



Republic of Iraq
Ministry of Higher Education
and Scientific Research
Al Hikma University College



1st Al Hikma International
Conference on Natural
and Applied Sciences - HICNAS

**Under the Slogan of
The Effect of Natural and Applied Researches
on Sustainable Development**

14-15 May 2022
Al Hikma University College
Baghdad - Iraq

كلية الحكمة الجامعة

**1st Al Hikma International Conference on Natural
and Applied Sciences - HICNAS**



HiUC Dean's Message



Prof. Dr. Mazin Sameer Al Hakeim
Dean of Al Hikma University College
Baghdad – Iraq
dean@hiuc.edu.iq

Once Steve Jobs said “Let’s go to invent tomorrow” ...

Dear Online Attendances

Honor guests, Minister of Higher Education and scientific Research Representative
University Presidents and Deans of University Colleges

IEEE – Iraq Chapter Representative

Distinguished Speakers

Colleagues, Friends

Ladies and Gentlemen

A good day to you all and thank you for online joining us at our Al Hikma University College’s First International Conference on Natural and Applied Sciences (HICNAS2022) under the slogan (The Effect of Natural and Applied Researches on Sustainable Development).

To our eminent speakers and delegates who have decided to be with us virtually and physically today I warmly welcome you at Al Hikma University College. We are indeed honored to have you with us. We have 91 participants from 23 Universities / 7 countries gathered online today, scientifically supported by IEEE – Iraq Chapter, to present 38 accepted papers during 10 regular sessions running online in parallel halls. Beside that 6 Keynote Speeches will be presented reputable professors, from 6 Universities/ 3 Countries, in opening and workshop sessions making our conference a truly international one.

I am personally happy to see that our conference has attracted such a large and diverse group of speakers and participants, combining intellectual brilliance with practical experiences in Engineering, IT, Computer, Biology and Biomedical fields. All the relevant institutions and sectors having an interest in, and a contribution to

((2))



make to, the natural and applied fields are represented in the online sessions of this conference.

HiUC is looking forward to your valuable contributions in this conference, and to hear what you will share and its impact on our society and daily lives.

On the sidelines of the conference, 32 HiUC Students will present their graduation projects during the Scientific Poster Online Fair.

Ladies and Gentleman,

Al Hikma University College (HiUC) is a private university college established in Baghdad in 2010. Its mission has always been to promote and maintain the highest educational standards of excellence, integrity, and professionalism in teaching and research for which there is a strong demand in Iraq and abroad. This mission will continue to guide our strategic plans as we grow in student numbers, faculty, and academic programmes to meet the new challenges ahead of us and to align ourselves with the high-quality ranking vision of the Ministry of Higher Education and Scientific Research.

I would like to invest this opportunity to thank all those who worked hard to make this event possible and in particular the faculty and staff of HiUC, IEEE-Iraq Chapter and HICNAS's committees that include (Steering Committee, International Advisory Board, Organizing Committee, Scientific Committee, Publication and Media Committee, EDAS Management Committee, Plagiarism Checker and Conference Secretary).

I know I am speaking on behalf of all my colleagues at HiUC when I say, we consider ourselves proud to be a part of this historic development and to serve this great institution that we all love and cherish.

Let me conclude by saying "The Scientifically Interaction with The Rest of The World Today ... Will be Innovating of Tomorrow Sustainability" ...

I wish you all a successful and fruitful conference.

Thank You ...

HICNAS2022 Chairman's Message



Prof. Dr. Mohammed Ibrahim Mohammed

Al Hikma University College

Baghdad – Iraq

mohammed.ibrahim@hiuc.edu.iq

The Honorable Prof. Dr. Mazin Al-Hakeem - Dean of Al Hikma University College

The Preventative of IEEE

Guests and researchers

Ladies and Gentlemen

In the name of Allah

With trust in God, Al Hikma University College holds its first international scientific conference under the slogan of (The Effect of Natural and Applied Researches on Sustainable Development).

Al Hikma University College has taken upon itself the task of stimulating the production of scientific research and creating suitable conditions for academic staff, by encouraging and supporting scientific research and upgrading the research performance of researchers through their participation in publishing their scientific papers in local and international journals and conferences. Through the conference slogan, the College strive hard to communicate with global progress.

Our college has signed a scientific agreement with IEEE-Iraq chapter to publish part of conference researches in journals within IEE Xplore, as well as memorandums of understanding have been signed with both the Journal of Engineering & Technology issued by the University of Technology and the Journal of Al-Mansour University College, where a special issue will be issued to publish a selected numbers of research within these journals, and researchers have the option to choose the type of participation either international or local publication.

In this conference, 57 papers were received (39 submitted to IEEE and 18 submitted to local journals, all of which were evaluated by peer reviewers from inside and outside Iraq, as (38) papers were accepted after approved by reviewers, including 6 international papers submitted from outside of Iraq by researchers from countries

((4))



such as Great Britain, Libya, Tunis, Oman, Malaysia and Jordan. All accepted papers were divided into three axes; the Engineering axes included scientific and applied research, and the Computer Research axes (Computer Science and Engineering), and the Biological Research axes (related to Bio-medical aspect) three speakers were also invited to give lectures within the conference program at the opening session.

As for the evening session, it will include a workshop in which several researchers will participate.

On the margin of the conference, and to encourage and support graduation projects for the fourth level students at Al Hikma University College, an exhibition was prepared that includes posters and student exhibits of designs and devices, where 32 a students will participate from all of three scientific departments of Al Hikma University College.

Finally, I would like to express my sincere thanks to everyone who contributed to this effort, especially the Dean of Al Hikma University College, Prof.Dr. Mazin Sameir Al-Hakeem, to the members of the Scientific Committee from inside and outside the college, all members of the organization Committee, and special thanks to the efforts made by the IEEE-Iraq Chapter team and to editors of the journals Engineering & Technology and Al-Mansour College journal in Supporting and Successful of our Conference

May ALLAH help us all for the good of our beloved country

Prof. Dr. Mohammed Ibrahim Mohammed
Conference Chairman

IEEE IRAQ Section's Message



Assist. Prof. Sabiha F. Jawad
IEEE - Iraq Chapter
Babylon – Iraq
drengsattar@ieee.org

In the name of God, the Most Gracious, the Most Merciful

Dear Attendees ...

On this occasion, I am pleased to congratulate the (Al Hikma University College) convening the international conference (with scientific support from the international organization IEEE).

The convening of this conference represents many positive milestones for the Iraqi scientific arena.

It is a beginning that represents a shining light around the world - indicating active existence and the distinguished - the Iraqi scientific mind, and its parade of scientific giving - the world despite the difficult circumstances surrounding it. It constitutes the acceptance of research in such international conferences (which are scientifically supported).

The acceptance of research in such international conference supported by IEEE form positive indicator for the Iraqi arena.

The IEEE Foundation has been in existence for more than 135 years, and annually assigns more than 2000 national and international conferences in all countries of the world and owns 13 institution scientific families of various specializations (engineering , scientific and Humanity) and owns more than 200 scientific journals of various specialties and its library contains more than (6) six million scientific papers and all of these research is Scopus Cited and this library has a high academic assessment academic teachers compared with the international journal (which belong to Q1, Q2) which is a very important matter for the Iraqi researcher based on the requirements of the annual calendar or the requirements of Scientific promotions.

Note that the scientific level of these conferences varies greatly with the other conferences held in many countries of the world, Where the Foundation monitors the scientific aspect of research, its sobriety, and the ideas it carries scientific and modern. It is affiliated with the scientific committees (representing them inside

Iraq) all vocabulary of the evaluation process for research submitted to these conferences.

Also, the institution gives the final decision in depositing research within the library or not depositing - after being submitted to the measures of quality and sobriety carried out by the institution after research has been submitted by scientific committee of the conference.

Dear Sir, God has helped us (as a scientific branch of the institution) to assign 37 contracts process conferences in Iraqi universities - starting in 2009. And at the last three years 3000 research papers were submitted through these conferences to the international library and the approval of the Foundation was obtained for scientific support to hold (12) conferences within Iraqi universities during the year 2022.

The goal of the scientific representations of the institution (inside Iraq) is to support these scientific conferences is to make the Iraqi researcher think that holding such conferences (in our dear country) is the great scientific challenge which you must cooperate on achieving all the names of the Iraqi scientific arena who really want to hold Scientific-international conferences distinguished by the sobriety of their accepted and deposited research papers at the Foundation's International Library.

We thank (Al Hikma University College) with all its official and academic peoples - for providing this the wonderful scientific opportunity - for the researcher in Iraq and outside Iraq ... We thank all the researchers who submitted their research for this conference... as well as all the reviewers (from Inside and outside Iraq) who contributed to supporting this conference with their scientific effort supportive evaluation in selecting researches with solid scientific...

We thank all of those submit and contribute even with a small effort to achieve this scientific event.

And, may God grant everyone who puts before his eyes the goal of serving the Iraqi scientific arena when qualifies her to be worthy of the scientific challenge... with international universities for their distinguished scientific conference.

Peace, Mercy and Blessings of God

The Goal of HICNAS2022



The 1st International Conference on Natural and Applied Sciences (HICNAS2022) is going to be held on 14-15 May 2022 at Al Hikma University College, Baghdad-Iraq Technically sponsored by IEEE Institute, under the slogan of (The Effect of Natural and Applied Researches on Sustainable Development).

HICNAS2022 attempts to bring together leading academic scientists, researchers to exchange and share their experiences and research results on all aspects of Advances in Natural and Applied Sciences.

It also provides a premier interdisciplinary platform for researchers, practitioners and educators to present and discuss the most recent innovations, trends, practical challenges and solutions adopted in the fields of Advances in Natural and Applied Sciences.



Al Hikma University College – Baghdad , Iraq

HICNAS2022 Topics

HICNAS2022 provides a leading forum for the presentation of new advances and research results in various fields. Accordingly, topics of interest for submission include:

- Biological Sciences
- Biomedicine & Biotechnology
- Environment
- Chemistry & Physics
- Advanced Mathematics
- Material Science, Engineering & Nanotechnology
- Computer Science & Engineering
- Electrical & Electronics Engineering
- Engineering of Medical Devices
- Mechanical Engineering
- Mechatronics Engineering
- Industrial Engineering.
- Information Security.
- Laser and Optic Electronic.
- E-Learning.
- Renewable Energy.

