENETIC ALGORITHM.

Information Security Paper ID: 1570536963

Hybrid Method to Implement a Parallel Search of the Cryptosystem Keys

Sattar B. Sadkhan
Collage of IT
Babylon University
Babel – Iraq
drenqsattar@ieee.orq

Basim S. Yaseen
Collage of IT
Babylon University
Babel – Iraq
basiml78l4@qmail.com

Abstract

The current paper proposes a method to combine the theoretical concepts of the parallel processinq created by the DNA computinq and GA environments, with the effectiveness novel mechanism of the distinction and discover of the cryptosystem keys. Three-level contributions to the current work, the first is the adoption of a final key sequence mechanism by the principle of interconnected sequence parts, the second to exploit the principle of the parallel that provides GA in the search for the counter value of the sequences of the challenqe to the mechanism of the discrimination, the third, the most important and broadeninq the breakinq of the cipher, is the harmony of the principle of the parallelism that has found via the DNA computinq to discover the basic encryption key. The proposed method constructs a combined set of files includes binary sequences produced from substitution of the quess attributes of the binary equations system of the cryptosystem, as well as qeneratinq files that include all the prospects of the DNA strands for all successive cipher characters, the way to process these files to be obtained from the first character file, where extract a key sequence of each sequence from mentioned file and processed with the binary sequences that mentioned the counter produced from GA. The aim of the paper is exploitation and implementation the theoretical principles of the parallelism that providinq via biological environment with the new sequences recoqnition mechanism in the cryptanalysis.

KEYWORDS— *DNA COMPUTING, GA, CRYPTANALYSIS, INTERCONNECTED SEQUENCES, PARALLELISM, LFSR.*

Detecting Kissing Disbond Defect in Adhesively Bonded Structures: A Review

Fady E. F. Samann
Computer and Communications Engineering Department
Nawroz University
Duhok, Kurdistan Region-Iraq
fady.fathel@nawroz.edu.krd

Abstract

Presently, the industry is increasing the use of adhesive bonding of modern complex materials to build durable enhanced engineering structures. Materials such as GLARE, CFRP and GRP, which are complex multilayer materials used to lower the weight to size ratio, increase damage tolerance and improve fire and corrosion resistance. One of the defects that can be found in such structures is Kissing Disbond. This imperfection is explained as undeveloped disbond that has intimate contact with zero or near zero bond strength, which is relatively challenging to detect by conventional non-destructive testing methods. Due to the geometry and elusive nature of this defect, many researchers worked on detecting this defect using different techniques. This paper will review and discuss the most recent work that focused on detecting and fabricating test samples with this defect. It will emphasis on the work done on adhesively bonded structures. Significant attributes of these studies will be compared at the end of this work, while a background about the defect will be mentioned in the next section.

KEYWORDS— *KISSING DISBOND, NDT/NDI, ULTRASONIC WAVES, THERMOGRAPHY, SHEAROGRAPHY*

Shape Restoration of Deformed Egg-Shaped Single Layer Space Frames

Najmadeen Saeed
Civil Engineering Department
University of Raparin
Rania, Kurdistan Region-Iraq
Najmadeen_qasre@uor.edu.krd

Ahmed Manguri
Civil Engineering Department
University of Raparin
Rania, Kurdistan Region-Iraq
Ahmed.manguri@uor.edu.krd

Shna Abdulkarim
Civil Engineering Department
University of Raparin
Rania, Kurdistan Region-Iraq
Shna.jabar@uor.edu.krd

Ali Shekha
Civil Engineering Department
University of Raparin
Rania, Kurdistan Region-Iraq
Ali.Shekha@uor.edu.krd

Abstract

Egg-shaped single layer space frame structures have many applications among space structures. One of the advantages of egg-shaped geometry is its low ratio of surface area to volume as compared with other common geometries. They provide a unique solution for covering large spaces that seat on substructures, or as load bearing structures. They are economical and aesthetically pleasing in appearance as well as the architectural requirement, in which tolerances of structural shape under changing service conditions are vital. Due to the influence of load and fatigue, the outer face of the egg shaped single layer space frames may suffer big deformation, which leads to a significant potential undesired appearance of the shape. In this situation, the displacements may need to be reduced or eliminated. In this paper, two trials were made to static shape control of the structure to restore or limit displacements according to the desired target. In both attempts, the target displacement was the same but location of the actuations was different to show its impact of the efficiency of the work. The improvement was done via controlling nodal displacements of the theoretical model of the Egg-shaped single layer of space frame structures. This can be done through using a relatively simple and direct method previously derived by the author, via calculating required length actuations within a single formulation.

KEYWORDS— *EGG- SHAPED SPACE STRUCTURE, DEFORMATION, SHAPE CONTROL, SHAPE RESTORATION, ACTUATION & MODELS*

Mechanical and Industrial Engineering Paper ID: 1570524938

Experimental Investigation to Retrofit HCFC-22 Window Air Conditioner with R-407C

Ibrahim F. Abdulqadir
Refrigeration & A/C Department
Duhok Polytechnic University
Duhok, Kurdistan Region-Iraq
Ibrahim.fadilaldin@dpu.edu.krd

Badran M. Salim
Refrigeration & A/C Department
Northern Technical University
Mosul, Iraq
Badran.salim@ntu.edu.iq

Omar M. Ali
Department of Mechanical Engineering
University of Zakho
Zakho, Kurdistan Region-Iraq
Omar.ali@uoz.edu.krd

Abstract

In this paper, refrigerant R407c has been experimentally investigated to retrofit the refrigerant R22 in the existing systems. Window type air conditioner with capacity of 7.0 kW using R22 as working fluid has been selected to conduct the experimental work. The two refrigerants R22 and R407C have same operation conditions are selected in order to compare these thermal performances. The results showed that the refrigeration effect of R22 is higher than those for R407C. Consequently, the coefficient of performance COP of R407C is lower than R22. Also, the discharge temperature of the R407C is lower than those of R22. The pressure drop in the evaporator and condenser of the R407C less than those for R22. Moreover, the condensation temperature decreases along the length of the condenser coil for two refrigerants. The condensation temperatures for R22 is higher than the condensation temperatures of R407C at same ambient temperature. Finally, R407C can be considered as a suitable replacement for R22 with a slight variation in the performance with no need to change any part of the refrigeration system.