Publisher of Accepted Papers

All accepted papers in the conference will be published in journals: IEEE Xplore Digital Library or Engineering and Technology Journal or Al Mansour Journal (depending on the author's desire)



**IEEE Xplore
Digital Library**
<https://ieeexplore.ieee.org/>
Publication Fee: 190\$



Engineering and Technology Journal
University of Technology
<https://etj.uotechnology.edu.iq/>
Publication Fee: 55.000 IQD



Al-Mansour Journal
Al-Mansour University College
<https://muc.edu.iq/pages/290/al--mansour-journal/>
Publication Fee: Free

The Main Speakers



Prof. Dr. Alaa Hussein Al Hamami
Al Hikma University College
Baghdad – Iraq
prof.alaa.alhmami@hiuc.edu.iq

Filed: Computer Science & Engineering
Topic: **WE HUMANS AND COMPUTERS WHERE TO?**



Prof. Dr. Taghreed Khudur Mohammed
Institute of Medical Technology –
Middle Technical University
Baghdad – Iraq
taghreidkheder@gmail.com

Filed: Biological Sciences
Topic: **The Relationship between Different Blood Groups and Infection with COIVD 19**



Prof. Dr. Jamila Harbi
IEEE – Iraq Chapter
Baghdad – Iraq
dr.jameelahharbi@gmail.com

Filed: Computer Science & Engineering
Topic: **Grand Challenges in Image Processing**

The Main Speakers



Prof. Dr. Ayad Murad Takhakh
College of Engineering - Al-Nahrain University
Baghdad - Iraq
ayadmurad@nahrainuniv.edu.iq

Filed: **Prosthetics**
Topic: **The Importance of Supporting Modern Research Paths
in The Field of Prosthetics and Orthotics in Community
Service**



Assist. Prof. Dr. Raed Mohsen
College of Education - Jinan University
Tripoli - Lebanon
raedmohsenn@gmail.com

Filed: **Educational Technology**
Topic: **Contributions of The Vocational Education and
Educational Technology in Achieving The Goals of
Sustainable Development**



Prof. Dr. Tahseen Al-Shaikhli
Director of Future Research Studies Centre
London - UK
alshaikhlitahseen@yahoo.com

Filed: **Digitalization**
Topic: **The Digital Revolution and Sustainable Development:
Opportunities and Challenges**

Chairman of The Conference

- Prof. Dr. Mohammed Ibrahim Mohammed, Al Hikma University College-Iraq
- Prof. Dr. Eng. Sattar B. Sadkhan, IEEE IRAQ Section-University of Babylon-Iraq

Steering Committee

- Prof. Dr. Mazin Sameir Al Hakeim, Al Hikma University College-Iraq
- Prof. Dr. Mohammed Ibrahim Mohammed, Al Hikma University College-Iraq
- Prof. Dr. Alaa Hussein Al Hamami, Al Hikma University College-Iraq
- Prof. Dr. Alaa Kareem Mohammed, Al Hikma University College-Iraq
- Assist. Prof. Sabiha F. Jawad, IEEE IRAQ Section Chair -Iraq

International Advisory Board

- Prof. Dr. Eng. Sattar B. Sadkhan, IEEE IRAQ Section-University of Babylon-Iraq
- Prof. Dr. Mohammed Ibrahim Mohammed, Al Hikma University College-Iraq
- Prof. Dr. S. N. Chakaravarthy, Jawaharal Nehru Technological University-India
- Prof. Dr. Jawad K. Ali, University of Technology-Iraq
- Assist. Prof. Dr. Ozen Ozer, Ondokuz Mayis University-Turkey
- Dr. Stefano Pergani , IEEE Communication Society-Italy
- Dr. Ramana Morthey-India
- Dr. Eva Volna, University of Ostrava - Czech Republic
- Dr. Raad S. Fayath, SMIEEE-AI-Nahrain University-Iraq

Organizing Committee

- Assist. Prof. Dr. Mahmoud Abbas Mahmoud, Al Hikma University College-Iraq
- Assist. Prof. Abdul Muhsin Mahmood Abass, Al Hikma University College, Iraq
- Dr. Mustafa Tareq Abd, Al Hikma University College-Iraq
- Dr. Zainab Noori Hamed, Al Hikma University College-Iraq
- Dr. Saba Ayad Tuama, Al Hikma University College-Iraq
- Assist. Lec. Zaineb Hameed Neamah, Al Hikma University College- Iraq
- Assist. Lect. Farah Mazin Salim, Al Hikma University College-Iraq
- Assist. Lect. Aula Hassoon , Al Hikma University College-Iraq

Scientific Committee

- Prof. Dr. Alaa Kareem Mohammed, Al Hikma University College-Iraq
- Prof. Dr. Mehmet GÖNEN, Süleyman Demirel University- Turkey
- Prof. Dr. Abdullah Abbas Kendoush, Ph.D, Augusta Technical College- USA
- Prof. Dr. Abdul Amir H. Kadhum, University of Al-Ameed-Iraq
- Prof. Dr. Taghreed Khudur Mohammed, Institute of Medical Technology - Iraq
- Prof. Dr. Raid A. Ismail, University of Technology-Iraq
- Prof. Dr. Talib M. Albayati, University of Technology Iraq
- Prof. Dr. Jawad K. Ali, University of Technology-Iraq
- Prof. Dr. Nidhal Raof Mahdi, Al Hikma University college-Iraq
- Prof. Dr. Basim Ajeel Abass, University of Babylon-Iraq
- Prof. Dr. Husham Mahmood Ahmed, AMA International University- Bahrain
- Prof. Dr. Bassam Ghalib Rasheed, Al-Nahrain University-Iraq
- Prof. Dr. Hashim Abed Hussein, University of Technology-Iraq
- Prof. Dr. Rami Hikmat Fouad AL-Hadeethi, University of Victoria, London, Uk.
- Assist. Prof. Dr. Ali Khalid Jassim, AL-Mustansiriyah, Iraq
- Assist. Prof. Dr. Abbas Hadi Al-Shukry, Uruk University-Iraq
- Assist. Prof. Dr. Mahmood Zaki Abdullah, AL-Mustansiriyah University- Iraq
- Assist. Prof. Dr. Ahmed Abdulsameea Al-Duroobi, Al-Nahrain University- Iraq
- Assist. Prof. Dr. Mustafa K. Ismael, Middle Technical University, Institute of Technology-Iraq
- Assist. Prof. Dr. Saad AbdulAziz Mohammed Salih, AL Hikma University College-Iraq
- Assist. Prof. Dr. Zaki Saeed Tawfck, AL Hikma University College-Iraq
- Assist. Prof. Dr. Abdulsalam Mohammed Saeed Al qassab, Al Hikma University College-Iraq.
- Dr. Ihsan Ali Abdul Kareem Bazirgan, University of Uruk, Iraq
- Dr. Abdul Majid Channa, Government Muslim Science Degree College, Hyderabad -Pakistan
- Dr. Aws Basil Hamid Alazawi, Middle Technical University/Technical College of Electrical Engineering-Iraq
- Dr. Jamal Kamil Alrudaini, AL-Nisour University College-Iraq
- Dr. Ivan A. Hashim, University of Technology-Iraq

- Dr. Jumana Waleed , Diyala University-Iraq
- Dr. Farqad H. Abdulraheem, North Technical University-Iraq
- Dr. Nidaa A. Abbass, University of Babylon-Iraq
- Dr. Mehdi A. Manh, University of Babylon-Iraq
- Dr. Ali A. Ahmed Abed, University of Basrah Iraq
- Dr. Muna Dawood Sallal, Al-Muthana University-Iraq
- Dr. Riyadh D. Mansoor, Al-Muthana University-Iraq
- Ass. Lect. Rusul S. Bader – Al-Mustaqbal College University- Iraq

Publication and Media Committee

- Dr. Saba Ayad Tuama, Al Hikma University College-Iraq
- Assist. Lec. Zaineb Hameed Neamah, Al Hikma University College-Iraq
- Assist. Lec. Farah Mazin Salim, Al Hikma University College-Iraq
- Eng. Abbas. B. Sadkhan, MIEEE-Iraqi Media-Iraq

EDAS Committee

- Prof. Dr. Eng. Sattar B. Sadkhan, IEEE IRAQ Section-University of Babylon-Iraq
- Dr. Mustafa Tareq Abd, Al Hikma University College-Iraq
- Assist. Prof. Sabiha F. Jawad, IEEE IRAQ Section Chair -Iraq

Plagiarism Checker

- Dr. Omar Fitian Rasheed, Al Hikma University College-Iraq

Conference Secretary

- Dr. Mustafa Tareq Abd, Al Hikma University College-Iraq
- Assist. Lec. Zaineb Hameed Neamah, Al Hikma University College-Iraq
- Assist. Lec. Farah Mazin Salim, Al Hikma University College-Iraq

HICNAS2022 Conference Agenda (1st Day)

Saturday - May 14, 2022

| | | | | |
|-------------------------|--|---|---|--|
| 12:00 | Registration | | | |
| 12:30 Pm | Opening Session #1 (HICNAS Online Hall) <i>Iraqi National Anthem</i> <i>Verses from Qur'an</i> <i>Clip: About HiUC – Iraq</i> <i>HiUC Dean Welcoming (Prof.Dr. Mazin S. Al-Hakeem)</i> <i>HICNAS2022 Conference Chairman's Speech (Prof.Dr. Mohammed Ibrahim Mohammed)</i> <i>IEEE IRAQ Section's Speech (Dr.Sabiha F. Jawad)</i> <i>HICNAS2022 from Ambition to Reality (Assist. Prof. Dr. Mahmoud Abbas Mahmoud)</i> | | | |
| 01:30 Pm | Topic: WE HUMANS AND COMPUTERS WHERE TO? <i>Speaker: Prof.Dr. Alaa Hussein Al Hamami</i> | | | |
| 02:00 Pm | Topic: The Relationship between Different Blood Groups and Infection with COVID 19 <i>Speaker: Prof. Dr. Taghreed Khudur Mohammed</i> | | | |
| 02:30 Pm | Topic: Grand Challenges in Image Processing <i>Speaker: Prof. Dr. Jamila Harbi</i> | | | |
| 3:30 Pm | Session #2 Computer Science & Engineering (5) Papers Euphrates Online Hall | Session #3 Computer Science & Engineering (5) Papers Prof.Dr. Hilal Abbood AL-Bayati Online Hall | Session #4 Biological Sciences (4) Papers Prof.Dr. AbdulHakim A. Al-Rawi Online Hall | Session #5 Engineering (6) Papers Prof.Dr.Kahtan K. Al-Khazraji Online Hall |
| 05:30 – 08:00 pm | | Break | | |
| 08:00 | Workshop Session - Al Hikma Online Hall | | | |
| 08:00 Pm | Online Workshop #1 Topic: The Importance of Supporting Modern Research Paths in The Field of Prosthetics and Orthotics in Community Service <i>Speaker: Prof. Dr. Ayad Murad Takhakh</i> | | | |
| 09:00 Pm | Online Workshop #2 Topic: Contributions of The Vocational Education and Educational Technology in Achieving The Goals of Sustainable Development <i>Speaker: Assist. Prof. Dr. Raed Mohsen</i> | | | |
| 10:00 Pm | Online Workshop #3 Topic: The Digital Revolution and Sustainable Development: Opportunities and Challenges <i>Speaker: Prof. Dr. Tahseen Al-Shaikhli</i> | | | |

HICNAS2022 Conference Agenda (2nd Day)

Sunday - May 15, 2022

| Scientific Poster Online Fair | | | | |
|-------------------------------|--|---|---|---|
| 04:00 Pm | SP Session #1 CSE Scientific Poster Online Fair | SP Session #2 BIO Scientific Poster Online Fair | SP Session #3 ENG Scientific Poster Online Fair | |
| 06:00 Pm | Session #6 Computer Science & Engineering (5) Papers Tigris Online Hall | Session #7 Computer Science & Engineering (5) Papers Prof.Dr. Hilal Abbood AL-Bayati Online Hall | Session #8 Biological Sciences (3) Papers Prof.Dr. AbdulHakim Ahmed Al-Rawi Online Hall | Session #9 Engineering (5) Papers Prof.Dr.Kahtan K. Al-Khazraji Online Hall |
| 07:30 Pm | Closing Session #10 (Euphrates Online Hall) <i>HICNAS2022 Recommendations</i> | | | |
| 07:45 Pm | Closing Ceremony (Euphrates Online Hall) | | | |



HICNAS2022

The Best Presentation Award will be given to the most outstanding presentation presented by a participant in each session.

Saturday - May 14, 2022 (1st Day)

| | |
|--|---|
| Opening Session #1 : HICNAS Online Hall https://zoom.us/j/99973075480 Webinar ID: 999 7307 5480 <i>Master of Ceremony: Zahraa Abdul Hameed Alobaidy - Al Hikma University College</i> <i>TPC: Dr. Omar F. Rasheed - Al Hikma University College</i> | |
| <p>12:30 ~ 3:00 <i>pm</i></p>  | Opening Session <i>Iraqi National Anthem</i> <i>Verses from Qur'an</i> <i>Clip: About HiUC – Iraq</i> <i>HiUC Dean Welcoming (Prof.Dr. Mazin S. Al-Hakeem)</i> <i>HICNAS2022 Conference Chairman’s Speech (Prof.Dr. Mohammed Ibrahim)</i> <i>IEEE IRAQ Section’s Speech (Dr.Sabiha F. Jawad)</i> <i>HICNAS2022 from Ambition to Reality (Assist. Prof. Dr. Mahmoud Abbas)</i> |
| | 01:30 <i>pm</i> Topic: WE HUMANS AND COMPUTERS...WHERE TO? <i>Speaker: Prof.Dr. Alaa Hussein Al Hamami</i> |
| | 02:00 <i>pm</i> Topic: The Relationship between Different Blood Groups and Infection with COVD 19 <i>Speaker: Prof. Dr. Taghreed Khudur Mohammed</i> |
| | 02:30 <i>pm</i> Topic: Grand Challenges in Image Processing <i>Speaker: Prof. Dr. Jamila Harbi</i> |

| | | |
|---|---|---|
| Session #2: Computer Science & Engineering CSE : Euphrates Online Hall https://meet.google.com/rtr-adzw-kot <i>Chairman: Prof.Dr. Alaa Hussein Al Hamami - Al Hikma University College</i> <i>Apporteur: Dr.Mohammed Joudah Zaiter - Middle Technical University</i> <i>TPC: Dr. Saba Ayad Tuama - Al Hikma University College</i> | | |
| <p>3:30 ~ 5:30 <i>pm</i></p>  | Paper ID | Paper Title |
| | 12 | A Few Thoughts to Improve the E-Passport Security |
| | 13 | A Hybrid Approach for Plagiarism Detection Using Siamese LSTM |
| | 14 | A New Method for Ensuring the Integrity in Wireless LAN (WiFi) |
| | 16 | An Improved Energy Efficient Clustering Protocol for Wireless Sensor Networks |
| 19 | Automatic Modulation Classification Based Deep Learning: A Review | |
|  The Best Presentation Award will be given to the most outstanding presentation presented by a participant in each session. | | |

| Session #3: Computer Science & Engineering CSE : Prof.Dr. Hilal Abbood AL-Bayati Online Hall https://meet.google.com/yuu-wuux-swj | | |
|---|---|---|
| <p><i>Chairman: Prof. Dr. Mahmood Farhan Mosleh - Middle Technical University</i></p> <p><i>Appporteur: Dr. Salim M. Zaki – Dijlah University College</i></p> <p><i>TPC: Assist. Lect. Zahraa Abdul Hameed Alobaidy - Al Hikma University College</i></p> | | |
| <p>3:30 ~ 5:30 <i>pm</i></p>  | Paper ID | Paper Title |
| | 20 | Comparison of Data Mining Techniques in Healthcare Data |
| | 22 | Decision Tree Algorithm and Learning Algorithms for Blood Data Diagnosis |
| | 24 | Design and Implementation of Smart Energy Billing System Based on RFID and Zigbee |
| | 26 | Fractional Two-Dimensional Linear Discriminant Analysis |
| | 27 | Free Space Optical Communications Security and Reliability Trade-Off: A Survey |
|  | The Best Presentation Award will be given to the most outstanding presentation presented by a participant in each session. | |

| Session #4: Biological Sciences BIO : Prof.Dr. AbdulHakim A. Al-Rawi Online Hall https://meet.google.com/ohj-yzvp-nib | | |
|--|---|---|
| <p><i>Chairman: Assist. Prof. Dr Mayada Noori Iqbal - Middle Technical University</i></p> <p><i>Appporteur: Assist. Prof. Dr. Kareem A. Hammad – Al Hikma University College</i></p> <p><i>TPC: Assist. Lect. Aula Hassoon - Al Hikma University College</i></p> | | |
| <p>3:30 ~ 5:30 <i>pm</i></p>  | Paper ID | Paper Title |
| | 2 | Correlation Between Hypothyroidism and Vitamin D Deficiency and Calcium Level |
| | 3 | Correlation Between BMI, Inflammatory Markers and Das-28 in Patients with RA |
| | 5 | Extraction & Purification of Plasmid from Some Species of E.coliin Different Ways |
| | 6 | First Occurrence in Iraq of Gyrodactylus Montanus Bychowsky, 1957 (Monogenea: Gyrodactylidae) from Gills of the Common Carp Cyprinus Carpio |
|  | The Best Presentation Award will be given to the most outstanding presentation presented by a participant in each session. | |

| Session #5: Engineering | | |
|---|---|--|
| ENG : Prof.Dr.Kahtan K. Al-Khazraji Online Hall | | |
| https://meet.google.com/pbs-nijs-woi | | |
| Chairman: Prof. Dr. Mohammed Ibrahim Mohammed - Al Hikma University College | | |
| Appporteur: Prof. Dr. Jinan Fadhil Mahdi - Middle Technical University | | |
| TPC: Assist. lecturer Zaineb Hameed Neamah - Al Hikma University College | | |
| <p>3:30 ~ 5:30 pm</p>  | Paper ID | Paper Title |
| | 42 | A Review of HVDC Cables Technologies and Their Challenges |
| | 43 | Additive Manufacturing of Custom Orthopedic Implants: A Review |
| | 44 | An Accurate DL Threat Image Detection Algorithm for X-Ray Baggage Dataset |
| | 45 | Evaluation of the External Radiation Effects of Fly ash Added to Iraqi Concrete |
| | 46 | Formation Energy of Alpha-Cluster Preformation Probability for Cluster-Formation Model |
| | 50 | Metaheuristics on the Multi-Objective in Cellular Manufacturing: Review Paper |
|  | The Best Presentation Award will be given to the most outstanding presentation presented by a participant in each session. | |

| Workshop Session - Al Hikma Online Hall | | |
|--|--------------------|---|
| https://zoom.us/j/99903749554 | | |
| Webinar ID: 999 0374 9554 | | |
| Chairman: Prof. Dr. Mohammed Ibrahim Mohammed , Al Hikma University College-Iraq | | |
| Appporteur: Assist. Prof. Dr. Mahmoud Abbas Mahmoud , Al Hikma University College-Iraq | | |
| TPC: Dr. Omar F. Rasheed - Al Hikma University College | | |
| <p>8:00 ~ 11:00 pm</p>  | WS ID | Workshop Title |
| | WS1 08:00 pm | The Importance of Supporting Modern Research Paths in The Field of Prosthetics and Orthotics in Community Service <i>Prof Dr. Ayad Murad Takhakh</i> |
| | WS2 09:00 pm | Contributions of The Vocational Education and Educational Technology in Achieving The Goals of Sustainable Development <i>Assist. Prof. Dr. Raed Mohsen</i> |
| | WS3 10:00 pm | The Digital Revolution and Sustainable Development: Opportunities and Challenges <i>Prof Dr. Tahseen Al-Shaikhli</i> |

Sunday - May 15, 2022 (2nd Day)

| Scientific Poster Online Fair | | | |
|-------------------------------|--|---|---|
| | SP Session #1 CSE Scientific Poster Online Fair | SP Session #2 BIO Scientific Poster Online Fair | SP Session #3 ENG Scientific Poster Online Fair |
| 04:00 pm | <p>Chairman: Assist. Prof. Dr. Abdulsalam Mohammed Saeed</p> <p>Apporteur & TPC: Dr. Saba Ayad Tuama</p> <p>https://meet.google.com/epa-fjtd-neb</p>  | <p>Chairman: Dr. Zainab Noori Hammed</p> <p>Apporteur & TPC: Assist. Lect. Aula Hassoon</p> <p>https://meet.google.com/hcm-jgtr-maa</p>  | <p>Chairman: Ass. Prof Abdul Muhsin Mahmood Abass</p> <p>Apporteur & TPC: Assist. lecturer Zaineb Hameed Neamah</p> <p>https://meet.google.com/zdj-bqok-ypp</p>  |

| Session #6: Computer Science & Engineering CSE : Tigris Online Hall https://meet.google.com/ifj-xgyn-hwg | | |
|--|----------|--|
| <p>Chairman: Asst. Prof. Dr. Majid S. Naghmash - Dijlah University College Apporteur: Asst. Prof. Abdulsalam Mohammed Saeed- Al Hikma University College TPC: Dr. Saba Ayad Tuama - Al Hikma University College</p> | | |
| 6:00 ~ 7:30 pm  | Paper ID | Paper Title |
| | 35 | The Reality of e-Learning in Iraqi Universities |
| | 37 | Using an Accurate Multimodal Biometric for Human Identification System via Deep Learning |
| | 38 | Wide Band Omni-Directional Bow-Tie Antenna for Wireless LAN Application |
| | 40 | Deep Learning for Covid-19 Classification Using CT Scan Slices of Lung |
| | 41 | Data Reduction Based on Adaptive Stream Window Size for IoT Data |
|  <p>The Best Presentation Award will be given to the most outstanding presentation presented by a participant in each session.</p> | | |

| Session #7: Computer Science & Engineering CSE : Prof.Dr. Hilal Abbood AL-Bayati Online Hall https://meet.google.com/xkv-tqud-pct | | |
|--|----------|---|
| Chairman: Prof.Dr. Soukaena Hassan Hashem - University of Technology Apporteur: Assist. Prof. Dr. Ali Kadhum M. Al-Quraby - University of Babylon TPC: Assist. Lect. Zahraa Abdul Hameed Alobaidy - Al Hikma University College | | |
| 6:00 ~ 7:30 pm  | Paper ID | Paper Title |
| | 29 | Management and applications of Artificial Intelligence (AI) concerning the COVID-19 pandemic. A descriptive study |
| | 30 | Micro services vs. Monolithic Architectures |
| | 31 | Performance Analysis of Content Serving Through Device-To-Device Communication |
| | 33 | Text Cryptography Based on Three Different Keys |
| | 34 | The Blockchains Technologies for Cryptocurrencies: A Review |
|  The Best Presentation Award will be given to the most outstanding presentation presented by a participant in each session. | | |

| Session #8 : Biological Sciences BIO : Prof.Dr. AbdulHakim Ahmed Al-Rawi Online Hall https://meet.google.com/iod-kbat-ynr | | |
|---|----------|--|
| Chairman: Prof.Dr. Hanaa Naji Abdullah - Middle Technical University Apporteur: Prof.Dr. Nidhal Raof Mahdi - Al Hikma University College TPC: Assist. Lect. Aula Hassoon - Al Hikma University College | | |
| 6:00 ~ 7:30 Pm  | Paper ID | Paper Title |
| | 8 | Production of biodiesel from chicken fat using waste mussel shells as catalyst |
| | 9 | Study the effect of Infection by Entamoeba histolytica on some Blood Parameters in Kufa city, Iraq |
| | 11 | The Effect of Smoking on Osteoporosis |
|  The Best Presentation Award will be given to the most outstanding presentation presented by a participant in each session. | | |

| <p align="center">Session #9 : Engineering ENG : Prof.Dr.Kahtan K. Al-Khazraji Online Hall https://meet.google.com/fcn-qocg-qhf</p> | | |
|---|---|---|
| <p><i>Chairman: Prof. Dr. Jameel Kadhim Abed - Middle Technical University</i> <i>Apporteur: Asst. Prof.Dr. Ahmed R. Ajel - Middle Technical University</i> <i>TPC: Assist. Lect. Farah Mazin Salim - Al Hikma University College</i></p> | | |
| <p align="center">6:00 ~ 7:30 <i>pm</i></p>  | Paper ID | Paper Title |
| | 51 | Photodegradation of Automobile Exhaust Gases Using Catalytic Asphalt Pavement |
| | 52 | Production Improvement with Lean Adopting Value Stream Mapping |
| | 54 | The Effect of Coated Electrodes on MRR of Titanium Metal by Spark Machining |
| | 55 | The effect of using four types coated electrodes on material removal rate of titanium metal by electrical discharge machining |
| | 57 | Using Arduino to Design a Medical Device for Detection and Monitor |
|  | <p>The Best Presentation Award will be given to the most outstanding presentation presented by a participant in each session.</p> | |