KEYWORDS— *R- 407C, PERFORMANCE, COOLING CAPACITY, COP, RE*

Numerical Simulation of Natural Convection and Radiation on Performance of Uniform Fins Geometry

Omar Rafae Alomar
Engineering Technical College of Mosul
Northern Technical University
Mosul, Iraq
omar.alomar@ntu.edu.iq

Qais Abid Yousif
Engineering Technical College of Mosul
Northern Technical University
Mosul, Iraq
kaisyusuf@ntu.edu.iq

Ibrahim Atiya Mohamed
Engineering Technical College of Mosul
Northern Technical University
Mosul, Iraq
ibams_1962@ntu.edu.iq

Abstract

In this work, numerical simulations of thermal processing in a uniform fin geometry have been investigated to evaluate the effect of adding the heat loss by radiation on the fin effectiveness. The heat transfer through the fin has been considered to be one-dimensional and under steady state condition. The mathematical formulations have been converted into dimensionless form and discretised by Finite Volume Method (FVM). The results obtained with and without including radiation effect have been compared. Numerical simulations of temperature distribution have been obtained for a uniform fin shapes with insulated fin tip. The effects of radiation heat transfer coefficient (N_R), convection heat transfer coefficient (N_C), fluid temperature (θ_f) and medium temperature (θ_s) have been investigated. The developed in-house code has been validated against the analytical solution, which definitely display that the numerical and analytical solutions are identical. The numerical results indicated that N_C, N_R, θ_f and θ_s strongly affect the temperature distribution. It has been found that the case of both radiation and convection dissipate more heat as compared with that obtained by only convection. For high fin base temperature and low surrounding temperature, the heat transfer by radiation becomes more significant and thus, sufficient consideration should be taken in the design of extended surfaces. Finally, the current analysis prove that is an effective means of fin design in order to enhance the heat dissipation.

KEYWORDS— *RADIATION, FINS, NATURAL CONVECTION, EXTENDED SURFACES*

Natural and Environmental Sciences Paper ID: 1570515812

A New Ecological Risk Assessment Method of Heavy Metals in Sediments and Soil

Emad Mohammed Salih Al-Heety
Department of Applied Geology
University of Anbar
Alrammadi, Iraq
salahemad99@gmail.com

Abstract

The aim of this work was to derive a new modified equation to assess the potential ecological risk (Er) of heavy metals in riverine sediments and soils. The new equation calculates the ecological risk (Er) in terms of the geoaccumulation index (Igeo). Six new equations were derived to assess the Er of Cd, Cr, Cu, Ni, Pb and Zn. The Er of heavy metals in sediments of the Euphrates, Iraq and the Tietê River, Brazil was assessed using the new equation. The Er was also assessed for the heavy metals in soils of Fallujah, Iraq and Tawkwa, Ghana. Results of application of the new equation were compared with those resulted from common equation (Hakanson's equation). Results of the comparison give credibilty to use the new equation for ecological risk assessment. The effect of the reference value and concentration of heavy metal on Er value was investigated.

KEYWORDS— METAL, POLLUTION, ECOLOGICAL RISK, SOIL, SEDIMENT

Natural and Enuironmental Sciences Paper ID: 1570515815

Potential Ecological Risk Assessment of Heavy Metals in Iraqi Soils: Case Studies

Emad Mohammed Salih Al-Heety
Department of Applied Geology
University of Anbar
Alrammadi, Iraq
salahemad99@gmail.com

Wahran Monem Saod
Department of Chemistry
University of Anbar
Alrammadi, Iraq
rose_wsh@yahoo.com

Abstract

The aim of this study is to estimate the potential ecological risk of heavy metals in soils in different cities, Iraq. The used data was obtained from previous published studies. The index of ecological risk (Eri) and index of the overall potential ecological risk (RI) were calculated employing Hakanson's methodology. Generally, the obtained results showed that Cd was the major contributor to the potential risk in soils of Baghdad, Basrah, Duhok, Erbil, Fallujah, and Kirkuk cities. In soils of Al-Nasiriya, Babylon and Haweqa cities, the major contributor to the potential risk is Ni element. The spatial distribution of the RI showed that heavy risk was recorded in Baghdad city soil and moderate risk in soils of Basrah, Duhok, Erbil and Kirkuk while the risk in soils of the other cities was light. The spatial distribution reflects impact of the anthropogenic activities as a source of the metal pollution of the soils. The results showed that the factor controlling the estimation of Eri was the reference level value of the metal and using different reference values leads to overestimation or underestimation of the Er and in turn RI. This work represents the first attempt to assess the ecological risk of heavy metal in Iraqi soils except Baghdad's soil.

KEYWORDS— *HEAVY METAL, POLLUTION, SOIL, ECOLOGICAL RISK, IRAQ.*

Natural and Enuironmental Sciences Paper ID: 1570517963

Improvement Viscosity Index of Lubricating Engine Oil Using Low Molecular Weight Compounds

Shinwar Ahmed Idrees
Faculty of Science
University of Zakho
Zakho, Kurdistan Region-Iraq
shinwar.idrees@uoz.edu.krd

Lawand Luqman Mustafa
Duhok Polytechnic University
Duhok, Kurdistan Region-Iraq
lawand.luqman@dpu.edu.krd

Sabah Sardar Saleem
Duhok Polytechnic University
Duhok, Kurdistan Region-Iraq
sabahsardar2022@qmail.com

Abstract

The effect of polarity of solvent on the viscosity and viscosity index of lubricating engine oil has been studied using ethanol as an example of polar solvent and toluene as an example of non-polar solvent at different solvent ratios and ambient temperature and additionally other experiments have been done at five different temperatures including 100 oC. So that, the activation energy of viscous flow (Ea) was calculated, and for this purpose Arrhenius viscosity-temperature dependence has been applied and the results were 42.128, 29.256 and 35.417KJ/mole for lubricating engine oil mixed with ethanol, toluene and no additives in turn. It additionally shows that adding polar solvent to lubrication engine oil viscosity increases this may be due to the fact of strong inter molecular forces that found in polar molecules such as hydrogen bonding in ethanol makes the solution forces stronger as a result higher viscosity. However, adding non-polar solvent decreases viscosity because of small size of toluene and both paraffinic lubricating oil and toluene have same London dispersion inter molecular forces. Last not least, the result shows that engine oil mixed with non-polar molecule gives more temperature stability than that of polar molecule giving viscosity index (VI) 366 and 580 respectively.