Table of Accepted Papers

Biological Sciences Track

| Paper ID | Paper Title | Page No. |
|----------|---|----------|
| 2 | Correlation Between Hypothyroidism and Vitamin D Deficiency and Calcium Level | 27 |
| 3 | Correlation Between BMI, Inflammatory Markers and Das-28 in Patients with RA | 28 |
| 5 | Extraction & Purification of Plasmid from Some Species of E.coliin Different Ways | 29 |
| 6 | First Occurrence in Iraq of Gyrodactylus montanus Bychowsky, 1957 (Monogenea: Gyrodactylidae) from Gills of the Common Carp Cyprinus carpio | 30 |
| 8 | Production of Biodiesel from Chicken Fat using Waste Mussel Shells as Catalyst | 31 |
| 9 | Study the effect of Infection by Entamoeba histolytica on some Blood Parameters in Kufa City, Iraq | 32 |
| 11 | The Effect of Smoking on Osteoporosis | 33 |

Computer Science & Engineering Track

| Paper ID | Paper Title | Page No. |
|----------|---|----------|
| 12 | A Few Thoughts to Improve the E-Passport Security | 35 |
| 13 | A Hybrid Approach for Plagiarism Detection Using Siamese LSTM | 36 |
| 14 | A New Method for Ensuring the Integrity in Wireless LAN (WiFi) | 37 |
| 16 | An Improved Energy Efficient Clustering Protocol for Wireless Sensor Networks | 38 |
| 19 | Automatic Modulation Classification Based Deep Learning: A Review | 39 |
| 20 | Comparison of Data Mining Techniques in Healthcare Data | 40 |
| 22 | Decision Tree Algorithm and Learning Algorithms for Blood Data Diagnosis | 41 |
| 24 | Design and Implementation of Smart Energy Billing System Basedon RFID and Zigbee | 42 |
| 26 | Fractional Two-Dimensional Linear Discriminant Analysis | 43 |
| 27 | Free Space Optical Communications Security and Reliability Trade-Off: A Survey | 44 |
| 29 | Management and applications of Artificial Intelligence (AI) concerning the COVID-19 pandemic. A descriptive study | 45 |
| 30 | Micro services vs. Monolithic Architectures | 46 |
| 31 | Performance Analysis of Content Serving Through Device-To-Device Communication | 47 |

| Paper ID | Paper Title | Page No. |
|----------|--|----------|
| 33 | Text Cryptography Based on Three Different Keys | 48 |
| 34 | The Blockchains Technologies for Cryptocurrencies: A Review | 49 |
| 35 | The Reality of e-Learning in Iraqi Universities | 50 |
| 37 | Using an Accurate Multimodal Biometric for Human Identification System via Deep Learning | 51 |
| 38 | Wide Band Omni-Directional Bow-Tie Antenna for Wireless LAN Application | 52 |
| 40 | Deep Learning for Covid-19 Classification Using CT Scan Slices of Lung | 53 |
| 41 | Data Reduction Based on Adaptive Stream Window Size for IoT Data | 54 |

Engineering Track

| Paper ID | Paper Title | Page No. |
|----------|---|----------|
| 42 | A Review of HVDC Cables Technologies and Their Challenges | 56 |
| 43 | Additive Manufacturing of Custom Orthopedic Implants: A Review | 57 |
| 44 | An Accurate DL Threat Image Detection Algorithm for X-Ray Baggage Dataset | 58 |
| 45 | Evaluation of the external radiation effects of fly ash added to Iraqi concrete | 59 |
| 46 | Formation energy of alpha-cluster preformation probability for cluster-formation model | 60 |
| 50 | Metaheuristics on the Multi-Objective in Cellular Manufacturing: Review Paper | 61 |
| 51 | Photodegradation of Automobile Exhaust Gases Using Catalytic Asphalt Pavement | 62 |
| 52 | Production Improvement with Lean Adopting Value Stream Mapping | 63 |
| 54 | The Effect of Coated Electrodes on MRR of Titanium Metal by Spark Machining | 64 |
| 55 | The effect of using Four Types Coated Electrodes on Material Removal Rate of Titanium Metal by Electrical Discharge Machining | 65 |
| 57 | Using Arduino to Design a Medical Device for Detection and Monitor | 66 |



Biological Sciences

Biological Sciences

Paper ID: 2

Correlation Between Hypothyroidism and Vitamin D Deficiency and Calcium Level

Bushra Jassam *

Al Hikma University College- Iraq
Bushra.jassam@hiuc.edu.iq

Russell Abo Altemen

Al Hikma University College- Iraq
Rusul.ameen@hiuc.edu.iq

**: Corresponding Author.*

ABSTRACT

Lack of vitamin D is currently perceived as a pandemic and when vitamin D level is low, the absorption of calcium in the intestines becomes less. Body mass index is used to estimate a person's risk of weight-related health problems such as Hypothyroidism which is a result from low degrees of thyroid chemical. One hundred female practicing, half of them with a thyroid problem, the other is represented a control value. Serum obtained from all blood collected sample to use by immunological test and hormonal assay. All result was statistically significant with control. The deficiency of serum vit D and calcium levels for all female were significantly associated with degree and severity of the hypothyroidism which encourage the advisability of vitamin D supplementation.

Keywords

Vitamin D deficiency; Calcium Level; Hypothyroidism.

Biological Sciences

Paper ID: 3

Correlation Between BMI, Inflammatory Markers and Das-28 in Patients with RA

Ahmed Enad *
Al Hikma University
College- Iraq
ahmed.talal@hiuc.edu.iq

Ahmed Alfahdawi
Al Hikma University
College- Iraq
ahmed.jasim@hiuc.edu.iq

Nada Bedair
Al Hikma University
College- Iraq
nada.hassan@hiuc.edu.iq

*: Corresponding Author.

ABSTRACT

RA is an autoimmune illness that is more common in women, suggesting that female hormone variations have a role in disease progression. Knowing how they affect the development of RA is clinically relevant and might help with specialized prevention initiatives in high-risk individuals. The goal of this study was to look at the relationship between menopause and RA disease progression. (During the period from September 2021 to January 2022, 300 serum samples were collected from RA patients. These samples were then tested for RF, CRP, ESR and ACCP.)

The findings revealed that 90% of patients had positive ACCP results, whereas 65% had positive RF results, and 93% had positive CRP values. The majority of rheumatoid arthritis patients (32.5%) were in their premenopausal stage when they were diagnosed (73/300), while 67.6% (152/300) of the patients were in their post-menopause (postmenopausal) period. The findings revealed that postmenopausal RA women had more severe disease activity than premenopausal RA women, as evidenced by (the) elevated das28 and ESR values, (4.63 ± 0.10) and (47.14 ± 0.69) respectively, in comparison to their lower levels (3.66 ± 0.09) and (36.12 ± 0.81) respectively in premenopausal RA patients. Both groups, however, had elevated level(s) in contrast to the control group.

Conclusion: The findings revealed a significantly negative ($p < 0.01$) association between BMI and the severity of RA (Das28).

Keywords

Rheumatoid Arthritis; BMI; Das28

Biological Sciences

Paper ID: 5

Extraction & Purification of Plasmid from Some Species of *E.coli* in Different Ways

Zainab Noori *

Al Hikma University College-
Iraq
Zainab.nuri@hiuc.edu.Iq

Abdullah Taha

Al Hikma University College-
Iraq
Abdul.taha@hiuc.edu.iq

Alaa Kareem Mohammed

Al Hikma University College-
Iraq
allaa.kareem@hiuc.edu.iq

*: Corresponding Author.

ABSTRACT

This study involved the use of multiple methods to separate plasmids from bacterial cell DNA for some isolates of pathogenic *E. coli* through several steps, starting with the analysis of the bacterial cell using lysozymes to remove the outer wall, followed by centrifugation to isolate plasmids found in the solution from the rest of the proteins and other forms of DNA. Many sequential methods were used to separate plasmids. The first method used was the basal denaturation sodium hydroxide-based, which led to the denaturation of the chromosomal DNA without affecting the plasmid DNA, followed by the addition of sodium acetate, which led to the preservation of the shape and structure of the plasmid DNA. Second, using cesium chloride gradient density to isolate the protein cell components and the rest of the DNA forms. The different densities of these components led to the appearance of sequential bundles depending on their different molecular weights. Ethidium bromide, which gave the plasmid bundles a fluorescent dye, was added using ultraviolet rays. The last purification method was using the boiling method using a water bath. Plasmid samples extracted from the previous methods were taken to perform the purification and separation process using the high electrophoresis method. Agarose gel was used to separate the high molecular weight protein fragments. Standard proteins and plasmids were migrated to determine the volumes of purified plasmids.

Keywords

Plasmid, *E.coli*, DNA

Biological Sciences

Paper ID: 6

First Occurrence in Iraq of *Gyrodactylus montanus* Bychowsky, 1957 (Monogenea: Gyrodactylidae) from Gills of the Common Carp *Cyprinus carpio*

Mohammed Salih Abboud

Department of Biology, College of
Education for Pure Science, University of
Baghdad, Baghdad, Iraq

Kefah Naser Abdul-Ameer*

Department of Biology, College of
Education for Pure Science, University of
Baghdad, Baghdad, Iraq
kefahnaser59@yahoo.com

*: Corresponding Author.

ABSTRACT

Monogenic *Gyrodactylus montanus* Bychowsky, 1957 was recorded in this study for the first time in Iraq from the gills of the common carp *Cyprinus carpio* Linnaeus, 1758, which were collected from the Tigris River in Al-Rashidiya region north of Baghdad province from during the period from August 2021 till the end of until May 2022.

Keywords

Monogenea, *Gyrodactylus Montanus*, *Cyprinus Carpio*, Tigris River, Iraq.

Biological Sciences

Paper ID: 8

Production Of Biodiesel from Chicken Fat Using Waste Mussel Shells as Catalyst

Israa M. Rashid*

University of Baghdad,
Al-Khwarizmi College of Engineering
israa_msc2018@kecbu.uobaghdad.edu.iq

Yussur D. Abdulwahab

University of Baghdad,
Al-Khwarizmi College of Engineering

Bushra A. Jassam

Al Hikma University College - Iraq

Alaa Kareem Mohammed

University of Baghdad,
Al-Khwarizmi College of Engineering

*: Corresponding Author.

ABSTRACT

Biodiesel as an attractive energy source; a low-cost and green synthesis technique was utilized for biodiesel preparation from chicken fat. The preparation process was accomplished using esterification to reduce the free fatty acid of the chicken fat and transesterification to produce the biodiesel. The acid value of the chicken fat was reduced from 30.02 to 1.59 (mg KOH /g) via esterification process using ethanol. The parameters studied were the fat: ethanol mole ratio in the range (1:30 to 1:110), reaction temperature from 55°C to 75 °C and reaction time in the range of 2- 12 min. In the transesterification process, methanol was used and mussels shell as catalyst. The transesterification of triglycerides was accomplished after studying the most affecting reaction variables, in designed experiments following central composite method, in the ranges of (6:1-30:1) MeOH: oil molar ratio, (9-15) wt% catalyst loading, (50-70) °C reaction temperature, and (1-5) h reaction time at five levels for each factor. The heterogeneous alkaline catalyst was greenly synthesized from waste mussel shells throughout a calcination process at different calcination time of (1-5) h and temperature of (700-900) °C. The catalyst was characterized for the best catalytic activity using characterization techniques of XRD, BET, EDX, and FTIR. It was found that the optimum calcination conditions were 900 °C, and 3h, which resulted in 12.5 m²/g specific surface area and pore volume of 0.0033 cm³/g.

The model optimization was set its parameters at 15 methanol molar ratio, 10 wt% catalyst loading, 3 h reaction time, and 60 °C reaction temperature, resulting in a mixture comprised of 96.2% esters content, confirm the high potential of waste mussel shell to be employed in the production of renewable biodiesel product

Keywords

Esterification Reaction, Transesterification Reaction, Biodiesel Production, Chicken Fat, Central Composite Methodology.

Biological Sciences

Paper ID: 9

Study The Effect of Infection by *Entamoeba histolytica* on Some Blood Parameters in Kufa City, Iraq

Kareem A. Hammadi *
Al Hikma University College-
Iraq
kareem.hammady@hiuc.edu.iq

Maysoon K. A. AL-Hadraawy
AL-Furat AL- Awsat
Technical, University/
Kufa Technical Institute
Kin.msn@atu.edu.iq

Haqi Abd AL-Abass
AL-Furat AL Awsat
Technical University/
Kufa Technical Institute
Kin.hkee@atu.edu.iq

Alaa Kareem Mohammed
Al Hikma University College-
Iraq
Alaa.kareem@hiuc.edu.iq

Esam M. Turkey
AL-Furat AL- Awsat
Technical, University/
Kufa Technical Institute
Kin.asm@atu.edu.iq

*: Corresponding Author.

ABSTRACT

This study was carried out to study the effect of *Entamoeba histolytica* infection and its impact on some blood parameter such as hemoglobin, packed cell volume (p. c.v.), cholesterol and Triglyceride (TG) among 430 patient who attended AL-Furat AL-owset Teaching hospital in Kufa city / Iraq during six-month period from March and September 2018. Those patients suffered from diarrhea and abdominal discomfort. The frequency of *Entamoeba histolytica* occurring was (70) infection out of (430, 16.3%). Among those (70) infected there were male n=32/70,45.7%, while females represented n=38/70,54.3%. The result of this study showed no significant affect in cholesterol and Triglyceride but significant decrease in Hb and pcv in comparison with control group of (30) healthy individual which was included in this study.

Keywords

Entamoeba histolytica, Cholesterol, Iraq, Blood Parameter.

Biological Sciences

Paper ID: 11

The Effect of Smoking on Osteoporosis

Dunya Mohee Hayder *

Madent El Elm University College-
Iraq
dunyamoheehaydee@mauc.edu.iq

Fadia Alwan

Madent El Elm University
College- Iraq
Fadia.j.alwan@mauc.edu.iq

Ansam Qassim Ghadhban

Madent El Elm University
College- Iraq
Ansam.qasim@mauc.edu.iq

*: Corresponding Author.

ABSTRACT

Osteoporosis is a disease that affects the human skeleton that causes a reduction in bones strength. Osteoporosis causes bones to become so weak and brittle that a fall or minor exertion such as bending or coughing can cause fractures. Osteoporosis-related fractures most commonly occur in the hip, wrist, and spine.

This paper studied the affection for smoking as a risk factor for increasing the possibility of developing osteoporosis symptoms where the data were collected for 179 persons (78 males and 101 females) and analysed using the odds ratio test (OR), which is a powerful tool in the clinical research field.

The risk of developing Osteoporosis was determined using assessments forms for bone-density aspects. The analysis showed a strong effect of smoking on developing Osteoporosis (Odd ratio: OR=2.07).

Keywords

Osteoporosis, MRI, X-ray



Computer Science & Engineering

A Few Thoughts to Improve the E-Passport Security

Alaa Al-Hamami*

Al Hikma University College – Iraq
prof.alaa.alhmami@hiuc.edu.iq

*: Corresponding Author

ABSTRACT

Passport is an important legal document in travelling abroad. The passport is a legal identifier for the passenger and it has the permission to travel abroad. It is possible to fake the passport is either by replacing the credential photo or by replacing the passport holder name with a fake name.

E-passport is one of the most interesting invitations in the twenty-one centuries, it makes the airport check points performance more accurate and helps travellers to spend less time in their exit processing. Also, it is possible to combine the luggage details with passport information.

E-passport contains sensitive information and biometric data about passport bearers. In this research a lot of attacks that may occur, this will be discussed in more detail. We believe that adding privacy and security features and properties to e-passport is a must, in this research we will discuss this issue. Finally, we will conclude and summarize the e-passport idea.

Keywords

E-Passport, RFID, Biometric.

A Hybrid Approach for Plagiarism Detection Using Siamese LSTM

Ayoub Ali Mohammed Saeed*
University of Mosul– Iraq
ayobali-1980@uomosul.edu.iq

Alaa Taqa
University of Mosul– Iraq
alaa.taqa@gmail.com

*: Corresponding Author

ABSTRACT

Plagiarism is a severe issue that puts academic integrity and intellectual property rights in trouble. Plagiarism occurs in a variety of ways in scientific institutes, the most common of which being direct plagiarism. Manually inspecting plagiarism activities in big volumes of texts is a difficult task. As a result, numerous detection algorithms have been proposed in order to avoid lengthy manual screening. In this paper, we describe a deep learning framework for detecting text plagiarism that uses a network of Siamese LSTM and embeddings based on word. The purpose of this study is to figure out which word-based embedding architecture yields the best accurate plagiarism detection results. To prepare input of the network which is must be multiple pre-trained sequences of text embedding, the proposed framework employs Word2Vec and Glove models. The ratio of plagiarism in the network's two outputs are then measured using a hybrid of Manhattan distance and cosine similarity measures. To the best of our knowledge, this is one of the few studies that attempts to detect plagiarism using several embedding models and hybrid similarity measures. The embeddings from the Word2Vec architecture produce the best accurate detection scores, according to experimental findings on the PAN-PC-11 and Webis-CPC-11 datasets. The method attained a F1-measure of 0.816, recall of 0.91, and precision of 0.924 for PAN-PC-11 corpus and F1-measure of 0.793, a recall of 0.852, and precision of 0.902 for Webis-CPC-11 corpus using word2vec embeddings.

Keywords

Plagiarism Detection, Word Embeddings, Siamese LSTM Network, Deep Learning, Natural Language Processing.

A New Method for Ensuring the Integrity in Wireless LAN (WiFi)

Alaa Al-Hamami*

Al Hikma University College – Iraq
prof.alaa.alhmami@hiuc.edu.iq

Zaki Tawfik

Al Hikma University College – Iraq
Zeki.saeed@hiuc.edu.iq

*: Corresponding Author

ABSTRACT

Wireless LAN as one of the major types of wireless networks, has become vulnerable to a wide set of security threats and attacks due to the fact of using the air as the medium of transmission. Integrity attacks on Wireless Local Area Network (WLANs) aim to alter the messages while being transmitted, have not been eliminated by any of the wireless introduced protocols through the past years. This paper-introduced a new method of ensuring integrity of the message. The new method working by entering the message as an input to an integrity algorithm known only by the Access Point (AP) and the authenticated clients in the network. Then the result of the algorithm moved to the unused-bits field in the TCP header and sent to the destination.

Keywords

WLAN, Wireless Integrity, LAN, Wifi.

An Improved Energy Efficient Clustering Protocol for Wireless Sensor Networks

Wesal Bassem Nedham *
Al-Mustaqbal University College – Iraq
wisal.basim@mustaqbal-college.edu.iq

Ali Kadhum M. Al-Qurabat
University of Babylon - College of Science
for Women– Iraq
alikh.m.alqurabat@uobabylon.edu.iq

*: Corresponding Author

ABSTRACT

The energy resources available to nodes in wireless sensor networks are limited, so they must be wisely used. Clustering is a useful technique for reducing energy consumption and extending the life of a network. In this study, we presented an energy-saving clustering algorithm (ESCA) to reduce energy consumption and increase the network's lifetime.

The clustering phase is based on cluster construction that is centralized and cluster heads that are distributed. The clustering is stationary and determined using a centralized K-means method, with the created clusters remaining static throughout the process. Subsequently, according to the varying amounts of energy in the nodes, it chooses and rotates the cluster heads (CHs) within those clusters to reduce energy expenditure before the data transmission phase to the base station (BS).

The suggested ESCA is compared to the current two MOFCA, and IGHND clustering methods using a Python-based custom simulator. As a consequence, the suggested ESCA efficiently tackles the energy use issue while also greatly extending the network's lifetime.

Keywords

WSN, Clustering, K-Means

Automatic Modulation Classification Based Deep Learning: A Review

Ali Hmood Shah*
Mustansiriyah University–
Iraq
eema1007@uomustansiriyah.edu.iq

Abbas Hussien Miry
Mustansiriyah University–
Iraq
abbasmiry83@gmail.com

Tariq Mohammed Salman
Mustansiriyah University–
Iraq
tjibori@gmail.com

*: Corresponding Author

ABSTRACT

Automatic Modulation Recognition (AMR) is a critical component of smart communication and it contributed to the development of many applications such as Cognitive Radio (CR).

Therefore, many researchers have been interested in this field. In this paper, a brief review of AMR. More specifically, classification methods using Deep Learning (DL), especially those that give high accuracies, Such as Convolutional Neural Networks (CNN), take into account the database, the method of extracting features, and the number of modulation types for each (SNR).

Accordingly, this paper demonstrates that the best classification accuracy results are obtained using (DL) when using CNN. In recent research, the accuracy has been obtained reaching to more than 90% when the classification is for 24 different types of modulation and the size of the signal is 2.5M.

Keywords

Automatic Modulation Recognition, Deep Learning,
Convolutional Neural Networks.

Computer Science & Engineering

Paper ID: 20

Comparison of Data Mining Techniques in Healthcare Data

Zaki Tawfik *

Al Hikma University College
– Iraq
Zeki.saeed@hiuc.edu.iq

Alaa Al-Hamami

Al Hikma University College
– Iraq
prof.alaa.alhmami@hiuc.edu.iq

Mustafa Tareq

Al Hikma University College
– Iraq
mustafa.tariq@hiuc.edu.iq

*: Corresponding Author

ABSTRACT

Data gathering technology is developed. A shrinking research area in medical science, demonstrating excellent results in assessing physician dangers and aid healthcare data in diagnostic judgment study development. As a result, data analysis has distinct benefits in clinical trials large-scale research, particularly in big social data sets.

This study compares five free and open-source data mining techniques: Decision tree, Regression, Support Vector Machine (SVM), Clustering analysis, and Association rules are some of the perspectives described by using 100 records as a sample. Our objective is to reveal the most accurate tool and technique for the classification task. Analysis may use the results to rapidly achieve a good result. Our experimental results show that there is no single tool or technique that always achieves the best result but some achieve better results more often than others. In this project, Decision Tree is achieved the best result.

This project's goal was to assist patient data scientists in obtaining a clear and straightforward comprehension of how to use clinical data-mining technology to promote the production of research results that benefit doctors and patients.

Keywords

Data Mining, Healthcare, Decision Tree.

Decision Tree Algorithm and Learning Algorithms for Blood Data Diagnosis

Zaki Tawfik *
Al Hikma University College
– Iraq
Zeki.saeed@hiuc.edu.iq

Alaulddin Adel Albla
Al Hikma University College
– Iraq
alladdin@hiuc.edu.iq

Mahmoud Abbas Mahmoud
Al Hikma University College
– Iraq
mohamoudalnaimi@hiuc.edu.iq

*: Corresponding Author

ABSTRACT

A systolic pressure has a top (systolic) and bottom (pulse pressure) number (diastolic) Normal. People who already have hypertension that is greater than average should ask their doctor about how to lower it.