Keywords— *Engine Oil, Kinematic viscosity, Viscosity index*

Natural and Enuironmental Sciences Paper ID: 1570518764

Modeling the Effect of Reservoir Fluid Properties on Abundance of (H_2S) Evolved from Oil Wells and Dissolved in Reservoir Fluids

Ibtisam Kamal
Department of Chemical Engineering
Faculty of Engineering
Soran University
Kurdistan Region-Iraq
Ibtisam.kamal@soran.edu.iq

Keyvan Amjadian
Department of Petroleum Geosciences
Faculty of Science
Soran University
Kurdistan Region-Iraq
keyvan.amjadian@soran.edu.iq

Namam Salih
Department of Petroleum Geosciences
Faculty of Science
Soran University
Kurdistan Region-Iraq
namam.muhammed@gmail.com

Bryar Ahmad
Department of Petroleum Geosciences
Faculty of Science
Soran University
Kurdistan Region-Iraq
bryar.ahmad1985@gmail.com

Rebwar Haidar
Department of Petroleum Geosciences
Faculty of Science
Soran University
Kurdistan Region-Iraq
rebwar.haidar95@gmail.com

Abstract

Oil reservoirs are generally described by its main characteristics including its lithology and the pressure-volume-temperature (PVT) data. In reservoir engineering calculations, PVT data are essential to determine the reservoir fluid composition and design the production facilities. PVT data of 10 petroleum crude wells of Tawke field- Zakho are investigated in the current study. The data were analyzed to define the mathematical models correlate and govern the reservoir fluids properties as a function of sulfur compounds in term of (H_2S) evolved from the wells and dissolved in reservoir fluids. The results obtained showed that crude oils are classified as sour, and medium with high content of heavier fractions C6+ up to C14+ (average °API 23.4). The mathematical models explain the correlations were estimated. H_2S evolved and dissolved in reservoir fluids proved to increase with increasing sample depth, reservoir pressure and temperature, gas oil ratio, coefficient of compressibility at reservoir pressure, and decreases with increasing °API, viscosity at reservoir pressure and bubble point pressure, and gross heating value.

KEYWORDS— *PVT DATA, TAWKE FIELD, HYDROGEN SULFIDE, MATHEMATICAL MODELING*

Natural and Enuironmental Sciences Paper ID: 1570519396

Hydrocarbon Degradation of Oil Pipeline Blockage by Thermophilic Fungi Isolated from Tawke Field

Yousif A. AlBany
Nursing
Bardarash Technical Institute
Duhok Polytechnic University
Duhok. Kurdistan Region-Iraq
yousif.albany@yahoo.com

Anwer N. Mamdoh
Pharmacy
Duhok Technical Institute
Duhok Polytechnic University
Duhok. Kurdistan Region-Iraq
answed80@gmail.com

Mohammad I. Al-Berfkani
Medical Laboratory
Techniques
Zakho Technical Institute
Duhok Polytechnic University
Duhok. Kurdistan Region-Iraq
mohammad.said@dpu.edu.krd

Abstract

Recently major challenges facing oil industrials due to blockage of oil pipelines. Bioremediation technique was used for clearing the blockage of oil pipelines. Soil samples contaminated with Crude oil was collected from Tawke field in the Kurdistan Region of Iraq. Different strains of fungus were isolated from soil and estimated their hydrocarbon degradation efficacy. The fungal efficient for oil degradation was characterized by study their morphology and estimate their substrate utilization. The effect of following parameters such as Temperature, pH, the concentration of oil and NaCl on the efficiency of fungus was studied. The result found that Penicillium expansum has ability to degrade the crude oil at 10% concentration associated with 0.5% NaCl under microaerophilic environment in one week at 55°C at pH 7. The activity of biodegradation was confirmed by using Thin Layer Chromatography (TLC). It is one of the major advantage using Penicillium expansum in large scale production as these strains considered thermophilic strains which have merit over using Mesophilic strain due to less cost for cooling during production and minimize the contamination.

Keywords— *Oil pipeline blockage, Hydrocarbon degradation, Fungi, Thermophilic*

Using a Mix of Three Microbial Strains on Fermentation and Aerobic Stability of Grass Silage

Vahel Jaladet Taha
Department of Animal Production,
College of Agriculture
University of Duhok
Duhok, Kurdistan Region-Iraq
vahel.taha@uod.ac

Abstract

This study was conducted to investigate the effect of using a mix of Lactobacillus (L) plantarum, L. casei and Saccharomyces cerevisiae as silage inoculate to meadow grass on silage fermentation characteristics, silage quality and aerobic stability. A sample of Meadow grass (MG) was collected directly from the forage harvester during a first cut harvest. The fresh, chopped MG sample was divided into 2 equal portions and either treated with the test additive (EM) or received an equal volume of water [control]. The dosage of EM Silage was based on 80 ml per ton product [Table 1]. Samples were analysed statistically as randomise complete (1 x 2) design using an ANOVA procedure of Genstat 15. Ensiled sample was found to have lower dry matter (DM), crude protein (CP), water soluble carbohydrate (WSC) and yeasts count, and higher mould count compared fresh samples. Additionally, treating MG with EM increased concentration of total volatile fatty acids (tVFA), acetic and propionic acids and total alcohol by approximately (25%, 27%, 47%, 300% respectively) and reduced lactic acid by approximately13 % compared to control samples. Aerobic stability results showed that control MG treatment reached a temperature 3^0C above ambient in 6.8 days whereas the EM treated MG took approximately 14 days get to the same temperature after exposing to air. Therefore, using this mix of inoculate would enhance silage quality and protect silage from aerobic deterioration.