Previously, the level was set at 140/90 mm Hg for people below the age of 65- and 150/80-mm Hg for those 65 and older. The purpose of this research is to establish the reference range of red blood cells hydroxylated (Hb A1c percent) within the (males and females) and to forecast Bp blood pressure diastolic. This means 70% to 79% of age 65 and 150/80 mm Hg for those ages 65 and older.

Diastolic Blood pressure systolic. In this paper sampling is taken from 100 and based on data mining model, which is substitute for the decision tree calculative algorithm which one of one of the fields Artificial intelligent which analysis of appropriate decision-making can be used to visually represent decisions and processes operations prospecting.

Keywords

Data processing, Decision Tree Algorithm, Learning Algorithms, Classification

Computer Science & Engineering

Paper ID: 24

Design and Implementation of Smart Energy Billing System Based on RFID and Zigbee

Shamam Alwash*

University of Babylon– Iraq
shamamalwash@yahoo.com

Farqad Aljumaah

University of Babylon– Iraq
frqad.ghalib.engh305@student.
uobabylon.edu.iq

Kasim K. Abdalla

University of Babylon– Iraq
kasimkaa.11@gmail.com

*: Corresponding Author

ABSTRACT

Recently, the use of a smart energy billing system has been considered one of the most useful solutions to reduce the bills non-payment (BNP) problem which is one of the major issues for the non-technical losses (NTL) in power system.

This paper aims to design and implement a smart energy prepaid billing system based on a wireless sensor network (WSN) represented by Zigbee technology and radio frequency identification (RFID) technique which are easy used with low power consumption. In this paper, the contribution is enabling the server to collect the consumer's kilowatt hour (KWh) consumption wirelessly and inform the consumer with his meter balance without depending on the telecommunication companies or the internet as most previous researchers did.

In order to verify the high accuracy of the proposed system, the obtaining results were compared with standard energy meter.

This work is implemented in simple, cheap components with high accuracy, high secure, more reliable and solved the BNP problem.

Keywords

Non-Technical Losses, prepaid billing, RFID, Smart energy billing system,
Wireless Sensor Network.

Fractional Two-Dimensional Linear Discriminant Analysis

Falah Alsaqre *

Al Hikma University College – Iraq
alsaqre@ieee.org

*: Corresponding Author

ABSTRACT

Two-dimensional linear discriminant analysis (2DLDA) is a dimensional reduction technique widely applied to images recognition, particularly to the task of human facial recognition. Despite this, one of the potential limitations of the standard 2DLDA is its inability to model a discriminative feature subspace with the appearance of undesirable variations (illumination changes, face expressions, etc.) in the original image samples.

To address this limitation, fractional 2DLDA (F2DLDA) is suggested in this paper. F2DLDA uses fractional transformed images-as-matrices to generate a projection matrix through maximization of the fractional 2D Fisher's criterion.

In this manner, the constructed feature subspace by F2DLDA reflects the most discriminative information of the image samples and is comparatively less sensitive to undesirable variations.

Results from a set of experiments affirm the viability of the proposed F2DLDA in face recognition.

Keywords

Dimensionality Reduction, Face Recognition, Fractional-Order, 2DLDA

Free Space Optical Communications Security and Reliability Trade-Off: A Survey

Wafaa Mohammed Ridha Shakir *
Al-Furat Al-Awsat Technical University–
Iraq
inb.wfa@atu.edu.iq

Safa Mohammed
Al-Furat Al-Awsat Technical University–
Iraq
safaalwahamy@gmail.com

*: Corresponding Author

ABSTRACT

The security and reliability trade-off (SRT) of free space optical (FSO) communications are the most critical features that should receive significant attention, especially with the continued development of optical wireless communications. Although FSO communications are considered to be more secure than radio frequency communications in general, various threats compromise the security and reliability of FSO communications. This paper conducts a comprehensive review of the literature, examining the various approaches taken by researchers to ensure secure and reliable communication of FSO systems using opportunistic scheduling schemes. Keep in mind that SRT is the most critical factor that must be prioritized when dealing with FSO systems. Additionally, this paper includes a table outlining previous works.

Keywords

Free-Space Optical, Security and Reliability Trade-Off,
Opportunistic Scheduling.

Computer Science & Engineering

Paper ID: 29

Management and applications of Artificial Intelligence (AI) Concerning the COVID-19 Pandemic. A Descriptive Study

Sozan Sulaiman Maghdid*
Erbil Polytechnic University – Iraq
sozan.maghdid@epu.edu.iq

Luqman Qader Abdulrahman
Hawler Medical University– Iraq
luqman.qader@hmu.edu.krd

*: Corresponding Author

ABSTRACT

The processing data, regardless of its nature or size, in a mechanism or semi-automatic and appropriate manner and compatible with a specific goal, the science of artificial intelligence is suppressed in solving problems more quickly and processing or saving more data that is derived from the human mind. As a result, it leads to creativity, invention, and change on the one hand, and the development of computers capable of replicating human intellect on the other. Artificial intelligence has advanced dramatically in recent years, and it has emerged as a leader in the face of the world's difficulties, the most recent of which is the Coronavirus, which has become a global worry. Artificial intelligence can diagnose Coronavirus infection to accurately, quickly, and early identify the infected, allowing competent authorities to take the necessary measures and measures to address the disease, such as quarantine measures to prevent infection from spreading further and providing necessary health care to the injured as soon as possible. When health care professionals and authorities utilize AI to find trends in massive amounts of data, they can make better decisions and plan ahead of time. Because the population is not entirely mixed, and it tends to segregate into groups that rarely interact with one another, the application of artificial intelligence leads to tracking is especially beneficial in detecting "specific groups" of people.

Keywords

Artificial Intelligence, COVID-19, Patient Control, Diagnose

Micro Services vs. Monolithic Architectures

Nada SalahEddin ElGheriani*

College of Computer Technologies, Tripoli – Libya
nada.slhxx@gmail.com

*: Corresponding Author

ABSTRACT

Software development seems to be on the rise, owing to growing necessity for businesses to go online. There is a push to develop upgraded applications that will help businesses become more efficient and grow.

Today's software architectures include monolithic and microservices, which are both popular and powerful. For microservice architecture brings practical benefits such like scalability and flexibility, as well as being a cost-effective means of developing large applications. On the flipside, the monolithic approach is losing favor since it endangers current software delivery methodologies.

In this paper, we will discuss the differences between Microservices and Monolithic Architectures, highlighting their strengths and weaknesses in each, and minding a comparative depending on selecting a simple travel application structure, which wins to be chosen as the best choice in software business world.

Keywords

Microservices Architecture, Monolithic Architecture,
Software Architecture, Application.

Performance Analysis of Content Serving Through Device-To-Device Communication

Asaad S Daghah*

Al-Furat Al-Awsat Technical University–
Iraq
ad466kent@atu.edu.iq

Nasir Hussein Selman

NTC– Iraq
nhsm1969@yahoo.com

Osamah Shabaa

Al-Furat Al-Awsat Technical University–
Iraq
osama.ali.ms.etcn@student.atu.edu.iq

Ali Athab

Al-Furat Al-Awsat Technical University–
Iraq

*: Corresponding Author

ABSTRACT

In this paper, content sharing (Note: content could be any file, image, video, ..., etc.) using device-to-device (D2D) communication is proposed. For the file delivery, a general outage probability form is derived based on the storage cache unit of the user device, the file popularity, and the signal to interference plus noise ratio (SINR).

We further reduce this formula to a tractable closed-form expression. Initially, the user equipment (UE) is randomly distributed based on the Poisson point process on the cell. The Zipf distribution is used to model the file popularity, where the shape parameter is the most effective in the performance.

The main results showed that outage probability decreases substantially with the increase of popularity shape parameter as well as with the increase of the cache storage unit of the UE. For accurate system analysis, a Monte-Carlo simulation has used to validate the theoretical results, and it is showed a perfect match between simulation and theoretical results.

Keywords

D2D Communication, Stochastic Geometry, Outage Probability.

Text Cryptography Based on Three Different Keys

Omar Fitian Rashid *

Al Hikma University
College – Iraq
Omar.fitian@hiuc.edu.iq

Mohammed Jasim

Mohammed
Al Hikma University
College – Iraq
mohammed.jasim@hiuc.edu.iq

Mustafa Tareq Abd

Al Hikma University
College – Iraq
Mustafa.tariq@hiuc.edu.iq

*: Corresponding Author

ABSTRACT

Secure information transmission over the internet is becoming an important requirement in data communication. These days, authenticity, secrecy, and confidentiality are the most important concerns in securing data communication. For that reason, information hiding methods are used, such as Cryptography, Steganography and Watermarking methods, to secure data transmission, where cryptography method is used to encrypt the information in an unreadable form. At the same time, steganography covers the information within images, audio or video. Finally, watermarking is used to protect information from intruders. This paper proposed a new cryptography method by using three different keys to make the system harder to break by outsider attackers. This system is done based on seven steps; the first step is converting the plaintext based on the first generated key that leads to substitute each character in plaintext, the second step is embedding second generated key with the message that want to send, the third step is done by converting text to their equivalent ASCII format. The fourth step is converting these ASCII format to Binary numbers; then, these numbers are shifted based on the third generated key. These binary numbers are converted to ASCII, and the last step is to convert ASCII to their equivalent characters. The achieved text is the ciphertext that will be sent.

Keywords

Text Cryptography, Cryptography, Plaintext, Ciphertext.

Computer Science & Engineering

Paper ID: 34

The Blockchains Technologies for Cryptocurrencies: A Review

Marah Mohammed Taha*

University of Mosul – Iraq
marah.mohammed@alnoor.edu.iq

Mafaz Alanezi

University of Mosul – Iraq
mafazmhalanezi@uomosul.edu.iq

*: Corresponding Author

ABSTRACT

A blockchain is a decentralized architecture that most cryptocurrencies rely on duplicating and distributing a digital ledger of transactions across a peer-to-peer network with built in security to increase the trust and integrity of the transactions, that are collected in sequential blocks format, linked with each other.

This paper presents a review of the blockchains' types (public, private, and hybrid) to explain each type separately and extract some characteristics that distinguish each one and a review of the working environments related to the popular cryptocurrencies (Bitcoin, Ethereum and Litecoin), which are generally considered one of the basic applications depended on the blockchains.

Keywords

Blockchain Types, Cryptocurrency, Bitcoin, Ethereum, Litecoin.

The Reality of e-Learning in Iraqi Universities

Rajaa Jasim Mohammed*

Al-Nisour University
College – Iraq
rajaa.j.bs@nuc.edu.iq

Jamal Kamil Kh. Abbas

Al-Nisour University
College – Iraq
jamal.k.eng@nuc.edu.iq

Sura Khalil Ibrahim

Al-Nisour University
College – Iraq
Sura.eng@nuc.edu.iq

*: Corresponding Author

ABSTRACT

This study was found in foreign institutions because it has reached an inorganic department of universities with Elian modernization and the framework of general education policy.

This study discussed research because it does not continue to support existing learning environments that are not compatible with modern technology due to the situation and weakness of the Internet. There is no effort for any other reason.

The most important conclusion of this study is that not only the most important research results of this study, as well as a personal interview with the request, as well as proposed solutions for proposed solutions and personal populations but genuine Interviews with certification and modern cultural Ellis is also accepted for education and especially in college formats.

Keywords

Educational Technology, Learning Skills, Electronic Learning,
Medical Education, Corona Pandemic.

Using an Accurate Multimodal Biometric for Human Identification System via Deep Learning

Saba A.Tuama *
Al Hikma University College
– Iraq
Saba.ayad@hiuc.edu.iq

Jamila.H.Saud
Al-Mustansiriyah University
– Iraq
dr.jameelahharbi@gmail.com

Zahraa A. Alobaidy
Al Hikma University College
– Iraq
zahraa.abd@hiuc.edu.iq

*: Corresponding Author

ABSTRACT

Biometric systems for automated identification of an individual rely on behavioural or physiological variables linked to the individual features. The function of Biometric systems lies in two modes: verification and identification. In verification mode, a claimed identity is either denied or accepted, and in identification mode, the identity of an unknown person is revealed. Multibiometric systems are used to establish an individual's identification by combining information obtained from several biometric sensors, samples, units, algorithms, or features in a complementary manner. They are used to identify people for improving security. Therefore, these systems are intended to prevent spoofing, facilitate continuous monitoring, enhance population coverage, and provide fault tolerance to biometric applications. This study proposes an identification system for the individual based on the ear and tongue pattern. The proposed method consists of four main stages include pre-processing, fusion, feature extraction, and classification stage. In feature extraction stage convolution neural network (CNN) extracts the essential features from the input image. This system is robust to noise and insensitive to rotation variation. The proposed method was tested on real datasets and achieved an average accuracy of 99.72% for all datasets.

Keywords

Multibiometric, Identification System, Ear Biometric, Convolution Neural Network, Tongue Pattern.

Wide Band Omni-Directional Bow-Tie Antenna for Wireless LAN Application

Taha Raad Al-Shaikhli *

Al-Nisour University College– Iraq
taha.r.eng@nuc.edu.iq

Jamal Kamil Kh. Abbas

Al-Nisour University College– Iraq
jamal.k.eng@nuc.edu.iq

Sura Khalil Ibrahim

Al-Nisour University College– Iraq
Sura.eng@nuc.edu.iq

Ahmed Raed Al-Tameemi

Al-Nisour University College– Iraq

*: *Corresponding Author*

ABSTRACT

The goal of this research is to create a Bow-Tie antenna that can be used in wireless applications. The bow-tie microstrip antennas were created for wireless LAN applications that use a 2.4 GHz operating frequency. Prototypes that have been designed have a higher chance of reaching improved bandwidth and gain with a motivation that controls radiation. It also serves as a means of ensuring downsizing, for which Bow-Tie antennas are an excellent choice.

The return loss and radiation patterns simulation and measurement findings were given.

The simulation has been carried out by using Computer Simulation Technology (CST) based on its highly accurate results compared to fabrication results in reality layout.

The bandwidth of the antenna design measurement and simulation results in a better-returned loss.

Keywords

Bow-Tie Antenna, LAN, Wireless Application, Wide band Frequency, CST.

Deep Learning for Covid-19 Classification Using CT Scan Slices of Lung

Qusay Jafar *

University of Babylon, Iraq
qussaya.msc.sw@student.uobabylon.edu.iq

Israa Hadi Ali

University of Babylon, Iraq
israa_hadi@itnet.uobabylon.edu.iq

*: Corresponding Author

ABSTRACT

Since the rapid spreading of covid-19 in 2019 in the whole world, it was conceded in 2020 as a pandemic. The long timeline of PCR tests and lack of test tools kits in many hospitals leads to fast infection according to the slow diagnosis. Various experiences of radiologists cause deferent in accurately detection lessons. This research suggested and designed a model based on utilizing the deep learning (DL) algorithms to detect the infection of covid-19 patients. Transfer learning VGG16 has been manipulated and used to solve the problem. Manipulating on VGG16 has been accomplished to achieve acceptable accuracy. The tuning on the last three layers of VGG16 architecture (dense layers) by replacing them with two layers (flatten layer and dense layer). The dense layer that is added deals with binary classification problems depending on the sigmoid function. This tuning serves the current study by speeding up the prediction of the model and also increasing the accuracy. A large COVID-19 CT scan slice dataset has been used to train and test the model. The result of testing reached 99.7% with a loss of 0.0085 and a validation loss of 0.0162. The obtained result proved that the system can help the radiologist accommodate the pandemic.

Keywords

Deep learning; Covid-19; Transfer learning.

Data Reduction Based on Adaptive Stream Window Size for IoT Data

Rawaa Saeed

University of Babylon,
Iraq
rawaa.saeed.gsci8@student.
uobabylon.edu.iq

Muhammed Mahdi

University of Babylon,
Iraq
wsci.muhammed.a@uobabylon.
edu.iq

Mahdi Abed Salman

University of Babylon, Iraq
mahdi.salman@uobabylon.
edu.iq

*: Corresponding Author

ABSTRACT

IoT produces data that is streamed to servers for processing. Such a stream is characterized by redundancy. Data streams are often processed in blocks referred to as windows with a given size known as the window size. The estimation of window size is affecting the accuracy and reduction rate. This paper uses a genetic algorithm to optimize window size for the reduction process. The genetic algorithm is combined with fuzzy subtractive clustering as a fitness function. The experimental results show the impact of suitable window size on the accuracy and reduction rate for each type of sensor.

Keywords

IoT; Stream Data; Window Size.



Engineering

Engineering

Paper ID: 42

A Review of HVDC Cables Technologies and Their Challenges

Raad Salih Jawad*

National School of Engineering of Safax-
Tunisia
raad.saleh@gmail.com

Hafedh Abid

ENIS- Tunisia
abidhafedh@gmail.com

*: *Corresponding Author.*

ABSTRACT

The need for matching the increasing demand of electricity forced toward connecting grids cross-sea or land, connecting remote power sources to centers of load by using high voltage direct currents systems. These interconnections among grids require special types of HVDC cables to withstand operating conditions for such high loads and voltages. HVDC cables are one of the important elements of any HVDC transmission system; their specifications limit the capability of the system to transmit high power capacity. A reliable and robust system requires choosing the type of cables reasonable to its use depending on the insulation technology and manufacturing method. This paper reviews HVDC cables and their technologies, highlighting the manufacturing challenges of these cables.

Keywords

HVDC; HVAC; LCC HVDC; VSC HVDC; OF Cable

Engineering

Paper ID: 43

Additive Manufacturing of Custom Orthopedic Implants: A Review

Zaineb Hameed *
Al Hikma University College-
Iraq
Zaineb.hameed@hiuc.edu.iq

Luma Al-Kindi
University of Technology-
Iraq
luma.alkindi@gmail.com

Ghassan Al-Kindi
Mechanical Engineering
University Sohar- Oman
gkindi@su.edu.om

**: Corresponding Author.*

ABSTRACT

(AM) Additive manufacturing is a very fast technology development for the industrialization of the biomedical implants. It delivers an excellent and ample chance of the biomimicry for best complex shapes of carnal implants due to its customized invention, low manufacturing time and cost. AM Metal from Biomedical Implants has raised practitioners alertness of many medical due to its raised high strength, durable and wear-resistant properties, patient custom implants for rapid healing, and it is set up to be the fit for a substitute to mutilation. The reliability of additively manufactured parts is constantly improving, which contributes to their increasing use in medical implants. This paper examines the literature on the use of am in patient implants, with focusing on the custom of 3D printed implants. Process chain in the application of AM is identified. To find general information, academic publications databases were used.

Keywords

Additive Manufacturing; Orthopedic Implants; Customized Implants

Engineering

Paper ID: 44

An Accurate DL Threat Image Detection Algorithm for X-Ray Baggage Dataset

Saif S ALshamari *
University of Babylon- Iraq
saifsarmed123@gmail.com

Hilal Abbood Al-Libawy
University of Babylon- Iraq
hilal_hussain@yahoo.com

*: Corresponding Author.

ABSTRACT

Recently, the use of x-ray imaging has become widespread used in public places, stadiums and airports to reduce the risk of terrorist attacks. The importance of baggage inspection using X-ray imaging comes from its ability to detect the threat object like (explosives and guns). Different approaches have been followed to improve accuracy level of threat detection systems especially in deep learning area such as convolution neural networks (CNNs) approach. The researchers obtained good detection performance results using publicly available datasets. However, accuracy improvement is still a vital concern in security sector. In this paper, a proposed deep learning algorithm has been suggested to enhance threat image projection system performance. The core of this algorithm is based on deep learning network (DenseNet) as well as test time augmentation method. The suggested algorithm is trained on the well-known bench mark publicly available dataset (GDxray dataset). As far as we know, this is the first time that a DenseNet121 has been used to classify GDxray dataset. Moreover, the logistic regression model was added as a final stage in order to get the final prediction. The obtained results, shows the ability of the proposed algorithm to detect the threat images with an accuracy of (97.68%), which outperforms the existing approaches using the same dataset.

Keywords

Convolutional neural networks; Classification; Threat image projection;
X-ray Baggage inspection; DenseNet121

Engineering

Paper ID: 45

Evaluation of the External Radiation Effects of Fly Ash Added to Iraqi Concrete

Salam Tareq Jawad *

Department of Optic Technologies
Al Hikma University College – Iraq
Salam.tareq@hiuc.edu.iq

**: Corresponding Author.*

ABSTRACT

Increased in treats in measuring radionuclides and radon concern tractions in fly ash, cement and other components of building products is due to concern of health hazard of naturally occurring radioactive materials. The current work focuses on studying the influence of fly ash (FA) on radon – exhalation rate (radon flux) from cementations material. The tests were carried out on cement past specimens with FA content. It is found that despite the (more than 3 times, compared with Portland cement). The radon – exhalation rate was found top significantly lower in concrete containing fly ash than in ordinary concrete.

Keywords

Radionuclide, Radon, Fly ash, Cement, Concert

Engineering

Paper ID: 46

Formation Energy of Alpha-Cluster Preformation Probability for Cluster-Formation Model

Saad M. Saleh Ahmed *

Department of Optics Technology
Al Hikma University College, Iraq
saadtm2000@gmail.com

**: Corresponding Author.*

ABSTRACT

The preformation factor, preformation probability or the amount of alpha clustering was recently and well determined using the cluster-formation model (CFM) for alpha decay nuclei. Alpha-cluster formation energy was proposed and used in this model to calculate the factor that is important to calculate the alpha decay width. A new formula for this energy was derived and its validity is investigated. This formula was successful to describe alpha clustering and it can be included in the calculation of any future work.

Keywords

Cluster- Formation Model, Alpha Cluster Formation Energy, Alpha Decay Nuclei, Preformation Factor.

Engineering

Paper ID: 50

Metaheuristics on the Multi- Objective in Cellular Manufacturing: Review Paper

Dhulfiqar Hakeem D*

University of Technology-
Iraq
pme.20.37@grad.uotechnology
.edu.iq

Sawsan Al-Zubaidi

University of Technology-
Iraq
Sawsan.s.abdali@uotechnology
.edu.iq

Luma Al-kind

University of Technology-
Iraq
luma.alkindi@gmail.com

**: Corresponding Author.*

ABSTRACT

cellular Manufacturing (CM) is a GT component that is defined as a production system in which related components are categorized as part families and parts that need comparable manufacturing techniques are separated into different manufacturing cells. This paper presents a thorough review of the literature on cell formation issues in cellular manufacturing systems for multi-objective problems solved with various heuristics and metaheuristics. Genetic Algorithm (GA), Ant Colony Optimization (ACO), Particle Swarm Optimization (PSO) and other current algorithms are discussed in this work, as well as simulated annealing, tabu search, and other heuristics and metaheuristic algorithms. Future research topics are suggested to include labor assignment, uncertainty in component and machine efficiency, and demand changes.

Keywords

Cellular Manufacturing; Cell Formation; Multi-Objective; Heuristics and Metaheuristics; Ant Colony Optimization.