KEYWORDS— *SILAGE ADDITIVE, INOCULATE, LACTIC ACID BACTERIA*

Natural and Enuironmental Sciences Paper ID: 1570521338

Electrochemical Degradation of Alizarin Black Dye in Aqueous Medium Using Fe/Al Electrode

Haydar A. Mohammad Salim
Faculty of Science
University of Zakho
Zakho, Kurdistan Region-Iraq
hayder.Salim@uoz.edu.krd

Shinwar Ahmed Idrees
Faculty of Science
University of Zakho
Zakho, Kurdistan Region-Iraq
shinwar.idrees@uoz.edu.krd

Sabir Ayob Mohammed Salih
Faculty of Science
University of Zakho
Zakho, Kurdistan Region-Iraq
sabir.mohammed@uoz.edu.krd

Revinq Abdulazeez Rashid
Faculty of Science
University of Zakho
Zakho, Kurdistan Region-Iraq
revinq.rashid@uoz.edu.krd

Abstract

This work investigates the electro-catalytic degradation of alizarin black dye in an electrochemical cell using Fe as anode and Al as cathode. The influence of initial dye concentration, effect of salt, pH, change of temperature and effect of change of applied voltage have been studied in addition, the influence of semiconductor dose has studied as well. In the current work roughly total removal of 70 mg/L of dye occurred in 16 min only. The results showed that effect of both electrolyte concentration and applied voltage was positive if combined together and the rate of degradation in neutral medium was the best for degradation of Alizarin black dye.

KEYWORDS— *ELECTRO CATALYTIC OXIDATION; ALIZARIN BLACK DYE; SEMICONDUCTORS*

Gastrointestinal larval nematodes on pastures grazed by small ruminants of Duhok area

Adnan M. Abdullah Al-Rekani
Department of Animal Production
College of Agriculture
University of Duhok
Duhok, Kurdistan Region-Iraq
adnanrekani@uod.ac

Ronak Abdulaziz Meshahbaz
Department of Environment
Faculty of Science
University of Zakho
Zakho, Kurdistan Region-Iraq
ronak.meshabaz@uoz.edu.krd

Abdulrehman Abdulhamid Yousif
Department of Animal Production
College of Agriculture
University of Duhok
Duhok, Kurdistan Region-Iraq
abdulrahmanayousif@gmail.com

Fatah Majeed Khalaf
Department of Animal Production
College of Agriculture
University of Duhok
Duhok, Kurdistan Region-Iraq
fatah.khalaf2112@gmail.com

Abstract

The aim of the present study was determining the contamination and prevalence of gastrointestinal (GI) nematodes larvae on pastures permanently grazed by sheep and goats in different areas of Duhok province under the climate of the spring season. Samples of herbage were collected from different pastures and the larvae were identified and then counted. Out of 144 herbage samples, 89 (61.81%) were found positive in all selected areas during the three months (March, April and May). Significant differences ($p<0.05$) in contamination rates and pasture larvae count were observed among the months of study whereas they did not significant among the study areas. The most favorable environmental conditions for survival and development of nematodes larvae on pasture were found in April and followed by March. Also, a significant correlation was observed between environmental variables and pasture larvae three-stage count (PL_3C). It can be concluded that changes in environmental conditions among the months of spring season have a significant effect on the contamination of GI nematodes larvae in different grazing pastures of Duhok province. These results could be beneficial in planning control program of nematodes parasites.

KEYWORDS— *CONTAMINATION, NEMATODE, LARVAE, PASTURE, SHEEP, AND GOATS*

Natural and Enuironmental Sciences Paper ID: 1570521360

Determination of Dissociation Constants of Malonic Acid in (Ethylene glycol-Water)X% Mixed Solvent at Different Temperatures Using Electromotive Force Measurements

Soleen Saeed Ahmed
Department of Chemistry
University of Zakho
Zakho. Kurdisatn Region-Iraq
soleen.saeed@uod.ac

Lazgin A. Jamil
Department of Chemistry
University of Zakho
Zakho. Kurdisatn Region-Iraq
Lazgin.jamil@uoz.edu.krd

Abstract

The first and second dissociation constants $(pK_1 \& pK_2)$ of malonic acid in different composition of (ethylene glycol-water)%. (10. 20 and 30)%. mixed solvent determined using the electromotive force measurements of galvanic cells without liquid junction at nine different temperatures. $(278.15 - 318.15)K$ at 5° interval. including the body temperature. The value of the first and second thermodynamic dissociation constants have been used to determine the thermodynamic quantities of two dissociation processes. These quantities involved the standard free energy. ΔG^0, standard enthalpy change. ΔH^0, standard entropy change. ΔS^0, and standard heat capacity change. $\Delta {C_p}^0$.

KEYWORDS— *ELECTROMOTIVE FORCE, THERMODYNAMIC DISSOCIATION CONSTANT, MALONIC ACID, ETHYLENE GLYCOL- WATER MIXED SOLVENT, AND THERMODYNAMIC QUANTITY*

Extracting Cellulose Fibers from Rice Husks to Prepare a pH Sensitive Hydrogel with Sodium Alginate

Alarqam Zyaad Tareq
Department of Chemistry
Faculty of Science
University of Zakho
Zakho, Kurdistan Region-Iraq
Alarqam.tareq@uoz.edu.krd

Mohammed Salim Hussien
Department of Chemistry
Faculty of Science
University of Zakho
Zakho, Kurdistan Region-Iraq
mohammed.huseein@uoz.edu.krd

Asaad Mohammed Mustafa
Department of Chemistry
Faculty of Science
University of Zakho
Zakho, Kurdistan Region-Iraq
Asaad.mustafa@uoz.edu.krd

Ahmed Raoof Mahmood
Department of Medical
Imam Ja'far Al-Sadiq University
Kirkuk, Iraq
ahmedbayati189@gmail.com

Abstract

In this paper, pH-sensitive hydrogels were prepared and developed from cellulose fibers extracted from rice husks with sodium alginate by using a double cross-linker. Cellulose fibers extraction process was carried out by alkaline and bleaching treatment. Cellulose fibers were used in variable quantities to investigate their effects on swelling degree. The resulted hydrogels showed a very strong swelling (1785-2718%) in phosphate buffer solution (pH 7), good swelling (776-1195%) in pH 10, and less swelling (81-124%) in pH 4. All of these swelling degrees and more properties of the resulted cellulose fibers and hydrogels were tested and evaluated via some techniques like Infrared spectroscopy (ATR), thermal analysis (TG, DTG, DSC, and DTA), and Scanning electron microscopy (SEM). These results show that cellulose/alginate hydrogels could provide many possible applications in the biomedical, and purification of the wastewater by adsorbing pollutants.

KEYWORDS— *CELLULOSE FIBERS, PH-SENSITIVE, HYDROGEL, RICE HUSKS, SODIUM ALGINATE.*

Extraction of Hydrogen Sulfide from Water of Duhok Dam by Industrial Open Pilot Plant

Salah A. Naman
Department of Chemistry
Faculty of Science
University of Zakho
Zakho. Kurdisatn Region-Iraq
salah.naman@uoz.edu.krd

Lazgin A. Jamil
Department of Chemistry
Faculty of Science
University of Zakho
Zakho. Kurdisatn Region-Iraq
Lazgin.jamil@uoz.edu.krd

Abstract

Hydrogen sulfide is very poisons gas it should be extracted from water and decomposed it to pure sulfur and clean Hydrogen fuel. We had been done the extraction of this gas in Black Sea using two types of pilot plants. This paper will focus on the extraction of low concentration of hydrogen sulfide (H2S) from Duhok Dam. Survey for the concentration of this gas is low (0.1 – 5 ppm) at different depth and region of the Dam that may be due to natural sulfur cycle of reducing and oxidizing bacteria in this dam. According to Le Chatelier's principle the equilibrium concentration of H_2S gas is about 0.5 ppm at depth of 15 meter. A novel physical extraction method based on Henry's law have been done outside water for stripping H_2S completely from Dam water by special open pilot plant with tower at height between 10 to 15 meters depending on the location of plants on the Dam producing cheap and continuous clean water free of H_2S.

KEYWORDS— *EXTRACTION, H_2S, DUHOK DAM WATER, OPEN PILOT PLANT*

Natural and Enuironmental Sciences Paper ID: 1570516072

The Incidence of Intestinal Parasites among Children in Hivi Pediatric Hospital, Duhok, Kurdistan Region-Iraq

Jehan Nori Hussein
Department of Pharmacy
Duhok Technical Institute
Duhok Polytechnic Univercity
Duhok, Kurdistan Region-Iraq
jehannoori@yahoo.com

Azad Abdullah Meerkhan
Department of Nursing
Duhok Technical Institute
Duhok Polytechnic Univercity
Duhok, Kurdistan Region-Iraq
azad.meerkhan@dpu.edu.krd

Abstract

This study has conducted in Hivi Pediatric Hospital, Duhok Province, Iraq, to estimate the gastrointestinal parasites infection among patients contacted this hospital. Overall patients, 22.27% (261/1,172) were diagnosed as infected by parasites; more of them were from summer season with the infection rate of 24.83% (216/870) versus 14.90% (45/302) in autumn, rural residence had a greater rate of infection 65.90% (172/261) as compared with urban residence 34.09 (89/261), males were more infected than females (63.98% versus 36.02% respectively), the age group of three years and less had the highest rate of infection, while the age group of more than 9 years had the lowest rate (57.85%, 4.98% respectively). Concerning the children feeding way, the artificially feeding had the highest rate then mixed feeding and Breastfeeding (58.16%, 25.53% and 16.31% respectively). As general, the infection with protozoa (84.67) was higher than helminthes (18.01%) with some cases of infection by both of protozoa and helminthes (4.98). Regarding each parasite separately, Entamoeba histolytica had the highest infection rate then Giardia lamblia,, Enterobius vermicularis, Cryptosporidium Spp,, Entamoeba coli and Blastocystis hominis (38.70%, 25.67%, 18.01, 9.20%, 6.51 and 4.60 respectively).

Keywords— *Children Infection, Protozoa, Helminthes, Parasitic Infection, Gastrointestinal Infection*

Kinetic of Ascorbic Acid Dissolution in Local Pomegranate Juices

Rajab Ibrahim Hameed Doski
Department of Medical Lab Technology
Duhok Technical Institute
Duhok Polytechnic University
Duhok. Kurdistan Region-Iraq
rajab.ibrahim@dpu.edu.krd

Abstract

This research was conducted to examine the impact of storage house time and storage house temperatures on ascorbic acid dissolution in pomegranate juice. The juice of pomegranate stored at the temperatures 15,25 and 35 C^0 for four months. Outcomes noted that in the case of rising temperature and period storage house let to reducing the ascorbic acid content. The results of ascorbic acid dissolution kinetic parameter showed that the order of the reaction is first and there was an increasing in rate constant (K) in the case of increasing the storage house temperature. Also, the half time decreased with increasing the temperature of storage house. It was found that the shelf life of all samples decreased with increasing the storage house temperatures and storage house period.

KEYWORDS— *POMEGRANATE, ASCORBIC ACID, KINETIC, ACTIVATION ENERGY, DISSOLUTION*

Pure and Applied Sciences Paper ID: 1570503138

Improvement of the Efficiency of Dyed Mono Crystalline Silicon Solar Cell by Covering it with Natural Plants Pigments

Aseel Mohammed Ali Zakar
Department of Physics
College of Science
University of Duhok
Duhok, Kurdistan Region-Iraq
Intoscience77@gmail.com

Salah A. Naman
Department of Chemistry
Faculty of Science
University of Zakho
Zakho, Kurdisatn Region-Iraq
salah.naman@uoz.edu.krd

Sabah M. Ahmed
Department of Physics
College of Science
University of Duhok
Duhok, Kurdistan Region-Iraq
sabma62@uod.ac

Abstract

A new model of dyed silicon solar cell has been designed from a bared mono-crystalline silicon cell. The current-voltage (I-V) characterization of the cell is performed with standard artificial solar radiation. The solar cell is connected with four prop computerized Source-Measure Unit (SMU) for Auto- measuring efficiency of our cells. Measurements have been done at stable solar radiation intensity, constant temperatures (25° C), using different cell's area, and different natural plant pigments. Monitoring of the efficiency of solar cell with layer of pigments have been done with different period of time (20 days), an increase in the efficiency (up to 50%) has been found for some pigments, and botanical scientific name of the plants found. This research work is based on photo-electrochemical processes in dye sensitized solar cells (DSSC) field but in a very attainable method. Different silicon blank cells washed with solvents and covered with large number of different plant pigments as a thin layer. Efficiency has been optimized automatically by SMU as a result of changes in efficiencies as a function of physical variable, stability of dyes with irradiation time. Only Stable pigments with highly efficiency is studied in this research as it might be technologically applicable.

KEYWORDS— *SENSITIZED SILICON SOLAR CELLS FLOWERS, PLANTS PIGMENTS, EFFICIENCY*

Pure and Applied Sciences Paper ID: 1570513422

New Types of Pattern Formations in a New Reaction-diffusion Model Using Numerical Methods

Shaker Mahmood Rasheed
Department of Mathematics
Faculty of Science
University of Zakho
Zakho, Kurdistan Region-Iraq
Shaker.rasheed@uoz.edu.krd

Abstract

Pattern formations as mathematical models are grows significantly and the development in subject analysis and the type of mathematical tools offer a wide range in the research aspects. The paper shows results and analysis for a novel reaction-diffusion model which has unstable features and satisfy the Turing instability conditions when the diffusion coefficient becomes large enough. Two methods are used to analysis this model, namely semi-implicit finite different method and the analysis Finite element method with utilize of COMSOL Multiphysics software. The conditions of diffusion-driven instability are shown and the effect of diffusion coefficient in changing the state of the model to be unstable is explained. Travelling wave solutions for this model in one dimension are founded and compared using the mentioned two methods. Finally, pattern formations for this model are shown in two dimensions and for different values of diffusion coefficients.

KEYWORDS— *REACTION-DIFFUSION, FINITE DIFFERENT METHOD, PATTERN FORMATION, FINITE ELEMENT METHOD*

Soft J_s-Spaces and Strong Soft J_s-Spaces

Ramadhan A. Mohammed
Department of Mathematics
College of Basic Education
University of Duhok
Duhok, Kurdistan Region-Iraq
ramadhan.hajani@uod.ac

Osama R. Sayed
Department of Mathematics
Faculty of Science
University of Assiut
Assiut-Egypt
o_sayed@aun.edu.eg

Abstract

The current paper aims at studying soft J_s-spaces and strong soft J_s-spaces. It focuses on two related classes of spaces with certain basic defining features. The results indicate that in closed and perfect functions, soft J-spaces have natural categorizations. Furthermore, we prove that soft J_s-spaces and strong soft J_s-spaces coincide in the presence of soft local connectedness.

KEYWORDS— *SOFT J_s- SPACES AND STRONG SOFT J_s- SPACES*

Pure and Applied Sciences Paper ID: 1570522239

Study of Optical Properties of a Pinhole Nanorod

Pshtiwan M. A. Karim
Department of Physics
Faculty of Science
University of Zakho
Duhok, Kurdistan Region-Iraq
pshtiwan.karim@uoz.edu.krd

Shaker Mahmood Rasheed
Department of Mathematics
Faculty of Science
University of Zakho
Zakho, Kurdisatn Region-Iraq
shaker.rasheed@uoz.edu.krd

Diyar ahmed Sayb Sadiq
Department of Physics
Faculty of Science
University of Duhok
Duhok, Kurdistan Region-Iraq
diyar.sadiq@uoz.edu.krd

Abstract

In this paper, the optical properties of a pinhole nanorod are studied using finite element package (COMSOL Multiphysics). Both electric and magnetic field distribution for different radius of a hollow nanorod and variable pinhole position has been measured. Furthermore, the scattering cross-section for both fields is calculated. The magnetic field enhancement has been increased by adding a pinhole made of air. The magnetic field enhancement improved 20 percent. In case of scattering cross-section, the response is changed as a function of the pinhole position and diameter. The results provide the ability to tune optical properties through an appropriate geometric feature of the nanorods.

KEYWORDS— *PINHOLE NANORODS, ELECTRIC AND MAGNETIC FIELD ENHANCEMENT, SCATTERING CROSS SECTION*

About us

Conference Organizers

University of Zakho

The University of Zakho (UoZ) dates back to the year 2005 and within the framework of the directives and concerns of his excellency Masoud Barzani, president of the Kurdistan Regional Government (KRG), and Mr. Nechirvan Barzani, prime minister of the KRG, made a decision to lay the foundation stone of the College of Education and the College of Commerce in a university campus in Zakho city. On 8th of July 2010, a formal order was issued to establish a university in Zakho by the presidency of the council of ministers in KRG. Currently, UoZ has three faculties and four colleges, and has up to 7717 students with 408 academic staffs and about 600 employees.

UoZ is interested in the development and provision of all the scientific requirements of each department in addition to the application of the scientific quality assurance. UoZ formed a program to help raise the scientific level according to international standards through the development of the program, the implementation of health instruction and to sustain the application of science and quality assurance. UoZ, since its establishment, tries to have an effective role in the service of the society and improve the quality of the education so that it could become one of the leading universities in Kurdistan Region. Accordingly; in the academic year (2017-2018), the university adopted a new system of education using European Credit Transfer and Accumulation System (ECTS) that is so called "Bologna Process (BP)". This process contains pioneering lessons which can be utilized by the university to have more benefits for the students.

DUHOK POLYTECHNIC UNIVERSITY

Duhok Polytechnic University (DPU) is a public university which was established in 2012, and descended from the oldest Technical Institute in Duhok with more than 19558 graduates. It is one of the three polytechnic universities of Kurdistan Region Government following the instructions of Minister of Higher Education and Scientific Researches. The university continued to grow and now it is made up with six colleges and eight institutes in seven different campuses.

DUP offers a wide range of curricula leading to Diplomas (Associate Degrees) and Bachelor of Science Degrees. The course syllabi are set and developed under the oversight of Quality Assurance. DPU has unwavering commitment to academic improvement. Therefore, it has established relationships with international universities through MOU's and international partnership with many effective worldwide known programs that enhance university academic level. A very crucial step is now in progress which is practicing European Credit Transfer and Accumulation System (ECTS) for the upcoming study year 2019–2020, this system helps to make learning more student–centered.

Conference Committees

Conference Honorary Chairmen

- Asst. Prof. Dr. Lazgin A. Jamil. (President of University of Zakho)
- Prof. Dr. Adnan M. AbdulAzeez (President of Duhok Polytechnic University)

Conference Co-Chairmen

- Dr. Yaseen T. Mustafa. (University of Zakho – IEEE Iraq Section)
- Dr. Subhi R. Mohammed (Duhok Polytechnic University – IEEE Iraq Section)
- Dr. Nidaa A. Abbas (SMIEEE-Chair of IEEE Iraq Section, Iraq)
- Dr. Karwan Jacksi (University of Zakho – IEEE Iraq Section)

Conference Secretariat

- Dr. Dler A. Jameel (University of Zakho)
- Dr. Ismael A. Ali (University of Zakho)

International Scientific Committee

- Dr. Sattar B. Sadkhan – Babylon University – Iraq
- Dr. Ali Shehrbaz – University of Northampton-UK
- Dr. Fanq Wanq – Brunel University- London – UK
- Dr. Ibrahim Omary – Kinq Abdulaziz University- Saudi Arabia
- Dr. Raad S. Fayath- Al-Nahrain University –Iraq
- Dr. Özen ÖZER- Kırklareli University, Turkey
- Dr. Stefano Breqni- IEEE Communications Society- Italy
- Dr. M. V. Ramana Murthy- Osmania University- India
- Dr. Eva Volna- University of Ostrava, Czech Republic
- Dr. Salah Naman – University of Zakho – Iraq
- Dr. Sideeq Y. Ameen – Duhok Polytechnic University – Iraq

National Scientific Committee

- Dr. Yaseen T. Mustafa – University of Zakho – IEEE Iraq Section
- Dr. Subhi R. Mohammed – Duhok Polytechnic University – IEEE Iraq Section
- Dr. Zeerak Azizkhan Ahmed – Duhok Polytechnic University
- Dr. Karwan Jacksi – University of Zakho – IEEE Iraq Section
- Dr. Yasser Ahmed Fadhil – University of Duhok
- Dr. Siddeeq Yousif Ameen – Duhok Polytechnic University
- Dr. Wijdan Mohamed Salih Mero– University of Zakho
- Dr. Mahde Saleh Assafi – University of Zakho
- Dr. Kanaan Ramadan Ahmed – University of Zakho
- Dr. Hariwan Zikri Ibrahim – University of Zakho
- Dr. Shamil K. Talal – University of Zakho
- Dr. Hussien Ismael Salim – University of Zakho
- Dr. Dler Adil Jameel – University of Zakho
- Dr. Omar Mohammed Ali – University of Zakho
- Dr. Abdul Almir Saham Rsan – Duhok Polytechnic University
- Dr. Razwan Mohammed Saleh – University of Duhok
- Dr. Nawzat Sadiq Ahmed – Duhok Polytechnic University
- Dr. Ezdeen Hasso – Duhok Polytechnic University
- Dr. Lokman H. Hassan – University of Duhok

Technical Program Committee

- Dr. Sattar B. Sadkhan – University of Babylon– IEEE Iraq Section
- Dr. Abdulhameed Sulaiman Dhahir – University of Zakho
- Ms. Sabiha F. Jawad – Al-Mustansyriah University – IEEE Iraq Section
- Dr. Farqad Raheem– North Technical University – IEEE IRAQ Section

- Dr. Abdul Hadi Alaidi – Wasit University – IEEE IRAQ Section
- Dr. Ruma K. Ajeena– University of Babylon – IEEE IRAQ Section
- Dr. Rusul S. Bader – Razi University – IEEE Iraq Section
- Dr. Rang M. Nori – University of Zakho
- Dr. Dhyae Mustafa Sulaiman – Duhok Polytechnic University
- Dr. Adel S. Eessa – University of Zakho
- Dr. Idrees Sarhan Hussein – Duhok Polytechnic University
- Dr. Ramadhan J. Mstafa – University of Zakho
- Dr. Maiwan Bahjat Abdalrazaaq – University of Zakho
- Dr. Yousif M. Fatah – University of Zakho
- Dr. Alya Adel Dawood – University of Zakho
- Dr. Masoud Abdulkareem Abdulrahman – Duhok Polytechnic University
- Dr. Masoud Muhammed Hassan – University of Zakho
- Dr. Ammar Isam Idrees – Duhok Polytechnic University
- Dr. Musaab Salman Sultan – Duhok Polytechnic University
- Dr. Ramadhan H. Sulaiman – University of Zakho
- Dr. Mohammed Taher A. Mohsin – Duhok Polytechnic University
- Mr. Faris H. Yousif – University of Zakho
- Dr. Ayad M. F. Al-Quraishi – Knowledge University
- Dr. Dildar H. Ahmed – University of Zakho
- Mr. Renas Issa Mohammad – University of Zakho
- Dr. Alessandro G. Labella – University of Genoa
- Dr. Daniele Mestriner – University of Genoa
- Dr. Mohammed A. Shakir – University of Duhok
- Dr. Mohammed Basil Shukur – Duhok Polytechnic University
- Dr. Wathiq Mohammed Ali – Duhok Polytechnic University

- Dr. Khalaf Salloum Gaeid – Tikrit University
- Mr. Haval Sediq – Duhok Polytechnic University

Organizing Committee

- Dr. Salah A. Akreyi – Duhok Polytechnic University
- Dr. Zeerak Azizkhan Ahmed – Duhok Polytechnic University
- Dr. Sattar B. Sadkhan – University of Babylon – IEEE Iraq Section
- Dr. Yaseen T. Mustafa – University of Zakho – IEEE Iraq Section
- Dr. Rajab Ibrahim Hamid – Duhok Polytechnic University
- Dr. Maher Khild Ali – University of Zakho
- Dr. Lokman A. Abdulkareem – University of Zakho
- Dr. Jamal Ali Hasan – Duhok Polytechnic University
- Dr. Dhia M. Sulaiman – Duhok Polytechnic University
- Dr. Manhal Elham Abdaal – Duhok Polytechnic University
- Dr. Karwan Jacksi– University of Zakho – IEEE Iraq Section
- Ms. Sabiha F. Jawad – Al-Mustansyriah University – IEEE Iraq Section
- Mr. Ebrahim Ababakir Ali – Duhok Polytechnic University

Coordinating Committee

Financial:

- Dr. Salah A. Akreyi – Duhok Polytechnic University
- Mr. Sami A. Azab – University of Zakho
- Mr. Easa Y. Salman – University of Zakho
- Mr. Omeed M. Ibrahim – Duhok Polytechnic University
- Mr. Muhammed A. Abduljabbar – Duhok Polytechnic University

- Mr. Hija ghazi Mohamad – Duhok Polytechnic University
- Mr. Salam Rasheed Fathi– Duhok Polytechnic University
- Mr. Ozbaq Abdalilah Abdulqadir – Duhok Polytechnic University
- Mr. Hakar Mohamad Saleem– Duhok Polytechnic University

Administrative:

- Dr. Salah A. Akreyi – Duhok Polytechnic University
- Mr. Dilovan A. Salman – University of Zakho
- Dr. Ahmad Noh Taha – Duhok Polytechnic University
- Mr. Sardar H. Ali – University of Zakho
- Mr. Zuhir Omar Ahmed – Duhok Polytechnic University

Reception:

- Dr. Bann A. Dawood – University of Zakho
- Mr. Mohamad Abdulqadir Salih – Duhok Polytechnic University
- Mr. Diyar N. Saeed – Duhok Polytechnic University
- Mr. Sardar S. Khalil – University of Zakho
- Mr. Sarbast Husain Ali – Duhok Polytechnic University
- Ms. Rojan Tahseen Ismael – Duhok Polytechnic University
- Ms. Muhaj T. Abdullah – University of Zakho
- Ms. Rojeen Y. M. Saleem – Duhok Polytechnic University
- Ms. Diyar Evdi Hasan – University of Zakho
- Mr. Hoqir Anwer Sadeeq – Duhok Polytechnic University
- Mr. Muhammad A. Ahmad – Duhok Polytechnic University
- Ms. Kavar D. Salahaddin – University of Zakho
- Ms. Dlvin Hamid Mohamood – University of Zakho
- Ms. Lulav Nazar – Duhok Polytechnic University
- Ms. Awaz Shukri Ismaeel – Duhok Polytechnic University

Announcement/Publishing/Website Committee:

- Dr. Karwan Jacksi. – University of Zakho – IEEE Iraq Section
- Mr. Omer Mohamad Salih – Duhok Polytechnic University
- Mr. Abbas S. Bader – Iraqia Media Institute – IEEE IRAQ Section
- Mr. Fayiz Saeed Fayzi – Duhok Polytechnic University
- Mr. Husen Y. Husen – University of Zakho
- Mr. Banqin Sisen Ahmed – Duhok Polytechnic University
- Mr. Ali Mohamod Mohamad – Duhok Polytechnic University
- Mr. Shivan A. Havand – University of Zakho
- Mr. Sarkaft Rasheed Salman – Duhok Polytechnic University
- Mr. Ahmed Alaiady – Kirkuk – IEEE IRAQ Section
- Mr. Sarbast Husain Ali – Duhok Polytechnic University
- Mr. Raid J. Mahmood – University of Zakho

Services Committee:

- Mr. Zuhair Omer Ahmed – Duhok Polytechnic University
- Mr. Araz Rasheed Ebrahim – Duhok Polytechnic University
- Mr. Hija Ghazi Mohamad – Duhok Polytechnic University
- Mr. Dara Suliman Mustafa – Duhok Polytechnic University

Quality assurance committee:

- Mr. Islam Salih Taha – University of Zakho
- Ms. Shelir Ahmed Ibrahim – Duhok Polytechnic University
- Ms. Safa Subhi Ibrahim – University of Zakho
- Mr. Mohamad Abdulrazaq Mohamad – Duhok Polytechnic University
- Mr. Karzan Awnio Abdeljabar – Duhok Polytechnic University

Author Index

Conference Sponsors

ICOASE
International Conference on Advanced Science and Engineering
www.icoase.org

2nd INTERNATIONAL CONFERENCE ON ADVANCED SCIENCE AND ENGINEERING

Website

icoase2019.uoz.edu.krd
icoase2019.dpu.edu.krd

Email

icoase2019@uoz.edu.krd