Engineering

Paper ID: 51

Photodegradation of Automobile Exhaust Gases Using Catalytic Asphalt Pavement

Seba Saad Mohammed*
Institute of Northern
Technical University- Iraq
sebasaid75@gmail.com

Zainab Yousif Shnian
University of Technology-
Iraq
80062@uotechnology.edu.iq

Mohammad Fadhil Abid
Al-Turath University College-
Iraq
mohammad.fadhil@turath.edu.iq

**Mohammed Ibrahim
Mohammed**
Al Hikma University College-
Iraq
mohammed.ibrahim@hiuc.edu.iq

Kadhim Abed
General Directorate for
Vocational Education
Ministry of Education- Iraq
rabihazw@yahoo.com

Zaineb Hameed Neamah
Al Hikma University College-
Iraq
zaineb.hameed@hiuc.edu.iq

*: Corresponding Author.

ABSTRACT

Vehicular emissions (e.g., NO, and CO gases) are a substantial contributor to air quality problems in urban areas. The current work utilized paving asphaltic concrete with a locally-made photocatalyst to degrade NO_x CO evolved from an automobile engine. Various parameters were investigated such as gas flow (1, 2, and 3 L/min), light intensity (35, 50, and 70 W/m²), wt% Cu doped nano-TiO₂ (0, 2, 3.6, and 4.2 wt. %), and relative humidity (50%) to predict their influence on NO and CO oxidation. SEM, EDX, and FTIR were utilized to identify the doped photocatalyst. The outcomes showed that gas flow rate impact inversely on the degradation efficacy. In contrast, light intensity and Cu loading effect positively. After 3 hours of operation, a gaseous flow of 1 Lmin⁻¹, light irradiation (50W/m²), and Cu loading (3.6 wt. %) onto nano-TiO₂ resulted in a removal efficiency of 70.6%. With the same aforementioned operating variables, the CO removal efficiency was 49.4%.

Keywords

Air purification; Photocatalysis; Titanium Dioxide.

Engineering

Paper ID: 52

Production Improvement with Lean Adopting Value Stream Mapping

Ayat Sabah

Production and Metallurgical
Engineering Dept., University
of Technology-Iraq
pme.19.30@grad.uotechnology
.edu.iq

Luma A.H.Al-Kindi

Production and
Metallurgical Engineering
Dept., University of
Technology-Iraq

Zainab Al-Baldawi

Production and
Metallurgical Engineering
Dept., University of
Technology-Iraq

**: Corresponding Author.*

ABSTRACT

The main challenge facing industrial companies is how to stay competitive in a fast-changing world. They should adopt an effective supply chain that enables them to deliver products in short period of time. This forced organization to change their pattern of processing and become lean. There are several technologies available which help industries to get competitive advantages concerning waste. Lean manufacturing method is the best method to achieve the objectives of the industrial organizations and to reduce waste activities. The unnecessary movement, defective, waiting, inadequate processing, unnecessary inventory, excessive transport, overproduction, and the underutilization of people and facilities are the most types of waste found in the industries. Many industries have experienced the benefits of applying the lean concept in their area to improve the production processes, resources utilization, reduce production lead time, and eliminate wastes in the activities which is the goal of lean concept in the manufacturing industry. In this research, the lean concepts are presenting in the leather shoes manufacturing industry in the city of Baghdad, it aimed to decrease lead time of the production, minimize the Non-value time, and improve the production line. By using the most essential lean tool, value stream map, where the current and future map capture the flow of material and information of the production line before and after the implementation of the proposed improvement. The hybrid push/pull strategies and Kanban production was implemented to improve the production line. After adopting the suggested improvement the production lead time decreased by 76 %, therefore the Non-value added time has been reduced by 77%.

Keywords

Lean, Value Stream Map, Lead Time, Non- Value Added Time ,Push/Pull Strategies

The Effect of Coated Electrodes on MRR of Titanium Metal by Spark Machining

Maryam A. Sadik
Production Engineering and
Metallurgy Department,
University of Technology,
Baghdad, Iraq.
pme.20.55@grad.uotechnology
.edu.iq

Shukry H. Aghdeab
Production Engineering and
Metallurgy Department,
University of Technology,
Baghdad, Iraq.

Raed R. Shwaish
Production Engineering and
Metallurgy Department,
University of Technology,
Baghdad, Iraq.

*: Corresponding Author.

ABSTRACT

The electric spark cutting process is one of the most important cutting processes in the world of industry because it allows for the cutting of metals with a high hardness and the formation of complex shapes. The purpose of this research is to investigate the influence of four copper electrodes on the material removal rate (MRR) when cutting titanium metal. Three copper electrodes were coated with various materials (nickel, silver, and gold). The inputs for the practical side were current in values (12, 24, and 42 A) and pulse on time in values (200, 400, and 600 μ s). Optimal outcomes were achieved by the use of the analysis method (full factorial design). According to the practical results the MRR increases as the current and pulse on time increase. The electrode coated with gold had the highest MRR (139.6507mm³/min), while the electrode coated with nickel had the lowest MRR (5.8652 mm³/min). Furthermore, the predicted results are very closely to the practical results

Keywords

Material removal rate; Factorial analysis; Coating electrode

Engineering

Paper ID: 55

The Effect of Using Four Types Coated Electrodes on Material Removal Rate of Titanium Metal by Electrical Discharge Machining

Maryam A. Sadik

Production Engineering and
Metallurgy Department,
University of Technology,
Baghdad- Iraq
raed.r.shwaish@uotechnology.edu.iq

Shukry H. Aghdeab

Production Engineering and
Metallurgy Department,
University of Technology,
Baghdad- Iraq
Shukry.H.Aghdeab@uotechnology.edu.iq

Raed R. Shwaish *

Production Engineering and
Metallurgy Department,
University of Technology,
Baghdad- Iraq
pme.20.55@grad.uotechnology.edu.iq

**: Corresponding Author.*

ABSTRACT

The electric spark cutting process is one of the most important cutting processes in the world of industry because it allows for the cutting of metals with a high hardness and the formation of complex shapes. The purpose of this research is to investigate the influence of four copper electrodes on the material removal rate (MRR) when cutting titanium metal. Three copper electrodes were coated with various materials (nickel, silver, and gold). The inputs for the practical side were current in values (12, 24, and 42 A) and pulse on time in values (200, 400, and 600 μ s). Optimal outcomes were achieved by the use of the analysis method (full factorial design). According to the practical results the MRR increases as the current and pulse on time increase. The electrode coated with gold had the highest MRR (139.6507mm³/min), while the electrode coated with nickel had the lowest MRR (5.8652 mm³/min). Furthermore, the predicted results are very closely to the practical results.

Keywords

Material removal rate, factorial analysis, coating electrodes, EDM.

Engineering

Paper ID: 57

Using Arduino to Design a Medical Device for Detection and Monitor

Mohammed Imad Kadhim*
Middle Technical University-
Iraq
Mohammedemad9797@gmail.com

Rashid Ali Fayadh
Middle Technical University,
Iraq & College of Electrical
Engineering Techniques-
Malaysia
rashidfayadh47@gmail.com

Jinan Mahdi
Middle Technical
University- Iraq
Jinanf2008@yahoo.com

*: Corresponding Author.

ABSTRACT

The normal range for blood oxygen saturation is 80-100%. As a result, the body's blood oxygen levels must be maintained. Humans are also essential to keep their cardiac condition in good working order. Because the heart is a vital organ in the human body, its disease is the leading cause of death. As a result, the heart's state must be checked, one of which is the condition of a normal pulse range of 60 to 100 beats per minute. Monitoring human body temperature is just as critical as monitoring oxygen saturation and heart rate, especially in young children. Science and technological advancements must be able to assist in the resolution of human medical difficulties. challenges that threaten human survival, an integrated assessment of oxygen saturation in the lungs was used in this investigation. The human body's blood, heart rate, and temperature have been combined into a single tool, with measurement results shown immediately on the measuring instrument's LCD display. The MAX30100 sensor detects blood oxygen saturation and heart rate, while the MLX90614 sensor detects body temperature. All of the sensors are linked to the Arduino. Temperature, oxygen saturation, and heart rate are all measured by the unique sensors. The code for each sensor is written using the Arduino software. One of the advantages of the device used is that it is light in weight and can be carried anywhere and easily. It also provides accurate reading, takes more than one reading at a time, and is low cost, unlike the devices used in the medical field.

Keywords

Heart rate; Human body; Oxygen saturation; MAX30100; MLX90614.

Some Well-Known Iraqi Figures of Natural and Applied Sciences

In the honor of the memory of some well-known Iraqi figures of Natural and Applied Sciences and appreciation of their giving and gratitude for their contributions, which had a significant impact on the development of Iraqi, Arab, and even global society, the sessions halls of the 1st Al Hikma International Conference on Natural and Applied Sciences (HICNAS2022) were named after their names.

جلسة محور البيولوجي

قاعة المرحوم الاستاذ الدكتور عبد الحكيم احمد عبدالله الراوي

١٩٣٥ - ٢٠١٨ من مدينة راهو

نال شهادة الدكتوراه في تخصص علوم الحياة عام ١٩٦٦ من جامعة كنساس في الولايات المتحدة الامريكية. أسس مركز علوم الجار في جامعة البصرة وشارك في تأسيس كلية العلوم للبنات في جامعة بغداد، ترأس قسم علوم الحياة في جامعة بغداد وبعدها ادار مركز البحوث البيولوجي ثم رئيساً لقسم علوم الحياة بكلية العلوم للبنات في جامعة بغداد.. اشرف على العديد من رسائل الماجستير واطارح الدكتوراه وترأس المناقشات العلمية ، وله العديد من المؤلفات والبحوث العلمية. رحمه الله تعالى ونفعنا بعلومه.



جلسة المحور الهندسي

قاعة المرحوم الاستاذ المتفرس الدكتور قحطان خلف الخزرجي

١٩٣٧ - ٢٠١٨ من مدينة الحلة

نال شهادة الدكتوراه في تخصص هندسة المواد من المانيا. وهو احد اعمدة هندسة المواد ويلقب بعميد المهندسين، حيث اصبح عميداً لكلية الهندسة بجامعة بابل ثم عميد قسم هندسة المواد في الجامعة التكنولوجية، بعدها ترأس الجامعة التكنولوجية، اشرف على العديد من رسائل الماجستير واطارح الدكتوراه وترأس المناقشات العلمية، وله العديد من المؤلفات والبحوث العلمية. رحمه الله تعالى ونفعنا بعلومه.



جلسة محور هندسة وعلوم الحاسبات

قاعة المرحوم الاستاذ الدكتور هلال عبود تقي البياتي

١٩٤٤ - ٢٠٢٠ من مدينة واسط

نال شهادة الدكتوراه في الاحصاء والمعلوماتية عام ١٩٦٩ من جامعة ولاية فرجينيا. ادار دائرة الابحاث في الجهاز المركزي للاحصاء، واصبح مدير عام المركز القومي للحاسبات الالكترونية، وله العديد من المؤلفات والبحوث العلمية ومنها القاموس الاحصائي إنكليزي/عربي، اشرف على العديد من رسائل الماجستير واطارح الدكتوراه وترأس المناقشات العلمية. كان المرحوم عضو المعهد الدولي للاحصاء و امين عام اتحاد الاحصائيين العرب، ومستشار رئيس وزراء الحكومة العراقية المؤقتة ٢٠٠٤-٢٠٠٥. يعد المرحوم البياتي من ابرز الاشخاص الذين عملوا على ادخال الانظمة الحاسوبية في عدد من الاعمال الخدمية والادارية والحسابية في العراق. رحمه الله تعالى ونفعنا بعلومه.



كلية الحكمة الجامعة

1st Al Hikma International Conference on Natural and Applied Sciences - HICNAS



Scientific and Techniqal Sposnsers:



Publication Partners:

