ABSTRACT BOOK

Fifth International Scientific Conference of Iraqi Al-Khwarizmi Association In Karbala

- # <u>INTRODUCTION</u>

Scientific societies have played a prominent role in advancing science and linking it to society. Scientific societies were built on the basis of volunteerism through the efforts of scientists, researchers, and academics.

At the international level, the Scientific Society is founded on a sincere voluntary desire by groups of learners and intellectuals to contribute to the collection and dissemination of useful information in the field in which we work among members of society without regard to the material output resulting or expected for its members.

the Al-Khawarizmi Iraqi Society is one of the scientific societies concerned with the dissemination of the culture of mathematics and its sciences and includes the disciplines of mathematics, computer, statistics, and physics. It was established under the Law of Scientific Associations No. 55 of 1981 and its amendments as per the Ministerial Order No. (3/10793) in 10/10/2012. It works according to an internal system approved by the Legal Department of the Ministry of Higher Education and Scientific Research. The members of Al-Khawarizmi Iraqi Society based in the province of Qadisiyah aims to open other branches to it in the rest of the provinces.

1. Cooperation to raise the level of instruction and scholarship in the subject areas of the Association's specialties.
2. Promoting scientific research and sharing in the research, exchanging its results and linking applied research topics to the needs of Iraqi society.
3. Documenting cooperation between the corresponding departments inside and outside Iraq through the members of the Association.
4. Issue a quarterly Iraqi scientific journal in the specialties of the Society.
5. Unification of scientific terminologies in the specialties of the Association and encourage Arabization and composition in the Arabic language.

6. Attracting the scientific expertise and expertise from outside Iraq to benefit from their potential and to find out what is new in the fields of the Association's specialties.
7. Provide opportunities to complete the graduate studies of the members of the Association in coordination with the members of the Assembly as much as possible.

The Assembly adopted some means to achieve the objectives of the above-mentioned Association, as indicated in the following:-

1. Holding lectures, seminars, and conferences to discuss innovatively and applied research and findings of the member researchers as well as discuss the problems of society.
2. Issuing scientific journals and publications reflecting their activities, including research of their members and their achievements and exchanging with their counterparts locally and internationally.
3. Establishing scientific libraries through exchange or acquisition.
4. Organizing meetings or periodic meetings to study the new scientific terminology.
5. Organizing courses and studies for the activation and scientific modernization of the members.
6. To establish meetings between the Association and some scientific bodies rather than to serve the community.
7. Providing consultancy and technical services.
8. Provide a data room and a specialized library that combines scientific activity in the fields of the Society's specialties.

SCIENTIFIC COMMITTEE

- ## Scope of Mathematics
1. Prof. Dr. Noori Farhan Almayahy
2. Prof. Dr. Sattar Hameed Hamzaa
3. Asst.Prof.Dr.Hassan Rashed Yassein
4. Asst.Prof.Dr. Boushra Youssif Hussein

- ## Scope of Statistic
1. Prof. Dr. Mohammed Habeeb Alsharoot
2. Prof. Dr.Kareema Abed Al-Kadhim
3. Asst.Prof. Dr.Mohannad Faiz Alsaadony

- ## Scope of Physics
1. Asst.Prof.Dr. Saleem Azara Hussain
2. Asst.Prof.Dr. Abdulhussein Abbas Khdhair
3. Asst.Prof.Dr. Firas A'aid Najim

- ## Scope of Computer
1. Prof. Dr. Khalil Ibrahim Alsaif
2. Prof. Dr.Shakir Kadhim Ali
3. Asst.Prof. Dr. Lmyiaa A. Noor

• <u>ORGANIZING COMMITTEE</u>

1. Prof.Dr. Noori Farhan. Almayahy
2. Prof. Dr. Mohammed Habeeb Alsharoot
3. Asst.Prof.Dr. Saleem Azara Hussain
4. Asst.Prof.Dr.Hassan Rashed Yassein
5. Asst.Prof.Dr.Muhannad Faiz Al-Saadony
6. Asst.Prof.Dr.Hussam Abid Ali Mohammed
7. Dr.Reyadh Delfi. Ali
8. Dr.Hazim Ghdhaib Kalt
9. Dr.Gorgees Shaheed Mohammed
10. Dr.Faeza Lafta Hasan
11. Dr.Enaam Farhan Adhab
12. Dr. Salwa Shakir Baawi
13. Lect.Ali Khalid Hasan
14. Asst.Lect.Hussein Ali Kareem
15. Asst.Lect.Faiz Jawad Abdul Kadhim
16. Asst.Lect. Wasan A. Alawsi
17. Asst. lect. Zahraa Ch. Oleiwi
18. Asst.Lect.Raghda Naser Abdul Hussein
19. Mr. Hussain Khalil Hashim
20. Mr.Ihsan Mohammed Ali
21. Mr. Gasan Mohammed Abbas
22. Mr.Hadi Jameel Mohammed
23. Mrs. Fadaa Hadi Ibrahim
24. Mr.Hamza Mohsen Alrodhan

Mathematics Scope
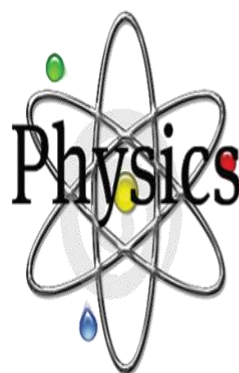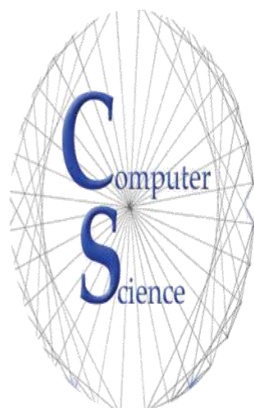
Related to Non – Vanishing Parts of the Dihedral Set D₃

Zinah Makki Kadhim AL-Shuhaib1, Mohammed Baqer Hashim al Hakeem2

Department of mathematics, Directorate General of Education Karbala , Karbala ,Iraq

1Zeanh73@ gmail.com

2mbhmsc2015110@gmail.com

Abstract*:*

For n ϵ z^+ the dihedral group D3, the part g ϵ D3 is supposed as a D3 non–vanishing when χ (g) ≠ 0; for whole χ ∈ Irr(D3). It's evaluated that the whole the D3 non–vanishing part locate in its Fitting subset F(D3). In this work, an allied is found to the non–vanishing basics of the dihedral set D3 that holds when D3 is solvable set.

Keywords: Soluble set, Feature, Fitting subset, Non–vanishing part, Dihedralset D3

An Intuitionistic Fuzzy Pseudo Enlarged Ideal of a BH-Algebra

Hussein Hadi Abbas[1] and Khoudair Obeas Kadem[2]

1 Department of Mathematics, Faculty of Education for Girls, University of Kufa, Iraq
Department of Mathematics, Faculty of Computer Science and Mathematics, University of Kufa, Iraq
khudhayer1981@gmail.com

Abstract:

In this Work the concepts of an intuitionistic fuzzy pseudo ideal of a pseudo BH-algebra are insert. several propositions and examples are scrupulous to study properties of this idea.

Keywords. BH-Algebra, Pseudo BH-Algebra, intuitionistic fuzzy pseudo ideal in pseudo BH-algebra, intuitionistic Enlarged ideal in pseudo BH-algebra.

Von Neumann Regular Semiring

Alaa Hussein Ali[1]   Asaad Mohammed Ali Alhossaini[2]

College of Education for pure Sciences University of Babylon
alaaasd476@gmail.com   asaad_hosain@itnet.uobabylon.edu.iq

Abstract:

The aim of this action is a study and investigate ″Von Neumann regular″ semirings, some related concepts, e.g. reduced semirings; duo semiring, quasi-duo, and weakly duo semirings; regular, weakly regular and strongly regular semirings, also investigated. Some known results related to those concepts in rings were converted to semirings. Another aim of this paper is characterization Von Neumann Regular condition by the principal right ideal generated by an idempotent element.

Key words. Semirings**,** reduced semiring; duo, quasi-duo semiring, weakly duo Semiring; regular, weakly regular, strongly regular**;** Boolean semiring**;** semifield**;** Nilpotent.

**Fifth International Scientific Conference Of
April 2020**
    Iraqi Al-Khwarizmi Association In Karbala
    13-14

Intuitionistic fuzzy S-filter in Q-algebra

Habeeb Kareem Abdullah1, Rakzan Shaker Naji2

Mathematics Department, University of Kufa
1habeebk.abdullah@uokufa.edu.iq
Mathematics Department, University of Kufa
2shakrakzan192@gmail.com

Abstract :

This project aimed to concept types intuitionistic fuzzy $\mathcal{S}$-filter and intuitionistic fuzzy complete $\mathcal{S}$-filter of Q-algebra. Showing the relationship between the different types of intuitionistic fuzzy filters and condition that must be put on Q-algebra using an example putting forward to explain that .Explore the properties of the types of intuitionistic fuzzy filter, finally a chart has been drawn up showing the types and relationship between them .

Keywords: Q -algebra, $\mathcal{S}$ -filter, complete $\mathcal{S}$ -filter, intuitionistic fuzzy $\mathcal{S}$ -filter,, intuitionistic fuzzy complete $\mathcal{S}$-filter.

intuitionistic fuzzy pseudo ideals in Q-algebra

Habeeb Kareem Abdullah and mortda taeh shadhan

Department of Mathematics, Uinversity of Kufa
habeebk.abdullah@uokufa.edu.iq
Department of Mathematics, Uinversity of Kufa
alnbhanymrtdy05@gmail.com

Abstract:

Present several types in this paper of intuitionistic fuzzy ideal in Q-algebra , called (intu-itionistic fuzzy pseudo ideal , intuitionistic fuzzy k-pseudo ideal, intuitionistic fuzzy c-psudoideal , intuitionistic fuzzy complete- k-pseudo ideal). We have introduced and illustrated severalideas that evaluate their relationship in a Q-algebra.

Unit Regular Clean Rings

1Israa Th. Younis,   2 Prof .Dr. Nazar H. Shuker

1Department of Mathematics, college of computer science and Mathematics, University of Mosul.
2 Department of Mathematics, college of computer science and Mathematics, University of Mosul.
israthanon8080@gmail.com

Abstract:
        A ring *R* is called unit regular clean, if every element is the sum of an idempotent and a unit regular elements. In this paper we introduce the notion of unit regular clean ring. we investigate some of it's basic properties and it's relation with clean ring.

Keyword: Clean ring ,unit regular ring ,unit regular element ,r-clean ring

Unit Regular Clean Rings

Raida D.Mahmood   Khedher J.khider

raida.1961@uomosul.edu.iq   khedirjumaa@gmail.com
College of Computer Science and Mathematics, University of Mosul, Mosul . Iraq

Abstract:

A ring $\Re$ is said to be $\Im\Re$ - rings , if $\sigma \in \sigma\Re\sigma$ for all $\sigma \in \Im(\Re)$ and $\Re$ is called right (left) S$\Im$F-ring , if every simple right (left) $\Re$-module is $\Im$-flat . In this paper , we give some characterization of $\Im\Re$ - rings and S $\Im$ F-rings . Further , it is shown that $\Re$ is $\Im\Re$ - ring if and only if , $\Re$ is S $\Im$ F-ring , with $\ell(\sigma) \subseteq r(\sigma)$ for every $\sigma \in \Im(\Re)$ if and only if $\Re$ is $\aleph\Im$ with every essential right ideal is $\Im$-flat . Additionally , we have investigated $\Im\Re$ - rings with simple singular right $\Re$ - modules are $\Im$-flat .

Key words : $\Im\Re$ - rings , $\Im$-flat , $\aleph\Im$-rings , reduced rings .

On $\mathcal{P}W\pi$-regular rings

Raida D. Mahmood   /   Khedher J. khider

Department of Mathematics / College of Computer Science and Mathematics
University of Mosul / Mosul - Iraq
raida.1961@uomosul.edu.iq   /   khedirjumaa@gmail.com

Abstract:

As a popularization of weakly π-regular rings , we tender the connotation of $\mathcal{P}W\pi$-regular rings , that is if for each $\mathfrak{a} \in \mathcal{J}(\mathfrak{N})$, there exist a natural number $\mathfrak{n}$ such that $\mathfrak{a}^{\mathfrak{n}} \in \mathfrak{a}^{\mathfrak{n}}\mathfrak{N}\mathfrak{a}^{\mathfrak{n}}\mathfrak{N}$ ($\mathfrak{a}^{\mathfrak{n}} \in \mathfrak{N}\mathfrak{a}^{\mathfrak{n}}\mathfrak{N}\mathfrak{a}^{\mathfrak{n}}$) . In this treatise , numerous properties of this sort of rings are discussed , some important results are secured . Using the connotation of $\mathcal{P}W\pi$-regular rings . It is show that :

1- Let $\mathfrak{N}$ be a right $\mathcal{P}W\pi$-regular ring and $\aleph\mathcal{J}$-rings with $\mathfrak{a}^{\mathfrak{n}}\mathfrak{N} = \mathfrak{N}\mathfrak{a}^{\mathfrak{n}} \, for \, every \, \mathfrak{a} \in \mathcal{J}(\mathfrak{N})$ and for at least one of a natural number . Then $\mathcal{J}(\mathfrak{N}) = \aleph(\mathfrak{N})$.

2- Let $\mathfrak{N}$ a right $\mathcal{P}W\pi$-regular ring and $\mathfrak{a}\mathfrak{N} = \mathfrak{N}\mathfrak{a}$ for each $\in \mathcal{J}(\mathfrak{N})$. Then $\mathfrak{N}$ is right $\mathcal{P}.\mathfrak{T}$-ring .

3- Let $\mathfrak{N}$ be a ring with $\mathfrak{r}(\mathfrak{a}) \subseteq \mathfrak{l}(\mathfrak{a})$, for each $\in \mathcal{J}(\mathfrak{N})$. If any of the next conditions are hold , then $\mathfrak{N}$ is $\mathcal{P}W\pi$-regular rings :

    i – Every maximal right ideal of $\mathfrak{N}$ is a right annihilator and right $\mathcal{JPP}$-ring .

    ii- any simple singular right $\mathfrak{N}$-module is $\mathcal{J}$-injective and $\mathfrak{N}$ is semi prime .

Keywords : $\mathcal{P}W\pi$-regular ring , $\mathcal{J}$-injective rings , $\mathcal{JPP}$-rings , $\mathcal{J}$-regular ring .

The rational valued characters of the group (Q_{2m} x C_2) when m is prime number

Najah Abed Rahi

Directorate General of Education in Karbala
Iraq – Karbala, Department of Mathematics

Abstract:

The main purpose of this paper is to find the rational valued characters table of the group (Q_{2m} x C_2) when m is a prime number, where Q_{2m} denotes the Quaternion group, and C_2 is the cyclic group of order 2.

In this paper, one finds the general form of the rational valued characters table of the group (Q_{2m} x C_2) is the tensor product of the rational valued characters of Q_{2m} and C_2.

BS-algebra and Pseudo Z-algebra

Adel Hashem Nouri

Faculty of Education, University of Kufa , Najaf, Iraq
adilh.alhajjar@ uokufa.edu.iq

Abstract:

This paper introduces a new notion of algebra called BS-algebra and some of its properties are discussed in detail. Also, we define a S(a,b) of BS-algebra and discus of properties and theorems of it. Some of theorems of a new ideals of BS-algebra are introduced and proved .Also, we introduced some new types of ideals of Z-algebra and we linked these ideals with some theorems and properties .Also , we define the concept of pseudo Z-algebra and introduced some examples and new concepts in it, including the concept of pseudo b-subalgebra and introduced some theorems and properties in this new concepts.

Some Results on (N, k)-Hyponormal Operators

Dr.Salim D. M.[1] and Nidaa Muraeh Atheab[2]

1AL-Mustansirya University/ College of Education /Department of Mathematics
2Wasit University/ College of Education /Department of Mathematics

Abstract:
In this paper we introduce a new generalization for hyponormal operators which is (N, k)-hyponormal operators, also we study some properties of these operators, as well as, we given the solvability of the λ- commuting operator equation $ST = \lambda TS$, where $\lambda \in \mathbb{C}$, and S , T are bounded (N, k)- hyponormal operators.

δ-*Fuzzy measure on fuzzy* δ-*Algebra*

Alaa M Jasim [1] and Noori F Al-Mayahi [2]

"Department of Mathematics, College of Science, University of Al-Qadisiyah,Iraq^1" ,Diwaniyah Education Directorate,Iraq^2

Email: sybzqoa@gmail.com1, : nfam60@yahoo.com2

Abstract:

The objective of this paper are , first , a new study of fuzzy δ-algebra and we discuss the   properties of this family , second, introduce concepts related to the fuzzy δ-algbra such as fuzzy measure on fuzzy δ-algebra , and we obtained some important results deal with these concepts .

Trigonometric Neural Networks $L_p, p < 1$ Approximation

Eman Samir Bhaya, Zaineb Hussain Abd Al-sadaa

University of Babylon
College of Education for Pure Sciences
Mathematics department
e-mail: emanbhaya@itnt.uobabylon.edu.iq, e-mail: basa33432@gmail.com

Abstract:

Many researchers studied the approximation by neural networks approximation. However only using first or second modulus, that is with low speed approaching zero.

In this paper we define a class of neural networks. Then we use it to approximate functions from L_p_quasi normed spaces we prove upper and lower bounds trigonometric estimations in terms of the kth order modulus of smoothness.

Weak* topology on modular space and some properties

[a]Murtda Mohammed Jabber and [b]Prof. Dr Noori Farhan Al-Mayahi

[a]Department of Mathematics, College of Science Al-Qadisiya University.
[b]Department of Mathematics, College of Science Al-Qadisiya University
murtda01@gmail.com   Nafm60 @yahoo.com

Abstract:

This study aims to redefine the weak topology $\sigma(X_M^*, X_M^{**})$ on a specific topological dual space (modular dual space $X_M{}^*$) this is weak topology generated by all linear bounded functional on $X_M{}^*$, but we interested in a subspace of this topology generated by X_M called weak* topology on $X_M{}^*$, it follows from that the modular space X_M over the field K can be embedded in X_M^{**} by using the canonical map, we denoted to this topology by $\sigma(X_M^*, X_M)$. After that, we checked the weak* topology is Hausdorff and investigated some properties, finally, we showed that under which condition the strong topology and the weak* topology coincided.

Keyword: weak topology on modular space, weak-star topology, weak* topology on modular space, modular space, weak topology.

On Spectral Asymptotics for the second-derivative Operators

Ehsan M. Hameed[1],   Yahea H. Saleem[2]

1 Department of Mathematics, Faculty of Computer Science and Mathematics, University of Thi-Qar.
ehsan.m@utq.edu.iq
2 Department of Mathematics, College of Education for Pure Sciences, University of Basrah.
yahea_h@mail.ru

Abstract:

In this work we focus on spectral asymptotics for the second derivative operators. Here we study Schrödinger operator with zero-range potentials, because this operator has great importance for understanding the solvable models in quantum mechanics, as in the study of wave propagation in electro-dynamics and more generally in some models of theoretical physics. We have two goals in this work. We first proved that the spectrum of this operator is pure continuous and fills in an infinite number of bands separated by gaps. Then, we proved that the ratio between the lengths of the bands and gaps tends to zero at high energies.

Key Words: Differential Operator, Spectrum of an Operator, Spectral Asymptotics.

Normed Space Of Measurable Functions With Some Of Their Properties

Asawer J.Al-Afloogee[1]   Noori F. Al-Mayahi [2]

1 Department of Mathematics, College of Science Al-Qadisiya University.
2Department of Mathematics, College of Science Al-Qadisiya University
Nafm60 @yahoo.com

Abstract:

Let $L^0(\Omega, F, \mu)$ be the space of measurable functions defined on measure space (Ω, F, μ) ,where we consider any two functions in which are equal almost everywhere (a .e). Then $L^0(\Omega, F, \mu)$ is complete metric space with respect to metric functions defined by $d(f , g) = \int_\Omega \frac{|f-g|}{1+|f-g|} d\mu$ for all $f, g \in L^0(\Omega, F, \mu)$.This paper includes two main parts , the first part we prove this space $L^0(\Omega, F, \mu)$ in general is not a normed space, and second we prove norm on $L^0(\Omega, F, \mu)$ achieved if and only if she was Ω is the finite union of disjoint atom .

How Can You Escape from Earth's Gravity?

Ali Hasan Abdul Khaleq[1] and Eman S. Bhaya[2]

University of Babylon,
College of Education for Pure Sciences. Mathematics Department.
ali.kufa94@gmail.com[1]
emanbhaya@itnet.uobabylon.edu.iq[2]

Abstract:

When you jump in the air, you will hit the ground. This does not mean that the laws of nature prevent you from leaving the Earth, but your jump was not strong enough to make you escape the Earth's gravity. To do this you have to jump more quickly or equal the escape velocity of the Earth, which we will calculate here.

Matroidal Structure Based On Soft-Sets

Kholod M. Hassan and Saied A. Johnny

AL-Diwaniyah Education Directorate, AL-Diwaniyah, Iraq
Email: kholodmohamed@qu.edu.iq
Email: saiedjhonnykh@gmail.com

Abstract:

      A matroidal structure that generalizes the properties of independence. Relevant applications are found in graph theory and linear algebra. This paper will focus on the definitions of a matroid in terms of generalization for a crisp set called soft-set and soft-point, also we give some results related to this concept. A soft-matroid is defined and examples of soft-systems which form are given. The novel concept of independent soft-set is introduced. The notion maximal of independent soft-sets and minimal dependent soft-sets, with examples from linear algebra and soft-graph theory, are illustrated. Finally, we investigate some fundamental properties of soft-matroid.

On the soft stability of soft Picard and soft Mann iteration processes

Sabah A. Khaleefah1, Buthainah A. A. Ahmed2

1Department of Mathematics, College of Science, University of Baghdad, Baghdad, Iraq.
Email:sab20072008@gmail.com
2Department of Mathematics, College of Science, University of Baghdad, Baghdad, Iraq.
Email:buthainah41@gmail.com

Abstract:

In this paper, we define the Soft Contraction Operator, soft Picard and soft Mann iteration processes. After that we establish some stability results for the soft Picard and soft Mann iteration processes considered in soft normed spaces.

Soft Compact linear operator and soft adjoint linear operator on soft linear spaces

Sabah A. Khaleefah   Buthainah A. A. Ahmed

Email:sab20072008@gmail.com   Email:buthainah41@gmail.com

Abstract:

Day after day, new concepts of soft normed spaces are emerging, which require studying their properties. In our works we have defined the soft compact operator and study some properties of this kind. After that we define soft adjoint operator on soft Banach spaces and study some of its properties. Finally we discuss the relation between the soft compact linear operator and its soft adjoint operator.

Keywords: soft compact linear operator, soft adjoint operator.

Study about fuzzyω-paracompact space in fuzzy topological space

Prof.Dr.Munir Abdul Khalik AL-Khafaji and Gazwan Haider Abdulhusein

Department of Mathematics, AL-Mustinsiryah University, Baghdad, Iraq
mnraziz@uomustansiriyah.edu.iq and haider.gazwan@uomustansiriyah.edu.iq

Abstract*:*

The purpose of this paper is to introduce a new class of fuzzy paracompact space is named fuzzy **ω**- paracompact space on fuzzy topological space also study the relationships with fuzzy **ω**- separation axioms and we give some characterization on fuzzy **ω**- paracompact space by using fuzzy countable set also we study the fuzzy **ω**- paracompact subspace and consider some relationship between fuzzy paracompact space and fuzzy **ω**- paracompact space by using certain types of fuzzy **ω**- continuous functions.

Topological Dynamics and the Space of Continuous Mappings

1 Mohammed Nokhas Murad Kaki , 2 Reyadh.D.Ali

1 Department of Mathematics, College of Science,University of Sulaimani
2 Department of Mathematics, College of Education for Pure Science, University of Karbala
Email: mohammed.murad@univsul.edu.iq , reyadhdelphi@gmail.com

Abstract:

The aim of this paper is define and investigate some new forms of transitive maps, minimal systems and chaotic maps on the space of all continuous maps from a space M to a space N, denoted by $Co(M,N)$. Also, we introduce some new definitions namely point-wise convergence transitive, compact-open transitive, uniform convergence topological transitive, chaotic maps defined on spaces up to product of uniform convergence spaces. In addition, we study the relationship between these new definitions.

Keywords: Uniform convergence, topological transitive, compact-open topology, minimal systems

Soft Closure Spaces

1Shahad Thaar Ekram, 1Rasha Naser Majeed

University of Baghdad, Faculty of Education for Pure Sciences Abn Al-Haitham, Department of Mathematics,Baghdad, Iraq
rasha.n.m@ihcoedu.uobaghdad.edu.iq

Abstract:

In this paper, the concept of soft closure spaces is defined and studied its basic properties. We show that the concept soft closure spaces are a generalization to the concept of $\check{C}$ech soft closure spaces introduced by Krishnaveni and Sekar. In addition, the concepts of subspaces and product spaces are extended to soft closure spaces and discussed some of their properties.

On Nano soft-Ɉ-semi-g-closed sets

R.B. Esmaeel1 and R.J.Mohammad2

1,2Department of Mathematics, College of Education for Pure Sciences, Ibn Al – Haitham / University of Baghdad, / Baghdad / Iraq
1ranamumosa@yahoo.com   2raf44456@gmail.com
1ORCID ID: https://orcid.org/0000-0002-4743-6034

Abstrac:

In this paper, the notions of *nano* soft closed sets were introduced *by* using *nano*soft ideal and *nano* soft semi-open sets, which are *nano* soft-Ɉ-semi-*g*-closed sets "*n-sɈsg*closed" where many of the properties of these sets were clarified. Using many figures and proposition have been studied the relationships among these kinds of *nano* soft sets with some examples were explained.

Separation axioms via αg_I-open set

Sufyan G Saeed[1] ,   R B Esmaeel[2]

1, 2Department of Mathematics, Ibn Al-Haitham
College of Education University of Baghdad, IRAQ
1Safsaf201030@gmail.com, 2ranamumosa@yahoo.com

Abstract:

The main objective of this paper is to use the concept αg_I-openness to offered new classes of separation axioms in ideal spaces. Those new classes are; αg_I-T0-space, αg_I-T1-space, αg_I-T2-space. Also new type of concepts of convergence in ideal spaces via the αg_I-open set were offered.

Keywords: αg_I-closed set, $\alpha g_I O$-functions, $\alpha g_I C$-functions, αg_I-continuous function, ideal, αg_I-T0-space, αg_I-T1-space, αg_I-T2-space, αg_I-convergence.

Soft Simply Connected Spaces And Soft Simply Paracompact Spaces

S. Noori1 and Y. Y. Yousif 2

1 Department of Mathematics, College of Education for Pure Sciences
(Ibn- Al-Haitham), University of Baghdad
2 Department of Mathematics, College of Education for Pure Sciences
(Ibn- Al-Haitham), University of Baghdad
sarah.asas90@gmail.com   yoyayuosif@yahoo.com

Abstract:

We introduce in this paper some new concepts in soft topological spaces such as soft simply separated, soft simply disjoint, soft simply division, soft simply limit point and we define soft simply connected spaces, and we presented soft simply Paracompact spaces and studying some of its properties in soft topological spaces. In addition to introduce a new types of functions known as soft simply pu-continuous which are defined between two soft topological spaces.

Keywords: soft simply-connected, soft simply pu-continuous, soft simply limit point, soft simply Paracompact spaces.

Generalized Rough Digraphs and Related Topologies

Samah Sarmad1 and Yousif Yaqoub Yousif 2

1 Department of Mathematics, College of Education for Pure Sciences
(Ibn- Al-Haitham), University of Baghdad
2 Department of Mathematics, College of Education for Pure Sciences
(Ibn- Al-Haitham), University of Baghdad
samahsarmad0@gmail.com   yoyayuosif@yahoo.com

Abstract:

The primary objective of this paper, is to introduce eight types of topologies on a finite digraphs and state the implication between these topologies. Also we used supra open digraphs to introduce a new types for approximation rough digraphs.

Key words. *J*-degree spaces, *J*-supra lower digraphs, *J*-supra upper digraphs, *J*-exact digraphs, *J*-rough digraphs.

Focal Function in i-Topological Spaces via Proximity Spaces

Yiezi Kadham Mahdi Altalkany   and   Luay A. A. Al Swidi

1Department of Mathematics, College of education for Girl, University of Kufa , Najaf
2Department of Mathematics, College of Education for Pure Science, Babylon
Email1: yiezik.altalkany@uokufa.edu.iq
Email2: drluayha11@yahoo.com

Abstract:

Through the characteristic and properties of ideal we were able to give a new definition to neighborhood of a certain point, but these neighborhoods do not necessarily contain that point. we also introduced a new definition to the local function by using both proximity relation and the idea of the neighborhoods that were indicated ,finally we presented most important results and their properties.

Comparison between Confine MO-Connectedness and Connectedness, Confine MO-Countability and Countability

Hasanain Al-Abbasi1 and Luay A A Al-Swidi2

University of Babylon, College of Education for Pure Sciences, Department of Mathematics1
University of Babylon, College of Education for Pure Sciences, Department of Mathematics2
Tel: +964 7811242210, E-mail: hasanainalabbasi@gmail.com1
Tel: +964 7812914256, E-mail: drluayha11@yahoo.com2

Abstract:

The main goal of this work is to introduce a comparison between connected and confine MO-connected space, locally connected and confine MO-locally connected space, extremally disconnected and confine MO-extremally disconnected space, confine MO-first countable space and first countable space, confine MO-second countable space and second countable space. New properties and relations are introduced.

Keyword: confine MO-topology, connected space**,** locally connected, extremally disconnected, first countable space, second countable space.

Laguerre and Touchard Polynomials for Linear Volterra Integral and Integro Differential Equations

Jalil T. Abdullah1   and   Haleema S. Ali2

1Wasit University/ Iraq
2 Al Karkh University of Science / Iraq
jalil.talab@gmail.com

Abstract:

In this paper, efficient numerical methods are given to solve linear Volterra integral (VI) equations and Volterra Integro differential (VID) equations of the first and second types with exponential, singular, regular and convolution kernels. These methods based on Laguerre polynomials (LPs) and Touchard polynomials (TPs) that convert these equations into a system of linear algebraic equations. The results are compared with one another method and with each other. The results show that these methods are applicable and efficient. In addition, the accuracy of solution is presented and also the calculations and Graphs are done by using matlab2018 program.

Keywords: Volterra integral and integro differential equation, Laguerre polynomials, Touchard polynomials, approximate numerical solutions

A Multilevel Approach for Stability Conditions in Fractional Time Diffusion Problems

I. K. Youssef 1 and Adel Rashed A. Ali2*

1 Department of Mathematics, Faculty of Science, Ain Shams University, Cairo, Egypt.
E-mail (kaoud22@hotmail.com).
2 Department of Mathematics, College of Education for Pure Science (Ibn al-Haitham), University of Baghdad, Baghdad, Iraq.
*Corresponding author: adil.r.a@ihcoedu.uobaghdad.edu.iq

Abstract:

The Caputo definition of fractional derivatives introduces solution to the difficulties appears in the numerical treatment of differential equations due its consistency in differentiating constant functions. In the same time the memory and hereditary behaviors of the time fractional order derivatives (TFODE) still common in all definitions of fractional derivatives. The use of properties of companion matrices appears in reformulating multilevel schemes as generalized two level schemes is employed with the Gerschgorin disc theorems to prove stability condition. Caputo fractional derivatives with finite difference representations is considered. Moreover the effect of using the inverse operator which transmit the memory and hereditary effects to other terms is examined. The theoretical results is applied to a numerical example. The calculated solution has a good agreement with the exact solution.

Improved Alternating Direction Implicit Method

Esraa Abbas Al-taai1   Adel Rashed A. Ali2*

1,2Department of Mathematics, College of Education for Pure Science (Ibn al-Haitham), University of Baghdad, Baghdad, Iraq.
*Corresponding author: adil.r.a@ihcoedu.uobaghdad.edu.iq

Abstract:

The alternating direction implicit method (ADI) is a common classical numerical method that was first introduced to solve the heat equation in two or more spatial dimensions and can also be used to solve parabolic and elliptic partial differential equations as well. In this paper, We introduce an improvement to the alternating direction implicit (ADI) method to get an equivalent scheme to Crank-Nicolson differences scheme in two dimensions with the main feature of ADI method. The new scheme can be solved by similar ADI algorithm with some modifications. A numerical example was provided to support the theoretical results in the research.

Numerical Solutions of Boundary Value Problems by using A new Cubic B-spline Method

Bushra A. Taha   &   Renna D. Abdul-Wahhab

University of Basrah / College of Science/ Dept. of Mathematics

Abstract:

In this study, cubic B-spline method is used with a new approximation of the second derivative to find a numerical solution for boundary value problems of the second order. An error analysis was performed for the method and the accuracy of the method was tested via four numerical examples and the results were compared with the exact solution and cubic B-spline method.

Keywords: boundary value problems, error analysis, cubic B-spline, exact solution.

Iteration Variational Method for Solving Two-Dimensional Partial Integro-Differential Equations

(1)Amina Kassim Hussain, (2)Fadhel SUBHI Fadhel, (3)Nursalasawati Rusli,(3)Zainor Ridzuan Yahya

Mustansiriyah University, Material Engineering Department, 10052 ,Baghdad, Iraq
(2)Al-Nahrain University, College of Science, Mathematics and Computer Applications Department,10070 Al-Jadriya, Baghdad, Iraq
(3)Universiti Malaysia Perlis, Institute of Engineering Mathematics,02600, Arau,Perlis,Malysia
Email:1amina1975_kas@yahoo.com,amina.kass@uomustansiriyah.edu.iq,2fsf@sc.nahrainuniv.edu.iq,
dr_fadhel67@yahoo.com
3nursalasawati@unimap.edu.my,3zainoryahya@unimap.edu.my

Abstract:

The two-dimensional integro-differential partial equations is one of the so difficult problems to be solved analytically and/or approximately, and therefore, a method that is efficient for solving such type of problems seems to be necessary. Therefore, in this paper, the iteration methods, which is so called the variational iteration method have been used to provide a solution to such type of problems approximately, in which the obtained results are very accurate in comparison with the exact solution for certain well selected examples which are constructed so that the exact solution exist. Main results of this work is to derive first the variational iteration formula and then analyzing analytically the error term and prove its convergence to zero as the number of iteration increases.

Keywords: Variational Iteration Method, Partial Integro-Differential Equations, Two-Dimensional Integro-Differential Partial Equation.

Best multiplier Approximation in $L_{p,\emptyset_n}(X)$
By two dimensions De La Vallee- Poussin Operator

Saheb K. AL-Saidy[1],   Naseif J. AL-Jawari[2]   and   Ali H.Zaboon[3]

1,2,3 Department of Mathematics, College of Science University of Mustansiriyah, IRAQ
1 Email1: sahebalsaidy@gmail.com
2 Email2: nsaif642014@yahoo.com
3 Email3: ali.zaboon1@gmail.com

Abstract:

The purpose of this paper is to find best multiplier approximation of unbounded functions in $L_{p,\emptyset_n}$ –space by using Trigonometric polynomials and by two dimensions de la Vallee- Poussin operator for $f \in L_{p,\emptyset_n}(X),\ X = [-\pi,\pi] \times [-\pi,\pi],$ in terms of the modulus of smoothness of order k and the average modulus.

Keywords: multiplier convergence, multiplier Integral.

Generalization of RKM Integrators for Solving a Class of Eighth-Order Ordinary Differential Equations with an Application

Mohammed S. Mechee*

Abstract:

The main contribution of this work is the development of direct explicit methods of Runge-Kutta (RK) type for solving a class of eighth-order ordinary differential equations (ODEs) to improve computational efficiency. For this purpose, we have generalized RK, RKN, RKD, RKT, RKFD and RKM methods for solving class of first-, second-, third-, fourth-, fifth-, sixth- and eighth-order ODEs. Using Taylor expansion approach, we have derived the algebraic equations of the order conditions for the proposed RKM integrators. Based on these order conditions, RKM method of seventh-order with five-stage has been derived. The zero
stability of the method is proven. Stability polynomial of the method for linear special eighth-order ODE is given. Numerical results have clearly shown the advantage and the efficiency of the new method and agree well with analytical solutions due to the fact that the proposed integrators are zero stable, more efficient and accurate integrators.

Keyword: Runge-Kutta method (RK); Runge-Kutta Nystrom method (RKN); Direct RK method (RKD); RKM; RKT; RKFD; Integrator; Class of eighth-order; Stage; Ordinary differential equation; Order conditions; Taylor expansion.

The Space of Strongly Prime Gamma Subacts

Mehdi S Abbas

Department of Mathematics, College of Education,
Al-Zahraa University for women, Iraq
E-mail: mhdsabass@gmail.com

Abstract:

In this work we consider and studyy uthe structures spacee of gamma acts by considering strongly prime gamma subacts. Also we study compactness and connectedness properties of this space as well as the separation axioms.

Key words : gamma semigroups, gamma acts, (strongly) prime gamma subacts, Noetherian gamma acts, multiplication gamma act and uniserial gamma act.

The Reverse construction of complete (k, n)- arcs in three-dimensional projective space PG(3,4)

1Aidan Essa Mustafa Sulaimaan 2Nada Yassen Kasm Yahya

1 Ph.D. Student, Department of Mathematics, College of Computer Sciences and Mathematics, University of Mosul, Mosul-Iraq

2 Department of Mathematics, College of Education for Pure Science, University of Mosul, Mosul-Iraq

eidanalkhatony@gmail.com

drnadaqasim1@gmail.com

Abstract :

In this work, the complete (k, n) arcs in PG(3,4) over Galois field GF(4) can be created by removing some points from the complete arcs of degree m, where m = n + 1, 3 n q2 + q is used. In addition, where k ≤ 85, we geometrically prove that the minimum complete (k, n)—arc in PG(3,4) is (5,3)-arc. A(k, n)—arcs is a set of k points no n+1 of which collinear. A(k, n)—arcs is complete unless it is embedded in an arc (k+1,n).

The Reverse construction of complete (k, n)- arcs in PG(2,q) where q=2,4,8 related with linear codes

Aidan Essa Mustafa Sulaimaan[1]   and Nada Yassen Kasm Yahya[2]

1 Ph.D. Student, Department of Mathematics, College of Computer Sciences and Mathematics, University of Mosul, Mosul-Iraq
2 Department of Mathematics, College of Education for Pure Science, University of Mosul, Mosul-Iraq
eidanalkhatony@gmail.com
drnadaqasim1@gmail.com

Abstract:

The aim of this work is to study The reverse construction of complete (k, n)- arcs in PG(2,q) where q=2,4,8 is related to linear codes, and n = q, q-1, ..., 2. And n = q, q-1, ... By removing points from the complete arc (K, n) to get a full arc (K, m) where m < n.

Application of Algebraic Geometry In Three Dimensional projective space PG (3,7)

Ali Ahmed A.Abdallah[1],   nada Yasssen Kasm Yahya[2]

1 Department of mathematics, College of computer Science and mathematics, university of mosul
2 Department of mathematics, College of Education for pure Science, university of mosul
drnadaqasim1@gmail.com

Abstract:

The main goal of this work is to construct surfaces and complete arcs in the projective 3 – space PG (3, q) over Galois fields GF (p), p=7. Which represents applications of algebraic geometry in three-dimensional projective space PG (3, P), where p=7 which is a (k,])-span. We get the following results. First, we found the points, lines and planes in PG (3,7) and we construct (k,])-span which is a set of k lines no two of which intersect. We prove that the maximum complete (k,])-span in PG (3,7) is (50,])-span, which is the equal to all the points of the space that is called a spread. Second in general we prove geometrical rule the total number of Spread in projective space PG (3, p) where p is prime, $P \geq 2$ *is* $p^2 + 1$.

Keywords: complete arcs and surfaces in three dimensional projective space PG(3,q) ; (k,])-span; spread.

The irreducible modular projective characters of the symmetric groups S_{21} modulo $p = 19$

Jenan Abd Alreda Resen, Jehan Mohammed Khudhir Al-Ameri, Enas Wahab Abood

Jenanabdalreda8@gmail.com   Jenan.resean@uobasrah.edu.iq

enaswahab223@gmail.com   enas.abood@uobasrah.edu.iq

jehankhudhir@yahoo.com   jehan.khudhir@uobasrah.edu.iq

Department of Mathematics,College of Sciences,University of Basrah, Iraq

Abstract :

In this paper we invention all irreducible modular spin(projective) characters of the symmetric group S_n , when $n = 12$ and the characteristic of the field =19.

Key words: spin(projective) characters , modular characters , decomposition matrix , AMS 2010,15C15,15C20,15C25.

Presentation of Mathieu Group using Groupoid

Nisreen N A Alokbi 1, Faik J H Mayah 2

1College of Computer science and Information technology, University of Wasit

2 College of science, University of Wasit

E-mail faik.mayah@gmail.com

Abstract:

Mathieu group is one sporadic simple group, it turn out not to be isomorphic to any member of the infinite families of finite simple groups. Study this group is interesting since its order is very high.

In this paper we introduce a technique using groupoid to find the presentation of the Mathieu groups.

Locally Finite Associative Algebras and Their Lie Subalgebras

HASAN M. SHLAKA

Department of Mathematics, Faculty of Computer Science and Mathematics,
University of Kufa, Iraq
Email address: hasan.shlaka@uokufa.edu.iq

Abstract:

An infinite dimensional associative algebra $\mathcal{A}$ over a field $\mathbb{F}$ is called locally finite associative algebra if every finite set of elements is contained in a finite dimensional subalgebra of $\mathcal{A}$. Given any associative algebra $\mathcal{A}$ over field $\mathbb{F}$ of any characteristic. Consider a new multiplication on $\mathcal{A}$ called the Lie multiplication which defined by $[a, b] = ab - ba$ for all $a, b \in \mathcal{A}$, where ab is the associative multiplication in $\mathcal{A}$. Then $L = \mathcal{A}^{(-)}$ together with the Lie multiplication form a Lie subalgebra of $\mathcal{A}$. It is natural to expect that the structures of L and $\mathcal{A}$ are connected closely. In this paper, we study and discuss the structure of infinite dimensional locally finite Lie and associative algebras. The relation between them, their ideals and their inner ideals is considered. A brief discussion of the simple associative algebras and simple Lie algebras is also be provided.

On Generalized (α, β) Derivation on Prime Semirings

Maryam K. Rashee**d** [1], Fatin A. Hamee**d** [2], Abdulrahman. H. Majee**d** [3]

1,2,3 Mathematics Department, University of Baghdad
maryamkhdhayer@yahoo.com [1]
tonaabd90@gmail.com [2]
ahmajeed6@yahoo.com [3]

Abstract:

    in this paper we introduce generalized (α, β) derivation on Semirings and extend some results of Oznur Golbasi on prime Semiring. Also, we present some results of commutativity of prime Semiring with these derivation.

Solving Max-Cut Optimization Problem

Basim Rabaa Jumaa[1]　　　　　　　Dr Ahmed Sabah Al-Jilawi[2]

1 College of Education for Pure Sciences, University of Babylon, basim4345@gmail.com
(07712276044)
2 College of Education for Pure Sciences, University of Babylon, aljelawy2000@yahoo.com
(07719409850)

Abstract :

The goal of this paper is to find a better method that converges faster of Max-Cutproblem. One strategy is to the comparison between Bundle Method and the Augmented Lagrangian method. We have also developed the theoretical convergence properties of these methods.

Keywords: Max-Cut, Augmented Lagrangian Method, Bundle Methods and Constrained Optimization problems.

A new conjugate gradient method for solving a large scale systems of monotone equations

H.A.Wasi , Mushtak A.K. Shiker [1]

Mathematics Department, College of Education for Pure Sciences, University of Babylon
1 mathman1972@gmail.com

Abstract:

The conjugate gradient method (CGM) is one of the best algorithms that used to solve and minimizer constrained optimization problems. In this paper, we development the algorithm that used for solving a large-scale systems of nonlinear monotone equations. The suggested method has some advantages such as it doesn't need the Jacobian matrix data nor store matrices at each iteration, also this method has the ability to solve large-scale problems with non-smooth property. With standard conditions, we established the global convergence for the proposed method. The numerical experiment shoes that the new method is promised and efficient by comparing with other famous methods.

Keywords: System of monotone equations, Conjugate gradient method, Global convergence.

Lie group Method for Solving System of Stochastic Differential Equations

Zainab Mohammed Alwan

Lect., Dr., Department of Mathematics, College of Science,
Mustansiriyah University, Iraq
lionwight_2009@uomustansiriyah.edu.iq

Abstract:

In the current work, we realize Lie group method for system of stochastic differential equations(SDE). To comprehend this method which is used the vector field in the function and solved system by associated with Fokker-Planck equations(FPE). For more accurate, we inserted some applications of system solved by this method.

Keywords: Lie group , SDE ,FPE ,Vector field , Wiener process.

Qualitative Analysis and Traveling wave Solutions for the Nonlinear Convection Equations with Absorption

Bashayir N. Abed1   Salam J. Majeed2   Habeeb A. Aal-Rkhais3

123Department of Mathematics, College of Computer Science and Mathematics, University of Thi-Qar, Iraq

Abstract:

We discuss qualitative behavior of the solutions for the nonlinear parabolic equation which modeling nonlinear convection equation with absorption. This model represents the movement of growing population that is ruled by convection process. In this paper, we concentrate on proving the existence of traveling wave solutions for the nonlinear convection-reaction equations. In addition, we consider the model when the speed of advective wave may breakdown and the problem has a shock wave solution. The mathematical interesting of the waves comes from the behaviors of singular differential equation and discussing the stability of the solution.

Keywords: traveling-waves, convection-reaction process, characteristic methods, stability.

Semi-Analytical Method with Laplace Transform for Certain Types of Nonlinear Problems

Areej Salah Mohammed1 , Sinan H. Abd Almjeed2

Department of mathematics, College of Education for pure Sciences/ Ibn-AL-Haithem,
University of Baghdad, Baghdad, Iraq
Email:1: areej.s.m@ihcoedu.uobaghdad.edu.iq; 2 : sinan.h.a@ihcoedu.uobaghdad.edu.iq

Abstract:

In this paper, the approximate solution is found for the Fornberg-Whitham equation (F-W) by using two analytical methods which are the Laplace decomposition method (LDM) and modified Laplace decomposition method (MLDM) with comparison between these methods for which gave the best approximate solution near to the exact solution, The analytical results of these methods have been received in terms of convergent series with easily calculable components. The results show that the modified method was found to be efficient, accurate and fast compared to the second method used in this research.

Hyers-ulam stability of integral Equations with two variables

Qusuay H. Alqi_ary

Department of Mathematics,College of Science,
University of Al-Qadisiyah
E-mail: qhaq2010@gmail.com ,qusuay.alqifiary@qu.edu.iq

Abstract:

We will apply the classical Banach contraction for proving the generalized Hyers-Ulam stability and Hyers-Ulam stability of Volterra integral equations with two variables.

Using Modified Conjugate Gradient Method to Improve SCA

Ayad Hamad Khalaf1 , Prof. Dr. Ban Ahmed Mitras2

1 Student, department of mathematics, college of computer sciences & mathematics, Mosul University.
Email: ayadlohebe@Gmail.com
2 Prof. Dr. department of mathematics, college of computer sciences & mathematics, Mosul University.
Email: dr.banah.mitras@Gmail.com

Abstract:

This research is to improve Sine - Cosine Algorithm (SCA) that is like any other intelligent techniques that encounter some problem such as slow convergence and the dropping in local solution. To overcome these problems. SCA has been developed and improved through three directions, First: Hybrid of SCA with Modified conjugate gradient method (MCG) that has improved through that derivation of parameter of new conjugate factor (β^{new}) and attest its characteristic such as descent and global to construct improve algorithm called SCA-MCG. The second direction was a hybrid of SCA with classic optimization methods such as conjugate gradient (CG) algorithm to construct SCA-CG, , and parallel Tangent (PT) algorithm to construct SCA-PT. Third combining both previous methods, using the Hybrid value with SCA to construct SCA-CG-PT Algorithm of high quality accounts in all directions mentioned above. To improve the initial population which randomly generated by using excellent characteristics of MCG-CG-PT as well as using this improvement as initial population for SCA. Numerical results have proved the efficiency of improved Algorithm and the results was excellent if we compared with SCA. In addition, we got optimum global values for most functions by achieving functions minimum.

*Keyword***:** SCA algorithm, meta-heuristic algorithms, conjugate gradient and PARTAN methods

On the Dirichlet Problem for the Nonlinear Diffusion Equation with Convection and Reaction

Habeeb A. Aal-Rkhais

Department of Mathematics, College of Computer Science and Mathematics,
University of Thi-Qar, Iraq(habeebk@utq.edu.iq)

Abstract:

We consider the nonlinear parabolic equations for the nonlinear diffusion-convection-reaction processes applying in many areas of science and engineering, such as filtration of gas or fluid in porous media. The aim of this paper is to concentrate on the existence of the weak solutions and boundary regularity for the Dirichlet problem of the degenerate parabolic equations in irregular domains in some cases where both the convection and reaction terms have the same exponents. The notion of parabolic modulus has a significant role for the boundary continuity of the solutions.

A New Iterative Methods For a Family of Asymptotically Severe Mappings

Z H Maibed

Department of Mathematics, College of Education for Pure Science
Ibn Al-Haithem University of Baghdad
mrs_ zena.hussein@yahoo.com

Abstract:

The aim of this paper is to introduce the concepts of asymptotically p-contractive and asymptotically severe accretive mappings. Also, we give an iterative methods(two step-three step) for finite family of asymptotically p-contractive and asymptotically severe accretive mappings to solve types of equations .

On Third-Order Sandwich Results for Analytic Functions Defined by Differential Operator

1Waggas Galib Atshan,   2Ali Hussein Battor   and 3Abeer Farhan Abaas

1Mathematics Department, University of Al-Qadisiyah
waggas.galib@qu.edu.iq, waggas_hnd@yahoo.com, waggashnd@gmail.com
2Mathematics Department, University of Kufa,
alih.battoor@uokufa.edu.iq
3Mathematics Department, University of Kufa
abeerfarhan688@gmail.com

Abstract:

In this paper, by making use the differential operator, suitable classes of admissible functions are investigated and the properties of third-order sandwich theorems for multivalent analytic function are obtained.

Keywords: analytic function, multivalent function, differential subordination, differential Superordination, sandwich theorem,   differential operator.

A Modified Generalization of Fractional Calculus Operators in A Complex Domain

Zainab E. Abdulnaby

Department of Mathematics, College of Science, Mustansiriyah University, Baghdad, Iraq
zainabesa@uomustansiriyah.edu.iq

Abstract:

This investigation deals with a new generalization for fractional calculus operators in a complex domain based on the well-known hypergeometric function. Conditions are forced for these generalized operators such as the upper bounds. Other properties for the above operators are also presented. Besides, the employment of these operators is proposed in the geometric function theory.

Keywords: Fractional Integral operator, Fractional differential operators,Univalent function, Convex function, Hypergeometric function, Bessel function, Wright functions.

The Formula For The Product Of Sines Of Multiple Arcs

Ahmed Khalaf Radhi

Department of Mathematics, College of Education, AL-Mustansiriyah University

E-mail : dr_ahmedk@yahoo.com

Abstract:

By using the theory of residues of holomorphic functions, one formula is obtained for the product of a finite number of Sines of multiple arcs and one improper integral is computed.

Essential Problems for Subclasses of Analytic Functions Defined on Unit Disk

Zainab H.Mahmood[1], Kassim A.Jassim[2] , Assel A.Hassan[3]

1,2,3 Department of Mathematics / College of Science / University of Baghdad/ Baghdad/Iraq

1 Email: zainab_hd@yahoo.com

2 Email: kasimmmathphd@gmail. com

3 Email: aselamer16@gmail. com

Abstract :

In this paper , we investigate essential problems for subclasses related to known functions . Therefore , we get special cases of our major results in a form of theorems and corollaries and proved .

Keyword: analytic function , Hadamard product, Ruscheweyh derivative,univalent function , Differential subordination.

تقويم منهج الرياضيات للصف الاول المتوسط في ضوء معايير المنهج الفعال

محمد ابراهيم مهدي1، حسين علي محسن2

hm.eb1986@gmail.com   1متوسطة المتفوقين للبنين

Hussain.ukm@gmail.com   2اعدادية الثبات للبنين

المديرية العامة لتربية كربلاء المقدسة

ملخص البحث:

عنوان البحث: " تقويم منهج الرياضيات للصف الاول المتوسط في ضوء معايير المنهج الفعال ".

اهداف البحث: يهدف البحث الحالي الى تقويم منهج الرياضيات للصف الاول متوسط ".

منهج البحث: تم استعمال المنهج الوصفي, وذلك لأنه يتناسب مع اهداف البحث.

مجتمع البحث وعينته: طبق البحث على مدرسي ومدرسات الرياضيات التابعين الى المديرية العامة لتربية كربلاء المقدسة للعام الدراسي (2017-2018) م.

أداة البحث: تمثلت اداة البحث باستخدام استبانة مكونة من (55) فقرة.

نتائج البحث: اظهرت تقديرات المدرسين بأن هنالك بعض الفقرات لها تقديرات عالية بالمنهج الفعال وهي احتواء المنهج على مواضيع تُعلم الطلبة التفكير الرياضي, والمصطلحات والمفاهيم تواكب الحداثة, والمنهج يركز على الطالب باعتباره محور العملية التعليمية, اما بخصوص الفقرات التي كان لها تقدير قليل هي عدم اهتمام الجانب الوجداني من حيث ذكر اسهامات المسلمين والعرب ودورهم في الرياضيات, وكذلك عدم توضيح الاهداف العامة للمنهج واهمال الاهداف السلوكية وعدم التركيز فيها.

الكلمات المفتاحية: تقويم، منهج الرياضيات للصف الاول المتوسط، معايير المنهج الفعال

Jordan Left Derivation and Centralizer on Skew Matrix Gamma Ring

Rajaa .C.Shaheen

Mathematics Department , Education College ,Al-Qadisiyah University
E-mail:rajaa.chaffat@qu.edu.iq

Abstract:

We define Skew matrix Gamma ring and describe constitute of Jordan left Centralizers and derivations of a Skew matrix gamma ring $M_2(M, \Gamma; \sigma, q)$ on a Γ-ring M .

Keywords: Skew matrix ring, Gamma ring ,Jordan left centralizer and Jordan left derivation

Classification of (k;4)-arcs up to projective inequivalence, for k < 10

Z.S. Hamed1 and J.W.P. Hirschfeld2

1Department of Mathematics, College of Science, Mustansiriah University, Iraq
2Department of Mathematics, University of Sussex, United Kingdom

Abstract:

In this paper, the classification of (k; 4)-arcs up to projective inequivalence for k < 10 in PG(2,13) is introduced in details according to their inequivalent number, stabilisers, the action of each stabiliser on the associated arc, and the inequivalent classes Nc of secant distributions of arcs. Here, the strategy is to start from the projective line PG(1,13) where there are three projectively inequivalent tetrads.

تعميم مسألة البائع المتجول في دراسة مشكلة تصريف مياه الأمطار في مركز محافظة الديوانية لعام 2019-2020

سعيد عبد الكاظم جوني

مديرية تربية الديوانية
saiedjhonnykh@gmail.com

ملخص البحث:

تم في هذا البحث توظيف خوارزمية شبيه بتدفق المياه (In short, Water Flow-Like Algorithm WFA) المقترحة لمسألة البائع المتجول Traveling Salesman Problem (In short, TSP) , خوارزمية جديدة طرحت تعتمد على العمليات الأساسية في التهيئة, تدفق وجريان المياه, دمج التدفق, تبخر المياه وهطول الأمطار لحل مشكلة البائع المتجول (TSP) باعتبارها قائمة على مسألة الرسم البياني. التجارب أجريت على (60) منطقة ضمن مركز محافظة الديوانية وأخذ بيانات المنطقة عددها (12), حيث تمت مقارنة متوسط وقت حساب (WFA-TSP) مع نظام مستعمرة النحل (ACS). أظهرت النتائج التجريبية التي تم الحصول عليها أن (WFA) المقترحة لحل مسألة البائع المتجول (TSP) حلولاً أفضل ومن ثم الوصول إلى الحل الأمثل بسهولة وأن كفاءة (WFA) المقترحة لحل مسألة البائع المتجول (TSP) زادت الأداء وخفضت الكلفة.

الكلمات المفتاحية : مسألة البائع المتجول, خوارزمية شبيه بتدفق المياه, نظام مستعمرة النمل, خوارزمية الجار الأقرب.

On Fuzzy pα-Separation Axioms

Marwa yasir Mohsen

Directorate-General of Education of Wasit
Marwayasir91@gmail.com

Abstract:

In this paper we study a type of fuzzy generalized open sets in fuzzy topological spaces namely pα- open set ,and study all types of fuzzy pα- Separation axioms. Properties and relationship of fuzzy pα- Separation axioms are investigated.

Keywords: fuzzy pα- open set; fuzzy pα- Separation axioms; fuzzy pα-regular space; fuzzy pα-normal space.

Computations in the Pre-Bloch group

Daher Al Baydli[1] ,   **Alxander Rahm[2]**

1University of Wasit, College of Education for Pure Science, Department of mathematics.

2Mathematics Research Unit of Université du Luxembourg, Luxembourg.

Abstract:

For compute the five term relations in the Bloch group for specify an infinite-order-element in $K_3(\mathbb{Q}(\sqrt{-m}))$, $m \in \mathbb{N}$ square- free. For the quadratic imaginary number fields F of discriminant $d = -1, -2, -3, -7, -17, -19$. We use the GAP Programming software to implement our method.

Some results of Mixed Fuzzy Topological Ring

Prof. Dr.Munir Abdul Khalik AL-Khafaji

AL-Mustinsiryah University \ College of Education \ Department of Mathematics
Basim Mohammed Melgat
University of Al- Furat Al- Awsat techniques \ College of Health and Medical Technique/ Kuffa

Abstract :

The theory of fuzzy topological ring has wide scope of applicability than order topological ring theory. The reason is fuzzy can provide better result. Therefore, fuzzy topological ring has been found in Robotics, computer, artificial intelligent, etc.

In this paper, we continue the study of mixed fuzzy topological ring [13]. We are studying the mixed fuzzy topological subring space, mixed fuzzy quotient topological ring and mixed product fuzzy topological ring.

Keywords: Fuzzy topological ring, Mixed Fuzzy topological ring, mixed fuzzy
        Quotient topological ring and mixed product fuzzy topological ring

Independent (non-adjacent vertices) topological spaces associated with undirected graphs, with some applications in biomathematices

Asmhan Flieh Hassan1 , Zainab Irhayyim Abed2

1Department of Mathematics, faculty of education for girls, University of Kufa, Iraq
asmhanf.alzuhairy@uokufa.edu.iq
ORCID ID: https://orcid.org/0000-0002-0855-1873
2Department of Mathematics, faculty of education for girls, University of Kufa, Iraq

Abstract:

In this work, we associate a new topology to undirected graph $G = (V, E)$ which may contain one isolated vertex or more and we named it Independent (non-adjacent vertices) Topology. A new sub-basis family to generate the Independent Topology is introduced on the set of n vertices V and for every vertex v of V the number of adjacent vertices is not greater than $n - 2$ (In simple graph we can say : for every vertex v of V , $\Delta(G) = n - 2$, where $\Delta(G)$ is the maximum degree of vertices in a graph G). Then we give a fundamental step toward investigation of some properties of undirected graphs by their corresponding Independent Topology which we introduce in this work. Furthermore, an application to our new model (Independent Topology) are presented, that to carry out a framework in practical life like biomathematics (applied examples in biomathematics).

2010 Mathematics Subject Classification: 05C99, 54A05.

Key words and phrases: Undirected graphs, Independent(non-adjacent vertices), Independent topology.

The M- Projective Tensor of G_1-Manifold

Nawaf Jaber Mohammed

.Department of Mathematics, Ministry of Education, Basra Education Directorate, Basra, Iraq.

Abstract:

This article is devoted to the study of the geometric properties of curvature tensor on certain classes of almost Hermitian manifolds. In particular, we studied the platitude property of M-projective on G_l-manifold and found a link between $\boldsymbol{G_1}$-manifold, $\boldsymbol{\mathcal{H}}$-manifold and $\boldsymbol{\mathcal{N}\mathcal{K}}$-manifold**.**

On Some Generalized Continuous Mappings in Fuzzy Topological Spaces

Rasha A.Isewid1, Samer R.Yaseen 2

1College of Physiccal Education and sport science, Al-Qadisiyah University, Iraq.

rasha.abbas@qu.edu.iq

2Department of Mathematics, College of pure science, Tikrit University, Iraq.

samer2017@tu.edu.iq

Abstract:

The purpose of this paper is to introduce a new class of intuitionistic fuzzy closed sets called intuitionistic k-continuous k-irresolute functions in intuitionistic fuzzy topological space (for short, fkt) . Finally , we introduce the concepts of k-open (k-closed) mapping with some properties in fuzzy topological spaces.

Keywords: Intuitionistic fuzzy K-closed sets Intuitionistic fuzzy K-connectedness, Intuitionistic fuzzy K-compactness.

Separation Axioms Via Graph Theory

Taha H. Jasim[1], Aiad I. Awad[2]

[1]Department of Mathematics, college of computer science and Mathematics, University of Tikrit.
[2] Department of Mathematics, college of computer science and Mathematics, University of Mosul.

Abstract :

A new concept called topological graph and via this concept introduces a new class of separation axioms via the concepts of graph ($G\text{-}T_0$, $G\text{-}T_1$, $G\text{-}T_2$, $G\text{-}T_3$, $G\text{-}T_4$), many relations among them were studied and investigated some characterization of these concepts. At last give an application for them.

Keyword: topology, graph, subgraph, topological graph, $G\text{-}T_0$, $G\text{-}T_1$, $G\text{-}T_2$, $G\text{-}T_3$, $G\text{-}T_4$.

Fuzzy Precompact Space

Saad Mahdi Jaber

University of Wasit/ Education College for Pure Science/ Department of Mathematics
s.jaber@uowasit.edu.iq

Abstract:

In this paper we study and introduce the concept of preompactness of a fuzzy topological space and also, we attain a number of important characterizations of a fuzzy precompact space. The notion of precompactness that can be extended to arbitrary fuzzy sets. So, this paper explains the relationship between fuzzy precompact space and fuzzy precompact subspace. Finally, we give necessary and sufficient conditions for a fuzzy pre regular space to be fuzzy precompact.

Key words and phrases: Fuzzy precompact space, Fuzzy pre q-nbd, Fuzzy pre cluster point.

Impress of rotation and an inclined MHD on waveform motion of the non-Newtonian fluid through porous canal

T Sh Alshareef

"Department of mathematics, College of education for pure science \Ibn AlHaitham\
University of Baghdad, Iraq"
tamara.shihab8282@gmail.com

Abstract:

Waveform flow of non-Newtonian fluid through a porous medium of the non-symmetric sloping canal under the effect of rotation and magnetic force, which has applied by the inclined way, have studied analytically and computed numerically. Slip boundary conditions on velocity distribution and stream function are used. We have taken the influence of heat and mass transfer in the consideration in our study. We carried out the mathematical model by using the presumption of low Reynolds number and small wave number. The resulting equations of motion, which are representing by the velocity profile and stream function distribution, solved by using the method of a domain decomposition analysis and we obtained the exact solutions of velocity, temperature, and concentration. The expressions of velocity, temperature, and concentration of the particles of the fluid have obtained and examined graphically by utilizing the soft wave of the Mathematica program. The efforts of various variables on mathematical modeling of motion and energy are discussed in detail. We found that.

Keywords: rotation effect, non-Newtonian fluid, porous medium, magnetic force, waveform transport.

Chaos in Beddington–DeAngelis food chain model with fear

Hiba Abdullah Ibrahim and Raid Kamel Naji

Department of the Mathematics, College of Science, University of Baghdad, Baghdad, IRAQ
haibrahim82@yahoo.com; rknaji@gmail.com

Abstract:

In the current paper, the effect of fear in three species Beddington–DeAngelis food chain model is investigated. A three species food chain model incorporating Beddington-DeAngelis functional response is proposed, where the growth rate in the first and second level decreases due to existence of predator in the upper level. The existence, uniqueness and boundedness of the solution of the model are studied. All the possible equilibrium points are determined. The local as well as global stability of the system are investigated. The persistence conditions of the system are established. The local bifurcation analysis of the system is carried out. Finally, numerical simulations are used to investigate the existence of chaos and understand the effect of varying the system parameters. It is observed that the existence of fear up to a critical value has a stabilizing effect on the system; otherwise it works as an extinction factor in the system.

The role of media coverage on the dynamical behavior of smoking model with and without spatial diffusion

Ahmed Ali Mohsen1 and Raid Kamel Naji2

1Department of Mathematics, Ibn-Al-Haitham College of Education, Baghdad University.
E-mail: aamuhseen@gmail.com;
2Department of mathematics, College of science, University of Baghdad.
rknaji@scbaghdad.edu.iq

Abstract:

The spread of epidemic diseases still a major threat to the life of communities. Therefore, with the great development of the technology , the spread of diseases can be reduced by using media coverage awareness. In this paper a smoking model incorporating media coverage for warranting the population is proposed and studied. The dynamics of the model is investigated in two different cases: nonexistence and existence of diffusion. The existence, positivity and bounded-ness of solutions are investigated. The local and global stability by the help of Lyapunov function of all possible equilibrium points are investigated. Moreover, numerical simulations are carried out to validate the analytical results and specify the effect of varying the parameters.

Keywords: Smoking model, media, diffusion, stability.

MHD Peristaltic Flow of a Couple - Stress with varying Temperature for Jeffrey Fluid through Porous Medium

1Samah F. Jaber AL-khulaifawi and 2Dheia Gaze Salih Al –Khafajy

1,2Department of Mathematics, College of Science, University of Al-Qadisiyah, Diwaneyah, Iraq.
1E-mail: samah85.samah85@gmail.com
2E-mail: dr.dheia.g.salih@gmail.com , dheia.salih@qu.edu.iq

Abstract:

This paper is intended for investigating the effects of magnetohydrodynamic on the couple stress unsteady flow of incompressible Jeffrey fluid with varying temperature through a cylindrical porous channel. The analytical expression of the axial velocity, stream function and gradient pressure, was created taking into account the effect of thermal diffusion on the flow of the fluid. The analytical formulas of the velocity, temperature have been illustrated graphically for significant various parameters such as magnetic parameter, couple stress parameter, permeability parameter.

Keywords: MHD, Jeffrey Fluid, peristaltic flow, couple stress, porous medium.

Uniqueness Solution Of Abstract Fractional Order Nonlinear Dynamical Control Problems

Sameer Qasim Hasan

Department of Mathematics, Al-Mustansiriyah University, Baghdad, Iraq
dr.sameer_kasim@yahoo.com
dr.sameerqasim@uomustansiriyah.edu.iq
https://orcid.org/0000-0002-2613-2584

Abstract:

The aim of this paper is to investigate the Uniqueness solution of Abstract Cauchy Problem represented for fractional order nonlinear dynamical control system involving certain control input and their approach of investigated depended on commutative composite semigroup and some certain conditions in certain space.

A Study of Equicontinuous Maps On Uniform G −Spaces

Ansam A A 1,2   Ihsan J K 2,3

1 ansan.a.ali1987@gmail.com
2 University of Al- Qadisiyah, College of Science, Department of Mathematics
3 Ihsan.kadhim@qu.edu.iq

Abstract:

In this paper we shall study some new properties of equicontinuous maps on uniform Spaces. Here the phase space consider as a uniform space. Also we show the relationship among the equicontinuous maps with the distal dynamical system and expansive dynamical system.

The Split Anti Fuzzy Domination in Anti Fuzzy Graphs

H J Yousif 1 and A A Omran2

1,2Department of Mathematics, College of Education for Pure Science, University of Babylon, Iraq.
Email:* hayderjasim36@gmail.com and Pure.Ahmed.Omran@uobabylon.edu.iq

Abstract:

We will discuss the concept of a split anti-fuzzy dominating set (SAFD) in anti fuzzy graph (GAF) and investigate the relationship of γ_{sAf} (G$_{AF}$)(split anti fuzzy domination number) with other known parameters of anti-fuzzy graph. Some bounds and interesting results for this parameter are obtained. The split anti-fuzzy domination on some standard anti-fuzzy graph has been discussed with some suitable graphs.

Keywords: anti fuzzy graph (G$_{AF}$), Anti fuzzy dominating set (AFD) and Split anti fuzzy Domination number**.**

Domination Polynomial of the Composition of Complete Graph and Star Graph

Ihsan A. Alwan[1]   Ahmed A. Omran[2]

Department of Mathematics, College of Education for Pure Science,
University of Babylon, Babylon, Iraq
1 Ihsan.ab92@gmail.com   2 pure.ahmed.omran@uobabylon.edu.iq

Abstract:

Graph domination by vertices is finding a subset D from the vertex set $V(G)$, "in a graph G such that D is a dominating set if every vertex in set $V - D$ is adjacent to at least one vertex in set D". In this paper, $\mathcal{D}(G, i)$ when G is a composition of complete graph K_r and star graph S_m, is constructed where "D(G, i), is the family of all dominating sets of a graph G with cardinality i and $d(G, i) = |\mathcal{D}(G, i)|$". A recursive formula for $d(K_r[S_m], i)$ is obtained. The domination polynomial of graph $K_r[S_m]$ is determined by using this recursive formula.

Keywords: Domination number, Domination polynomial, Dominating set, composition.

On Certain Types of Topological Spaces Associated with Digraphs

Khalid Shea Khairallah Al' Dzhabri1 and Mohammad Falih Hani Al'murshidy2

1University of Al-Qadisiyah, College of Education, Department of mathematics
2Ministry of Education, Babylon Education Directorate
1khalid.aljabrimath@qu.edu.iq,   2 mohfalih17@yahoo.com

Abstract:

In this work, we constructed a new types of topological structures by associated with digraphs called $DG_E^{\sigma} -$ **topological space and** $DG_E^{\mu} -$ **topological space** by induced two alternate definitions $-$**open set and** $DG^{\mu} -$ **open set respectivally**. Investigatedsome properties ofthe topologies determined by a digraph with respect to each of these alternated definitions**.**

Computer Scope
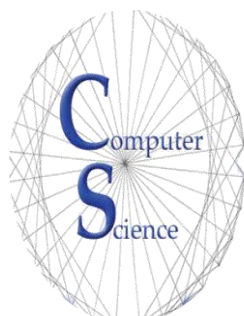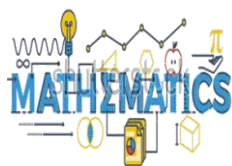
A Prediction of Grain Yield Based on Hybrid Intelligent Algorithm

Ibrahim Ahmed Saleh[1],   Wasan Abdallah Alawsi2 ,   Omar Ibrahim Alsaif [3] , Khalil Alsaif[4]

1 University Of Mosul, Software Engineering Dept. Iraq, i.hadedi@uomosul.edu.iq
2 University Of Al- Qadisiyah, college Science, Iraq, wasan.alawsi@qu.edu.iq
3 Northern Technical University, Mosul Technical Institute, Iraq, omar.alsaif@ntu.edu.iq
4 University of Mosul, Computer Science Dept., Iraq, khalil_alsaif@hotmail.com

Abstract:

The prediction is most important goals in economic quantitative studies, it basis in design and plan future economic policies properly process over forecasting accuracy. This paper is aiming at the problem salp swarm algorithm (SSA) for predicting grain yield is prone to fall into the local optimal problem. An improved SSA is proposed with combine with back propagation neural network. Using the different advantages of SSA algorithm in global search capabilities, combining the two for further optimize the weight, improve the accuracy and robustness of the grain yield prediction model. The specific implementation is selected from 1963 to 2013.

These methods are used to define agricultural datasets that supports crop growth decision for grain product and its influencing factors were tested as a data set.

The results show that, the improved salp swarm optimization can be classified as a good predict tool for the domestic food production trend in recent years compared with the SSA. This paper briefly introduces three artificial methods BP neural networks, SSA and improved SSA optimization algorithm. The natural behavior of salp, barrel-shaped plankton that are mostly water by weight optimization and combined with   mixed-group of intelligent algorithm are simulated. The simulation results of grain production prediction illustrate that the predict precision of the improved SSA is much higher than of both conventional BPNN and SSA techniques and it's very efficient and practicable.

Keywords: grain yield; prediction; Salp swarm optimization; neural network, back propagation algorithm

Securing Hill encrypted information With Audio steganography: a New Substitution Method

Enas Wahab Abood[1]   Wafaa A. Khudier1   Rasha Hadi Jabber1   Dina Adnan Abbas2

1University of Basrah-college of Science -Math. Dept
2Basra Education Directorate
E_mail: enaswahab223@gmail.com

Abstract:

Securing data is an essential matter in communication systems, data must be protected from interceptors and eavesdroppers. In this paper, a hybrid system was produced to secure a plain text message encrypted with the Hill encryption method and embedded within an audio file in a random distribution using audio symbol sign to represent message bits. The audio file is restricted to be *.wav stereo file, Two secret keys are needed for this system encryption key and the seed of generating hiding positions. PSNR,MSE,SSIM are calculated between cover before and after embedding and the results reflected the imperceptibility requirement of the system. Also the elapsed time for securing messages was quite low for different sizes of text and the encryption process was less time than hiding.

Performance analysis of Google's Quick UDP Internet Connection Protocol under Software Simulator

Saif Talib Albasrawi

Education Collage /Misan University, Iraq
saiftalib@uomisan.edu.iq

Abstract:

The QUIC protocol (Quick UDP Internet Connection) is a transport based over UDP Protocol (User Datagram Protocol) that provides safe, reliable and fast service on the Internet. Google proposed it to solve the problem of network delay. It is efficient, fast, and takes up fewer resources. The QUIC gathers the advantages of both TCP and UDP. QUIC is a user-level protocol running on top of UDP, which considered by IETF (Internet Engineering Task Force). Google assumes the response time of page load was short so that end-user performance was better. In this paper, the results presented on a local test using NS-3 (network simulator version 3) that allows QUIC output to test and design choices and possible limitations present the description of the functionalities and the main assumptions of the internet QUIC.

Keywords: TCP protocol, UDP protocol, QUIC protocol, NS-3.

Measuring the Impact of Using Different Tools on Classification System Results

Zainab A. Khalaf[1]   Zainab M. Jawad[2]

1Basrah University, College of Science, Department of Mathematics E-mail: zainab.ali2004@gmail.com
2Basrah University, College of Education for Pure Sciences, Department of Computer Science E-mail: z82m89asia@gmail.com

Abstract:

A huge amount of textual data is available on the web. These data need to be classified under labels or classes to make the search more efficient and easier. Achieved by using automatic classification is used for this task. Many factors impact on the performance of the classifier system, such as the amount of using dataset, the data dispersion degree, preprocessing tools, feature extraction methods, terms weighting, and data reduction. So, researchers constantly compete to build a robust classifier with good performance. This study focuses on the effect of using different tools in preprocessing and term weighting stages. The experimental results applied on two different languages (Arabic and English languages). Also, the experimental results were compared with the recent related works.

Encryption and Steganography a secret data using circle shapes in colored images

Zeena N. Al-kateeb1*, Muna Jaffer AL-Shamdeen2 and Farah Saad Al-Mukhtar 3

1,2 Computer Sciences Department, College of Computer Science and Mathematics,university of Mosul. 3Computer Science Department, College of Science, Al-Nahrain University.
*Corresponding author's, zeenaalkateeb@yahoo.com, zeenaalkateeb@uomosul.edu.iq

Abstract:

Since the earliest times, people have used the encryption and hiding data to achieve a safe and reliable transfer of important data. This paper propesed a new method for encrypting important data based on the circular shapes information that extracted from the cover image, The encryption process is done using an update of a well known traditional method with simple calculations taking advantage of the coordinates of the center of the main circle as keys extracted from the cover image to reduce the number of keys exchanged between the sender and the recipient and to increase the level of security and confidentiality. The hiding process of the encrypted data is done in pixels that located in the circular areas of the cover image and in three forms of concealment, which providing second encryption, choosing the hiding form depending on the appearing sequence of the character in the text, which makes decode the secure data will be so difficult, the experiments showed that the proposed method was achieved excellent encryption and hiding depending on the coefficients Peak Signal to Noise Ratio analyses (PNSR), Mean Square Error (MSE), and other measurements. The proposed method achieves a complete data recovery ratio where it was Bit Error Rate BER=0.

Review of Different Combinations of Facial Expression Recognition System

Abd_Almuhsen, F. Almudhafer1, Zainab A. Khalaf2

1 Basrah University, College of Education for Pure Sciences,   Department of Computer Science, Basrah, Iraq , abdalmudhafer@gmail.com
2 Basrah University, College of Science, Department of Mathematics, Basrah, Iraq, zainab_ali2004@yahoo.com

Abstract:

The facial expression recognition (FER) system is a classifier system that attempts to recognize facial expressions based on the analysis of emotion behaviour on the face. The FER system can be implemented by using one classifier or combining multi feature extraction and/or multi classifiers. In general, FER is used with one classifier system to find the best label. Although a classification system is commonly used to find the most likely facial expression, it still produces substantial numbers of errors due to several factors that influence the FER result, such as data quantity, and environmental conditions (i.e. illumination and noise). Therefore, combined multi feature extraction methods and/or multi classifier systems are useful to avoid the single classifier errors. Multi feature extraction or a multi classifier system combination are used to take advantage of different system hypotheses to find an accurate result. This paper is a survey of the latest system combination techniques being used to enhance the classification performance in the FER system; the most recent studies are presented.

Convert Arabic Letters Voice into Gesture

Shaker K. Ali[1] and Sabreen k. Saud[2]

1Computer sciences and mathematics college, University of Thi_Qar, Thi_Qar, Iraq.
2 College of Eduction for Pure, University of Thi_Qar, Thi_Qar, Iraq.
1 shaker@utq.edu.iq   and   2 sabreenkhalid55@gmail.com

Abstract:

This paper suggest approach to solve the problem of social communication between blind and dumb by converting voices of 28 Arabic letters (أ,………,ي) into gesture (images) by extraction features by using Mel-frequency Cepstral coefficients (MFCC)and classify the types of letters by using; J48, KNN, and Naive byes (NB). Several features are extracted from speech voice of Arabic letters voices. The dataset collected by recorded voices from twenty different persons, each person recorded ten voices for each twenty eight letters so the total dataset are 5600 voices (200 voices for each 28 letters). Mel-frequency Cepstral coefficients are extracted from 5600 voices of letters which convert the voices into a signal and extract features vector to classify later by using J48, KNN and NB algorithms, which may vary in time or speed signals. The experimental results shows that the best accuracy of speech recognition algorithm by using the J48 algorithm with a performance ratio of 100% while KNN is the 94.023% and Naive byes is the 20.012%.

Keywords: Mel frequency cepstral coefficients (MFCC), Vector quantization, J48, KNN and NB ,K-mean.

Feature Extraction Methods: A Review

Wamidh K. Mutlag[1], Shaker K. Ali[2], Zahoor M. Aydam[3] and Bahaa H.Taher[4]

1Al shatrah Technical Institute, Southern Technical University, Iraq.
2,3Computer sciences and mathematics college, University of Thi_Qar, Thi_Qar, Iraq.
4Information Technology college, University of Sumer, Thi_Qar, Iraq.
1wamid.almuhaysen@stu.edu.iq, 2 shaker@utq.edu.iq ,3 zahoormosad@gmail.com and
4ghrabiuk@gmail.com

Abstract:

Feature extraction is the main core in diagnosis, classification, clustering, recognition ,and detection. Many researchers may by interesting in choosing suitable features that used in the applications. In this paper, the most important features methods are collected, and explained each one. The features in this paper are divided into four groups; Geometric features, Statistical features, Texture features ,and Color features. It explains the methodology of each method, its equations, and application .In this paper, we made acomparison among them by using two types of image ,one type for face images (163 images divided into 113 for training and 50 for testing) and the other for plant images(130 images divided into 100 for training and 30 for testing) to test the features in geometric and textures. Each type of image group shows that each type of images may be used suitable features may differ from other types.

Keywords: Geometric features, statistical features, Textures features and Color features.

Review: A comparison Steganography Between Texts and Images

Assist. Prof. Dr. Maisa'a Abid Ali Khodher   ** Assist. Lec. Teaba Wala Aldeen Khairi

Department Computer Sciences/ University of Technology-Iraq
*110044@uotechnology.edu.iq   **110053@uotechnology.edu.iq

Abstract:

The steganography is branch from information hiding, the speed of evolve communications Internet and networks in wide areas in the world. This evolve make to most people tends for work in security data through transmit across networks from sender to receiver. The major aim from steganography uses to protect the substantial data, such as text, image, video, and audio during transmit between sender and receiver.

The problems in steganography, because the people to increase uses internet in the present time therefore, needs to protected information during transmitted from sender to receiver. And solve this problem in steganography, in here many techniques is used in this article.

This article offers comparing in steganography techniques between texts and Images, when hiding secret message in texts and Images. In this study, several techniques it uses by researcher in domain of steganography.

The outcomes to obtained comparing between steganography texts or images. The results that shown the compression between text and image steganography are good and efficiency together without sensitive by attackers.

Convert Gestures of Arabic Words into Voice

Shaker K .Ali1, Ali Al-Sherbaz2, Zahoor M. Aydam3

1,3 Computer Department, Computer sciences and mathematics college,
University of Thi_Qar ,Thi_Qar, Iraq
2 Computer Department, Faculty of Science and Technology
University of Northampton, UK

Abstract:

Gestures are one of the best ways of communication between dumbs and other people using the expression of signs language. In this paper, we suggest an algorithm for recognizing hand gestures of Arabic words (اتمنى لك حياة سعيدة-اقتباس) to by using dumb (through signs) and convert the sings into voice corresponding to sings words. The proposed algorithm for Convert Gestures of Arabic Words into Voice , record video of gesture (of the dumb person) then convert the video into frames (images), preprocessing for the resulted image must done by remove the noise, resize the images and increase the contrast, then calculate the distance to clustering the words by using (C4.5 , k-mean , k- medoid and artificial neural network), calculate the distance (or features) by using Euclidean distance and slope where ,there are eighteen features (eight features from Euclidean distance, eight features from slop, Area, and perimeter). The results in the training stage were (C4.5 gave 100%, k-mean gave 95.2% k-medoid gave 91.9% and ANN gave 91.27%). While in the testing stage we used three classifiers (Euclidian Distance, Modify of the Standardize Euclidian Distance and Correlation) and the results show that (Euclidian Distance gave 94.4%,Modify of the Standardize Euclidian Distance gave 100% and Correlation gave 94.4%) We create our database (three videos with 250 frames) for training and one video for testing.

Keywords: Gestures, Feature Extraction, C4.5, K-Mean , K-Medoid and ANN

Image Classification based on CBIR

Shaker K. Ali1 and Salah A. Sadoon2

1Computer sciences and mathematics college, University of Thi_Qar, Thi_Qar, Iraq.
2College of Education for Pure, University of Thi_Qar, Thi_Qar, Iraq.
shaker@utq.edu.iq   and   abdsalah847@gmail.com

Abstract:

In this paper, we present a new way to classify four types of images (Car accidents, Fire, Abnormal objects in street and Digs) which will be sent to four government places; Civil Defence, police station and Municipal. The classification method depends on the Content-Based Image Retrieval (CBIR), where we use a new method. In this method, we use a combination of three methods to extract features from an image; Single Value Decomposition (SVD), Edge Histogram Descriptor (EHD) and Color Auto-Correlogram for Extraction Features. You will use these features to find the closest similarities to the query image from the database images by selecting the closest 3 images, then choosing the class to which the closest two images belong to the retrieved. The combined method showed 100% accuracy in training phase and 100% test phase accuracy.

Hybrid K-means Clustering (HK): Cluster Assessment via Rand index

Zahraa Radhi Waad 1, Bahaa Hussein Taher 2

1college of Computer Science and Mathematics, University of Thi-Qar, Iraq.
2college of Computer Science and Information, Technology, University of Sumer, Iraq.
1hhaass441@gmail.com
2Ghrabiuk@gmail.com

Abstract:

This paper introduces a hybrid K-means clustering method, this method has better results than the standard K-means method in terms of accuracy. In order to evaluate the hybrid algorithm, it is compared with the standard algorithm in terms of accuracy on synthetic data with normal distribution and real data sets for single hierarchical and average hierarchical with Euclidean and Manhattan distances. In this paper, we determine the number of clusters by using a ratio from 0.1 to 0.9 from the total number of original data. And also, we used the external (Rand index) criteria with the purposes to evaluate the results obtained from hybrid K- means clustering and standard K-means clustering.

Keywords: Hierarchical clustering, K- means clustering, Hybrid clustering, External validation.

Statistic scope
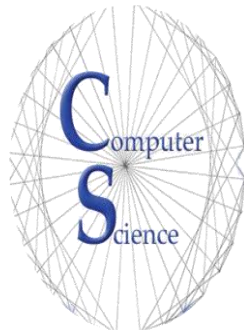
Rényi Entropy for Mixture Model of Multivariate Skew Laplace distributions

Salah H. Abid1, Uday J. Quaez2

1Department of Mathematics, College of Education, Al-Mustansiriya University
Baghdad, Iraq

2Department of Mathematics, College of Education, Al-Mustansiriya University Baghdad, Iraq

abidsalah@gmail.com   ,   uoday1977@gmail.com

Abstract:

Rényi entropy is an important concept developed by Rényi in information theory. In this paper, we study in detail this measure of information in cases multivariate skew Laplace distributions then we extend this study to the class of mixture model of multivariate skew Laplace distributions. The upper and lower bounds of Rényi entropy of mixture model are determined. In addition, an asymptotic expression for Rényi entropy is given by the approximation. Finally, we give a real data example to illustrate the behavior of entropy of the mixture model under consideration.

Properties of two Doubly-Truncated Generalized Distributions

Salah H Abid and Hind H Jani

Mathematics department, College of Education, University of Mustansiriyah , Bagdad, Iraq.
abidsalah@gmail.com and hind.mathematic13@gmail.com

Abstract:

In this paper, some properties of doubly truncated generalized gamma distribution and doubly truncated Generalized Invers Weibull distribution are derived. These properties are the reliability and hazard functions, rth raw moments, stress-strength reliability, Shannon entropy and relative entropy.

On the Doubly-Truncated Generalized Gompertz and Marshal-Olkin extended Uniform Distributions

Salah H Abid and Hind H Jani

Mathematics department, College of Education, University of Mustansiriyah , Bagdad, Iraq.
abidsalah@gmail.com and hind.mathematic13@gmail.com

Abstract:

It is well known that the truncated distributions are more matches with reality. Therefore, in this paper, some properties of doubly truncated generalized Gompertz distribution and doubly truncated Marshal-Olkin extended Uniform distribution are derived. These properties are the reliability and hazard functions, rth raw moments, stress-strength reliability, Shannon entropy and relative entropy.

Generalized Gamma – Generalized Gompertz Distribution

M A A Boshi[1], S H Abid[2] and N H Al-Noor[1]

[1] Mathematics Department, College of Science, Mustansiriyah University, Baghdad, Iraq
[2] Mathematics Department, Education College, Mustansiriyah University, Baghdad, Iraq
E-mail: drnadialnoor@gmail.com, nadialnoor@uomustansiriyah.edu.iq

Abstract:

In this paper, we present a generated class of continuous distributions named H-G distributions. A new family of this class named generalized gamma - G along with one of its special cases, generalized gamma - generalized Gompertz distribution, are discussed. The cumulative distribution, probability density, reliability and hazard rate functions are introduced. Furthermore, the most vital statistical properties for instance, the r-th moment, characteristic function, quantile and simulated data, Shannon entropy, relative entropy and stress strength are obtained.

Rayleigh-Rayleigh Distribution: Properties and Applications

N H Al-Noor and N K Assi

Mathematics Department, College of Science, Mustansiriyah University, Baghdad, Iraq
E-mail: drnadialnoor@gmail.com, nadialnoor@uomustansiriyah.edu.iq

Abstract:
In this paper, a new compound distribution named Rayleigh-Rayleigh (Ra-Ra) is presented. Several structural statistical properties of new distribution containing explicit expressions for the r-th moments, characteristic function, quantile function, order statistics, Shannon and relative entropies, besides stress strength reliability were considered and studied. The unknown parameters of Ra-Ra distribution have been estimated under the maximum likelihood estimation method. Moreover, the Ra-Ra distribution is applied upon a simulation study and real data set in order to evaluate its utility and flexibility.

Keywords: Rayleigh distribution, Compound distribution, Statistical properties, Shannon and relative entropies, Stress strength.

Assessment of Teachers' Knowledge about Tuberculosis at Primary School in Balad City

Wafaa S. Hasanain

Department of Mathematics, College of Science, Mustansiriyah University, Iraq
E-mail: w.s.hasanain@uomustansiriyah.edu.iq
E-mail: w_a_fairness@yahoo.com

Abstract:

Tuberculosis (TB) is one of the most common infectious diseases worldwide and continues to be a major public health problem for low and middle-income countries. Undoubtedly, Lack of knowledge about tuberculosis among health care and education workers, as well as if knowledge and practices of tuberculosis among students were generally insufficient causes an increased risk of contracting the disease.

Tuberculosis (TB) is a chronic communicable bacterial disease caused by Mycobacterium tuberculosis. The Latest World Health Organization (WHO) Report shows that there were 9.0 Million new TB cases and 1.5 Million tuberculosis deaths. The Transmission of the TB disease by Mycobacterium tuberculosis (a bacterium of a group that includes the causative agents of tuberculosis). takes place by air in the form of sneeze, talk, cough, spit, etc.[1,9,11,12,13]

This applied study attempt to identify, assess and analyze teachers' knowledge about tuberculosis in primary schools. A descriptive design, cross-sectional study was carried out in order to achieve the earlier stated objectives of this study by find out the relationship between teachers' knowledge and social demographic data (sex, age, academic achievement, ….).

The present study lasted for four months by prepared a questionnaires to assess the level of teachers' knowledge, and these questionnaire contains many themes, each theme contained a number of questions to evaluate and analyze teachers 'knowledge of tuberculosis by answering a set of questions (as a variables); (mode of transmission, symptoms and signs, diagnostic features of TB, duration of treatment, prevention methods, risk of developing tuberculosis).The research hypothesis also states that (mycobacterium tuberculosis factor) has a direct impact on TB infection, and to achieve this hypothesis, a questionnaire was distributed to a sample with a size of (58) teachers and the method of Multiple Logistic Regression was used for statistical treatment. Finally, the research concluded a set of results and conclusions included in tables by comparing Likelihood-ratio chi-square statistics and classification table of the observed versus predicted responses.

Keywords: Tuberculosis (TB); Assessment teachers' knowledge; Statistical analysis, Describing Demographic Characteristics, Logistic Regression

Estimate the parameters of Weibull distribution by using nonlinear membership function by Gaussian function

Suhaila N. Abdullah1   Iden Hasan Huessian2

ALkARKH University of Science, College of Energy&Environmenal Science   Baghdad , Iraq
Email: Sss333iraq@yahoo.com
University of Baghdad, College of Science for Women Baghdad, Iraq   Email: Iden_ALkanani@yahoo.com

Abstract:

The main aim of the presented study is estimating the parameters of Weibull distribution by utilizing simulation to generated the samples size when n=10, 50,100. Considering in the current study the parameters estimator of Weibull membership function, then using the nonlinear membership function for Gaussian function to find the fuzzy number for these parameters estimator. After that utilizing the ranking function to transform the fuzzy number to crisp number.

Keywords: Weibull distribution, simulation technique, nonlinear membership function, the ranking function.

Using a Contingency Table Technique of Median Test Based on Censored Survival Data

Mahdi Wahhab Neamah1, Adel Abbood Najm2

1 Mahdi_na2002@yahoo.commail: -E
2 University of Sumer, College of Economy and Administration.
adel.abood6969@gmail.commail: -E

Abstract:

It is often used the median failure time to recap survival data because it has a more explicit and clear explanation for researchers in application than the prevalent hazard function. In general, the most used methods for comparing median failure time based on censored data either need estimation of the probability density function (pdf) or include very difficult formulas to evaluate the variance of the estimates. In this paper, we use a modification to a k- sample median test based on censored survival data by means of a simple contingency table technique where each cell counts the number of individuals or observations in each sample that are greater than combined (pooled) median and vice versa. Under consideration the censoring, this technique will Produced a non- integers elements for the cells in the contingency table .

We suggest formulating a weighted asymptotic test statistic which is representing the summing produced at the nearest integers points to the main non- integer elements (values). According to this Point of view, we prove that the above statistic distributed approximately a with (k-1) degree of fredoms. Finally, an applied example has been showed.

Keywords: Median failure time, Mood's median test, censoring data, survival data, contingency table, satterthwaite approximation

High dimensional data challenges in estimating multiple linear regression

Jassim N Hussain

Department of Statistics, College of Administration & Economics, University of Kerbala, Iraq.
Email: jasim.nasir@uokerbala.edu.iq

Abstract:

Nowadays, High dimensional data are quickly increasing in many areas because of the development of new technology which helping to collect data with a large number of variables in order to better understanding for a given phenomenon of interest. Multiple Linear Regression is a famous technique used to investigate the relationship between one dependent variable and one or more of independent variables and analyzing the effects of them. Fitting this model requests assumptions, one of them is large sample size. High dimensional data does not satisfy this assumption because the sample size is small compared to the number of explanatory variables (k). Consequently, the results of traditional methods to estimate the model can be misleading. Regularization or shrinkage techniques (e.g., LASSO) have been proposed to estimate this model in this case. Nonparametric method was proposed to estimate this model. Average mean square error and root mean square error criteria are used to assess the performance of nonparametric; LASSO and OLS methods in the case of simulation study and analyzing the real dataset. The results of simulation study and the analysis of real data set show that nonparametric regression method is outperformance of LASSO and OLS methods to fit this model with high dimensional data.

Key Words: Average Mean square error; Data reduction techniques; Nonparametric regression, Regularization methods, Variable selection method.

Variable selection in Gamma regression model using binary gray Wolf optimization algorithm

Niam Abdulmunim Al-Thanoon[1], Omar Saber Qasim[2]. Zakariya Yahya Algamal[3]

1) Department of Operations Research and Artificial Intelligence, University of Mosul, Mosul, Iraq
2) Department of Mathematics, University of Mosul, Mosul, Iraq
3) Department of Statistics and Informatics, University of Mosul, Iraq.
E-mail: zakariya.algamal@uomosul.edu.iq

Abstract:

In the real life applications, large amounts of variables have been accumulated quickly. Selection of variables is a very useful tool for improving the prediction accuracy by identifying the most relative variables that related to the study. Gamma regression model is one of the most models that applied in several science fields. Gray Wolf optimization algorithm (GWO) is one of the proposed nature-inspired algorithms that can efficiently be employed for variable selection. In this paper, chaotic GWO is proposed to perform variable selection for gamma regression model. The simulation studies and a real data application are used to evaluate the performance of our proposed procedure in terms of prediction accuracy and variable selection criteria. The obtained results demonstrated the efficiency of our proposed methods comparing with other popular methods.

Multicomponent stress-strength system reliability estimation for generalized exponential-poison distribution

A R Mezaal 1,2, A I Mansour1,3 and N S Karm1,4

1Mathematical Dep., Mustanseriya University, College of Education, Baghdad, Iraq
2draraldubaicy@yahoo.com; dr_awatif@uomustansiriyah.edu.iq
3aliameraltaay313@gmail.com; aliibrahimaltaay@uomustansiriyah.edu.iq
4karamns6760@gmail.com ; dr_nadaskaram@uomustansiriyah.edu.iq

Abstract:

This study deals with (s -out of- k) Multicomponent Stress (Y) and Strength (X) System Reliability Estimation. Both stress and strength assumed to have Generalized Exponential-Poisson Distribution with common and known scale parameters (θ and λ). The aim here is to estimate the unknown shape parameters (α and β) for X and Y respectively using two methods of estimation ML and Bayes analysis by one prior with five loss functions. Then estimate Reliability using the same methods and compared the results by Mean square error criteria from simulation study to find the best performance of the estimators. the results show that the best estimator for $\mathbf{R_{(s,k)}}$ is Bayes estimator under Quadratic loss function using Gamma prior function, followed by GD, GW, GP, MLE and GS estimators, respectively.

Sparse minimum average variance estimation via the adaptive elastic net when the predictors correlated

Esraa Rahman[1] and Ali Alkenani[2]

[1]Department of Statistics, College of Administration and Economics, University of Al-Qadisiyah, Al Diwaniyah, Iraq.
[2]Correspondence: Ali Alkenani, E-mail: ali.alkenani@qu.edu.iq
[2]http://orcid.org/0000-0001-5067-2321

Abstract:

A new model-free variable selection method was proposed in this article, which is called SMAVE-AdEN. We combined the effective sufficient dimension reduction method MAVE with the variable selection method which is called adaptive Elastic Net (AdEN) to introduce SMAVE-AdEN. The SMAVE-AdEN produces a sparse and accurate estimate when the predictors are highly correlated. The advantage of SMAVE-AdEN is that SMAVE-AdEN extended Adaptive Elastic net (AdEN) to nonlinear and multi-dimensional regression. Also, the SMAVE-AdEN enables MAVE to work with problems were the predictors are highly correlated. In addition, SMAVE-AdEN can exhaustively estimate dimensions, while selecting informative covariates simultaneously. The performance of SMAVE-AdEN is evaluated by both simulation and real data analysis.

Keywords: Dimension reduction, Variable selection, Minimum average variance estimation, Adaptive Elastic Net.

Truncated Rayleigh Pareto Distribution

Reyah Zeadan Khalaf, Kareema Abad Al-Kadim

College of Education of Pure Sciences/ university of Babylon

Abstract:

In this paper, we introduced a new distribution which is the truncated Rayleigh Pareto distribution of a variable, and some useful functions, and some mathematical and statistical properties such as density function, the cumulative distribution function, limit function, reliability function, hazard function, stress -strength reliability, engineering arithmetic mean, mode and median, harmonic arithmetic mean, the r-th moment about the mean, the r-th moment about the origin, coefficients of variation, of sekeness and kutosis, order statistic, and some estimation methods.

Generalized Odd Generalized Exponential Weibull Distribution

Sabah Muhammad Khudair Hussain Al-Ghalib[1], Kareema Abed AL_Kadim[2]

1sabahalghalb@gmail.com
2Dept. of Mathematics,College of Education for Pure Sciences,
University of Babylon,Hilla, Iraq
kareema.kadim@yahoo.com

Abstract:

We introduce five parameters continuous distribution called generalized odd generalized exponential Weibull (GOGE-W-E) distribution for modeling life time data. We introduce an explicit expressions for the studying. We present and study some of its properties, the cdf , pdf, functions of reliability like moment, quantile and median, the moment generating function, Rényi entropy and order statistics. The five parameters of the suggested are estimated by the maximum likelihood estimation method . We illustrate its usefulness by means of an application to a real data sets

Spatial Analysis of Female Breast Cancer Incidence in Iraq during 2000-2015

M M AL-Hashimi1 and E M Nouri2

1Department of Statistics and Informatics, College of Computer science & Mathematics, University of Mosul, Mosul, Iraq
2Department of Operations Research and Intelligent Techniques, College of Computer science & Mathematics, University of Mosul, Mosul, Iraq.
Email. muzahim63@gmail.com

Abstract:

Breast cancer in females is the most common cancers diagnosed worldwide, and the leading cause of cancer death. This study explored the spatial distribution pattern of female BC in different districts in Iraq between 2000 and 2015. Data were obtained from the Iraqi Cancer Registry. The age standardized incidence rate (ASIR) were calculated according to provinces and geographical district for three periods (2000-2004, 2005-2009, 2010-2015). spatial statistical tools were applied to evaluate hotspots, coldspots, spatial clustering and outliers. Results showed a spatial correlation with hotspots, coldspots, and detecting spatial outlier. This study identified 10 districts as high-risk areas for BC, including AL-Kadhimiyah, Al-Karkh, Al-Adhamia, Al-Rissafa, Al-Sadir, and Abu-Graib in Baghdad province, Bakooba district in Diyala province, Al-Hindia district in Karbala province, and Shatt Al-Arab district in Basrah province, and we have evidenced an increase of breast cancer incidence rates during 2010-2015. More researches are needed to investigate the reasons for the geographic and temporal variations of breast cancer incidence in Iraq.

Gamma Inverse Rayleigh Distribution; Different methods of Estimation

Dr. Nashaat Jasim Mohammed Al-Anber

Technical College of Management- Baghdad, Middle Technical University, Baghdad, Iraq

Dr.nashaat@mtu.edu.iq

Abstract:

We develop a new continuous distribution called the Gamma-Inverse Rayleigh (GIR) distribution that extends the Inverse Rayleigh distribution that has increasing, decreasing and bathtub shapes for the hazard function. Various structural properties of this new distribution are provide, that includes the limit behavior, Quantile function and sub-models. From the generalization of the probability density function and cumulative distribution function of this distribution, the expression for the rth moment, moment generating function, and the order statistics can be established.

We considered the maximum likelihood estimation to estimate the parameters and utilizing the Artificial Intelligence Algorithms in estimation process. A comparison study is made through simulation experiments.

A real data set is applied to illustrate the usefulness of the GIR distribution.

This new distribution will serve as an alternative model to other models available in the literature for modeling positive real data in many areas.

Quality testing algorithms reduce overall completion time and overall delay in machine scheduling

Fathalh A. Cheachan

Department of Statistic
College of Economics and Admistration
University of Mustansiriyah,Baghdad, Iraq.
aiiiii_f@yahoo.com

Abstract:

In this paper we shed light on the issue of scheduling a single machine for foggy delay time and foggy work time. For the purpose of reducing the value of maximizing blur-delay function. A comparison was made and tested between several local methods ((TA), (TS), (GA), (ACO) and (MA)). The results of the selection reached 1500 works. Through the results, it was found that ACO gives the best approximate solutions .

Estimation Parameters Of The Multiple Regression Using Baysian Approach Based On The Normal Conjugate Function

Adel Abbood Najm1, Ahmed Hamza Abood2 , Shrook A.S. AL-Sabbah3

1 College of Administration and Economics / University of Sumer/ Iraq .

adel.abood6969@gmail.com

2 Department of Anatomy, Histology and Embryology/Factuality of Medicine/Karbala, University/Iraq.

ahmed.eabod@uokerbala.edu.iq

3Statistics Department / Administration And Economics College / Kerbala University / Iraq .

shorouq.a@uokerbala.edu.iq

Abstract:

In this paper, we have been used Bayes Technique depending on the normal conjugate function to estimate parameters of the multiple regression model, and we have been tested significance of this model. The test showed in the application that the mean square error (MSE) for the used model was decreasing, also it showed that the determinant coefficient is increasing highly. In the same time, value of the computed F-test was significant, according to the above, we can consider that the model is significant.

Keywords: Bayes Approach, Conjugate Probability densty function, multiple regression, Parameters estimation prior and posterior distribution, Normal dist.

Estimating Shrinkage Parameter of Generalized Liu Estimator in Logistic Regression Model

Najlaa Saad Alsharabi

Department of Statistics and Informatics, University of Mosul, Mosul, Iraq
E-mail: najlaa.s.a@uomosul.edu.iq , mob: 07703880964

Abstract:

The logistic regression model is one of the modern statistical methods developed to predict the set of quantitative variables (nominal or monotonous), and it is considered as an alternative test for the simple and multiple linear regression equation as well as it is subject to the model concepts in terms of the possibility of testing the effect of the overall pattern of the group of independent variables on the dependent variable and in terms of its use For concepts of standard matching criteria, and in some cases there is a correlation between the explanatory variables which leads to contrast variation and this problem is called the problem of Multicollinearity. In this study a generalized Liu estimator was introduced to combat the multicollinearity in the logistic regression model. The generalized Liu coefficient (shrinkage coefficient) was estimated in different ways and a comparison of these methods was performed using the mean square error criterion by applying to Monte Carlo simulation data and compared of road performance. Simulation results demonstrate that shrinkage parameter selection based on the work by Kibria (2003) ie (D_5) is more efficient than methods.

Key words: logistic regression, multicollinearity, mean square error, ridge estimator, liu estimator

A New Projection Technique for Developing a Liu-Storey Method to Solve Nonlinear Systems of Monotone Equations

Mohammed Maad **Mahdi**[1], Mushtak A. K. **Shiker**[2]

[1,2]**Department** of Mathematics, College of Education for Pure Science, University of Babylon, Babil-Iraq

[1]**m**ohmath44@gmail.com,
[2]**m**mttmmhh@yahoo.com

Abstract:

The projection technique is a very important method and efficient for solving unconstraint optimization and nonlinear equations. In this study, we developed a Liu-Story (LS) algorithm for solving a monotone equations of nonlinear systems. The new algorithm satisfies the sufficient descent condition and it's a suitable method of large scale equations for its limited memory. We established a global convergence of suggest method under the mild conditions. Numerical results proved that the new algorithm works well and promising.

Keyword: Projection Algorithm, Monotone Equations, Nonlinear Systems, Conjugate Gradient Method and Line Search Method.

Three terms of derivative free projection technique for solving nonlinear monotone equations

M M Mahdi1   and   M A K Shiker1,2

1Department of Mathematics, College of Education for Pure Sciences,
University of Babylon, Babil-Iraq.
E-mail: 1mohmath44@gmail.com,   2mmttmmhh@yahoo.com
2Corresponding Author.

Abstract:

The derivative-free projection technique is one of the efficient methods for solving nonlinear monotone equations. In this study, three terms of the derivative-free projection method with a monotone line search technique is presented. This method based on extension of a conjugate gradient descent and a developed gradient projection method to solve the nonlinear system of monotone equations. The proposed method can be used for large scale equations due to limited memory requirement. We investigated the global convergence of the suggested approach without requiring differentiability and also the equation is Lipschitz continuous. The numerical results showed that the new algorithm is efficient and promised.

Keywords: Projection Algorithm, Monotone Equations, Nonlinear Systems and Line search method.

A Modification to Vogel's Approximation Method to Solve Transportation Problems

H A Hussein[1]　　and　　M A K Shiker[1, 2]

1Department of Mathematics, College of Education for Pure Sciences,
University of Babylon, Babil-Iraq
Email:　1hussainalseaidi@gmail.com,　　　2mmttmmhh@yahoo.com
2Corresponding Author

Abstract:

Transportation Problem (TP) is singular of the paradigms in the Linear Programming Problems (LPP). The TP in Operations Research represent vastly applied optimization. (TP) has some goals, like reducing transportation costs or reducing transportation time, etc. Whereas meeting both supply level and request level requirements. Transportation problem plays a major role in industry, trade, logistics, etc. To get the most possible profit, organizations are always looking for better ways to reduce cost and improve revenue. To solve the transportation problems, it is always required to find an initial basic feasible solution (IBFS) for get the optimal solution. The Vogel's Approximation Method (VAM) is the important known traditional methods for obtaining an IBFS of TP. In this work, we introduce a new modification to the VAM for finding an IBFS for the transportation problems almost nearer to the optimal solve. Proposed modification is illustrated with solved numerical examples. A comparison study was also conducted with the results of classic methods. This modified approach most of times give better solution and very nearer to the optimal solve, furthermore, occasionally gives the optimal solve. This method is clear, easy to comprehend.

Keywords: Operation Research, Liner Programming, Initial Basic Feasible Solution and Vogel's Approximation Method

A New Revised Efficient of VAM to Find the Initial Solution for the Transportation Problem

H A Hussein[1],   Mushtak A K Shiker[1, 2]   and   Mohammed S M Zabiba[3]

[1,2]Department of Mathematics, College of Education for Pure Sciences
University of Babylon
[3]Department of Mathematics, Faculty of Education for Women, University of Kufa, Najaf-Iraq
Email: [1]hussainalseaidi@gmail.com,   [2]mmttmmhh@yahoo.com,
3mohammedsh.mahdi@uokufa.edu.iq
2 Corresponding Author

Abstract:

Transportation Problem (TP) is a very important problem which has been vastly studied in Operations Research domain. There are some classical methods to find the initial basic feasible solution (IBFS) which minimize the total shipping cost of (TP) such as north-west corner method (NWCM), minimum cost method (MCM) and Vogel's approximation method (VAM) which the best one of them. In this paper, we suggest a new amendment to (VAM) to find (IBFS) of (TP), which is an iterative method and the results will be near the optimal solution and in some cases equal to the optimal solution. In the numerical experiences we compare the results of the new approach with other classical methods to verify the efficiency of the new method. The proposed method is very effective and well-suited for use in solving these problems of various sizes.

Keywords: Liner Programming, Transportation Problems, Vogel's Approximation Method and Initial Basic Feasible Solution

Employ the Principle Components in the Detection of Feedback

Dr.Heyam A.A Hayawi\ Asst.Prof.   Dept.of Statistics and Informatics

College of Computer Sciences and Mathematic
University of Mosul/Iraq
heyamhayawi@gmail.com

Abstract:

In linear dynamic feedback models ,the relationship between two input series input and output shows that the approach is a propose to discover a feedback in linear dynamic system through examining autocorrelation function and partial autocorrelation function for principle components by using few tests of time series identification and exact using Ljung-Box test depending on Simulation approach to show the efficiency of the suggested approach and application on linear and nonlinear models within and without feedback, The obtained result is good and encourage.

Keyword: principle Component, State Space, Feedback

The use of discriminant analysis in classifying new borns into normal and preterm infants (applied study)

Assist.Prof. Dr. Saad Sabir Mohameed

University / Wasit
Statistics Department / College of Administration and Economics
Saadsabir455@Gmail.com

Abstract:

The discriminant analysis method is one of the statistical methods in classifying data into groups according to the independent variables affecting the specific response variable (or classification), and it includes the classification stage and the discrimination stage . The primary goal of the discriminant analysis method is to find a function known as the discriminant (or classification) function, whereby observations are classified according to the characteristics they carry for each independent variable into two or more groups so that we can judge using this function on the return of any new view to one These groups. The research found that the independent variables, such as the weight of a child in kg and the duration of pregnancy per week, had a significant effect. As for the mother's age in the year, it had no significant effect. The correct classification efficiency ratio for normal children was 100%, and the correct classification efficiency ratio for premature infants was 96.7%, and 98.3% of the original grouped cases were correctly categorized, and these percentages support the differential analysis method in prediction.

Key words: discriminant analysis, linear discriminant function, linear discriminant significance tests , Probability of Misclassification

A Comparison between Some Bayesian Estimation Methods for Parameter Exponential Distribution by Using Data Type II Censoring

Nabeel Ali Hussein[1], Sameer Annon Abbas[2], Ahmed Hadi Hussain[3],*
and Abbas Musleh Salman4

1, 2, 4 Iraqi Ministry of Education, The Directorate of Education of the Governorate Babylon- Iraq.
3 University of Babylon, College of Engineering Al-musayab, Department of Energy Engineering
Corresponding Author: Ahmed Hadi Hussain, met.ahmed.hadi@uobabylon.edu.iq

Abstract:

Due to the importance of exponential distribution, especially in the modeling and analysis of various data in several fields in mathematics and statistics, including the applied field (experiments) and the pure field (theories). Some tests do not provide sufficient information on the trial data, so they are called "censored data". The aim of this paper is to compare some Bayesian estimation methods for the exponential distribution of parameters using data type II censoring. We provided an estimate of the scale parameter (ESP) for the exponential distribution under data the control of type II by using the proposed Bayesian method and maximum probability. We also compared these methods using Mean square error (MSE). This study was conducted using simulation with different parameter values (θ) and different sample sizes (n = 10, 20, 50, 100). The calculation results showed that the best method of estimation is the proposed Bayesian method (BAY2), which uses the distribution of Chi-Square (n) in the previous information.

Keywords*: Bayes Estimation, exponential distribution, Jeffery prior information, Maximum likelihood estimates.*

Estimate survival function by using Dagum distribution

Lecturer/ Hind Jawad Kadhim Al-Bderi

College of Administration and Economics / University of Al-Qadisiyah
hind.kadhum@qu.edu.iq
hind_satia@yahoo.com
http://orcid.org/0000-0003-1525

Abstract:

This paper intends to estimate the unlabeled three parameters for Dagum distribution modle depend on censored samples type two ; employing the maximum likelihood estimator method to obtain the derivation of the point estimators for all unlabeled parameters depending on iterative techniques , as Newton – Raphson method ; then to derive ordinary least squares estimator method. Applying all these methods to estimate related probability functions; death density function, cumulative distribution function, survival function and hazard function (rate function).

When examining the numerical results for probability survival function by employing 'mean squares error measure and mean absolute percentage measure' , this may lead to work on the best method in modeling a set of real data; and this method is "Maximum likelihood estimator method for real censored type II sample".

Keywords: Censored type two sample, Maximum Likelihood Estimator Method, Ordinary least squares estimator method, Survival Function, .

Preliminary Test Double Stage Shrinkage Estimators of Burr XII Distribution

Alaa.K. Jiheel, Walaa.H.Ashour Hassan.A. Naser, Qusay. A.Kassid

Email: alaa-math2011@yahoo.com, haalna@hmail.com, aqusay251@gmail.com
Department of Mathematics, College of Education for Pure Sciences, University of Thi-Qar, Nasiriyah, Iraq

Abstract

In this paper, Four Pre-test estimators of the burr XII distribution are proposed and studied. In addition equations of bias, bias ratio, mean square error and relative e_ciency are derived. The suggested estimators are compared with respect pooled classical estimator. The results show the preference for the proposed estimators.
Keywords: Burr XII distribution, Pre-test estimators, Signi_cance level, Bias, Mean square error, Relative e_ciency

Physical Scope
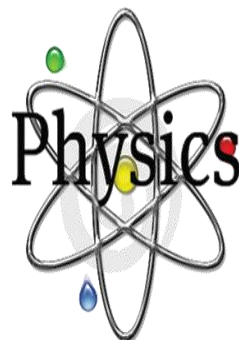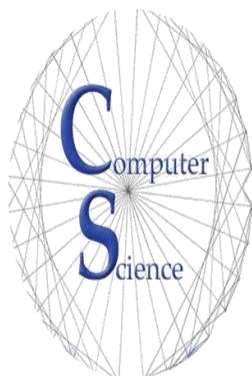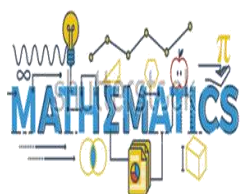
Synthesis and characterization of PVA-Graphene-Ag nanocomposite by using laser ablation technique

Musaab Khudhur Mohammed1, Ghaleb Al-Dahash2 and Amer Al-Nafiey2

1University of Babylon, College of Education for Pure Sciences, Department of Physics, Iraq

2University of Babylon, College of science for women, Department of Laser Physics, Iraq

*musabali33@yahoo.com

Abstract:

The PVA-G-Ag nanocomposite have been synthesized effectively by pulsed laser ablation liquid (PLAL) as a considered to be environmentally friendly and free of residues from chemical reactions. The high excellence silver plate (99.99%) and graphite plate (99.99%) was immersed in the polyvinyl alcohol (PVA) solution and irradiated with the Nd-YAG laser at wavelength 1064 nm, power 160 mJ for the silver plate and 80mJ for graphite plate, reiteration rate 6 Hz, 10 ns pulse width and 300 pules for graphite plate and 700 pulse for silver plate. The pure of PVA, PVA-Graphene and PVA-Graphene-Ag nanocomposite were investigated using UV-VIS spectroscopy, FTIR and SEM. The absorption spectra of PVA-Graphene-Ag nanocomposite show the presence of two peaks one 0.4 at 272 and second 0.47 at 403 nm. The optical energy gap (Eg) decreased from 5eV of a pure PVA to 4.6eV of a PVA-G-Ag for indirect allowed transition and therefore, decreased from 4.4eV of a pure PVA to 4.1eV of a PVA-G-Ag for indirect forbidden transition. The transmittance and absorption coefficient have been determined. The SEM images confirmed that homogenous composite without aggregation of the components. The average size of nanoparticles of GNPs and AgNPs for PVA-G and PVA-G-Ag nanocomposite was 130 and 115 nm respectively. The FTIR has demonstrated that the connection between the graphene, silver and polymer network was enough to have stable nanocomposite. This investigation demonstrates that the pulse laser ablation decent instrument to decorated metals on the graphene with the presence of the polymer.

Keywords: graphene, AgNPs, PVA-G-Ag nanocomposite, Laser ablation

Investigation of Mixed Symmetry States in 170-178Yb isotopes

Heiyam Najy Hady1* and Mohsin Kadhim Muttal2

1University of Kufa, Education College for girls, physics department
2University of Babylon, Science College, physics department
* E-mail : heiyam_najy@yahoo.com

Abstract:

low-lying positive parity states, dynamic symmetries, mixed symmetry states (MSS), reducing electric quadrupole transition probabilities B(E2), branching ratio, reducing magnetic dipole transition probabilities B(M1), and mixing ratios δ(E2/M1) for [170-178]Yb have been investigated by applied IBM-1 and IBM-2 program package. The software package IBM-1 and IBMT computer code for IBM-1 and Neutron Proton Boson NPBOS and Neutron Proton Boson Electromagnetic NPBEM software package have been used. The Ytterbium nuclei with the $(\mathbf{170 - 178})$ mass number considered as rotational nuclei after applying the first and second interacting boson model with studying dynamic symmetry and energy ratios $(E4_1^+/E2_1^+)$, $(E6_1^+/E2_1^+)$ and $(\boldsymbol{E8_1^+/E2_1^+})$ that approximated to (3.33,7 and 12). The reducing transition probability for electric quadruple $\boldsymbol{B(E2)}$ and branching ratios that state the small values of the ratios R' and R" as having rotational characteristics. A study of the mixed symmetry state of these nuclei shows that the lower energy mixing level is the first 1^+ level, which distinguishes the rotational determination nuclei. The energy levels values for the states $\mathbf{2_2^+, 3_1^+, 5_1^+, 1_1^+}$ have a clear mixed symmetry state (MSS) directly proportional with Majorana parameters ζ_2 , while $\mathbf{2_3^+}$, and $\mathbf{2_4^+}$, tend to be approximately more conservative.

Preparation and characterization of hydroxyapatite powder and study of hydroxyapatite - alumina Composite

Ghazi K. Saeed1 , Abbas F. Essa2 and Saja Abdul-Ammer Said2

1 Science Department – College of Basic Education /University of Waist
2 Physics Department – College of Science/ University of Waist
Email: phyghazi@ymail.com

Abstract:

Hydroxyapatite powder $Ca_{10}(PO_4)_6(OH)_2$ was prepared locally from Iraqi beef bones, and characterization the powder as well as studied purity. A composite of hydroxyapatite-alumina was also prepared with a ratio of alumina 0,5,10,15,20,25% wt .Use polyethylene glycol as a binder with 1% wt by dissolving polyethylene glycol with ethanol (1g: 100ml) at 40 °C and using a magnetic stirrer to obtain a homogeneous solution for the material. Then drying the powder and pressing to prepare compound samples, after that heat treatment at 1350°C for three hours. The physical and mechanical properties studied such as density, porosity, water absorption ratio, hardness and compression resistance, as well as X-ray diffraction and X-ray florescence. X-ray diffraction analysis showed that the hydroxyapatite phase was stabilized for all prepared samples before and after heat treatment with chemical form $Ca_{10}(PO_4)_6(OH)_2$, the hydroxyapatite showed a stabilization in phase before and after heat treatment without decomposition into different components.

Keywords: Hydroxyapatite, Alumina, Composite and Medical applications

Study the kinetic of Acridin orange dye adsorption by ZnO/GO nanocomposite

Baydaa A. Kadhim[1] ,Asmhan A. Muhmood[2], Liwaa H. Mahdi[3]

1 University of Alkafeel/Iraq /Najaf
2 Physics Department / Faculty of Science /Kufa university / Iraq
3 Pathology Department / Faculty of medicine / Kufa University / Iraq
*Corresponding Author Email: Baydaa.Awad @alkafeel.edu.iq

Abstract:

Found of dyes in water bodies because of industrialization has prompted genuine medical problems. In the present investigation, an adsorbent ZnO/GO nanopartical was utilized for the removal of Acridine orange dye from watery that containing dyes. The adequacy of this adsorbent was read in group reads for different size portions of adsorbent at various pH, convergence of dye, measure of adsorbent, contact time and temperature. The seudo-first-request, pseudo-second-request and Elovich models were applied to test the motor test information. Pseudo first request model best fitted the adsorption of dye, The maximum adsorption rate was found to be 47% by 0.2 g of ZnO/GO nanocomposite in wastewater at a temperature of 25 °C dyes.

Study the contamination of ^{238}U, ^{232}Th and ^{40}K in flour samples of Iraq markets

Shaymaa Awad Kadhim1 , Shatha F.Alhous2,Ahmed shaker Hussein 3, Hayder H. Hussein4, Azhar S.Alaboodi5

1,4,5 Department of Physics /Faculty of Science/ University of Kufa/Iraq
2Department of Physics /Faculty of education for girls / University of Kufa/ Najaf/Iraq
3Department of basic science-college of dentistry-university of babylon –Iraq
Email: shaymaa.alshebly@uokufa.edu.iq

Abstract:

Wheat flour is a nutritious type of food that is widely consumed by various age groups in Iraq. This study investigates the presence of long-lived gamma emitters in different type of wheat flour in Iraqi market.

Materials and methods. Uranium (^{238}U), Thorium (^{232}Th) and Potassium (^{40}K) specific activity in (Bq/kg) were measured in (15) different types of wheat flours that are available in Iraqi markets. The gamma spectrometry method with a NaI(Tl) detector has been used for radiometric measurements. Also in this study we have calculated the internal hazard index, radium equivalent and absorbed dose rate in all samples.

Results and discussion. It is found that the specific activity in wheat flour samples were varied from (13.73496258±1.894477598) Bq/kg to (2.604906697±0.30785261) Bq/kg with an average (8.750907771) Bq/kg for^{238}U, For ^{232}Th From (67.79661017±0.442561205) Bq/kg to (9.962335217±0.141242938) Bq/kg with an average (21.8782172)Bq/kg and for ^{40}K from (2680.738112±23.60049089) Bq/kg to (283.7056658±3.415129858) Bq/kg with an average (133.097) Bq/kg. Also, it is found that the radium equivalent and The external (H_ex) and internal (H_in) hazard indices in wheat flour samples . This study prove that the natural radioactivity and radiation hazard indices were lower than the safe.

Keywords: Activity concentration, Gamma spectrometry, Flour, Iraq.

Natural radioactivity levels of some medical herbal commonly used in Iraq

Zahra Mousa Hamza[1] ,Shaymaa awad kadhim alshebly[2], Fawziyya Fakhry Al-Fayyadh[3]
Hayder H. Hussain[4]

[2,4]Department of physics , College of science, University of kufa ,Iraq
[1,3]AL furat al awssat Technical University 31003 , Kufa Technical Institute , Iraq
[1]E mail: shaymaa.alshebly@uokufa.edu.iq

Abstract:

Natural radioactivity levels in some selected medicinal plants commonly used in were investigated to determine the activity concentration and the annual committed effective dose due to naturally occurring radionuclides of ^{238}U, ^{232}Th and ^{40}K. The activity concentration was determined using gamma-ray spectrometry. The results of the analysis indicated an average activity concentration of ^{238}U, ^{232}Th and ^{40}K in the medicinal plants to be 38.12 ± 1.619 Bq kg^{-1}, 12.95 ± 0.896 Bq kg^{-1} and 570.70 ± 31.453 Bq kg^{-1} respectively. Chamomile recorded the highest activity concentration of ^{238}U and ^{40}K while Officinalis Borago recorded the highest activity concentrations of ^{232}Th. radiological hazard associated with intake of the natural radionuclides in the medicinal plants is insignificant. The results provide baseline values which may be useful in establishing rules and regulations relating to radiation protection as well as developing standards and guidelines for the use of medicinal or herbal plants to the appropriate authorities.

Keywords: Medicinal plants, Natural radioactivity, Gamma-ray spectrometry, Annual committed effective dose

Study the Effect of Annealing on the, Structural. and Optical Properties of Nano SnO₂ Thin Films Prepared by Spray Pyrolysis Technical

Radhiyah M. S.al jarrah1 , Noor Ali Jaafer 2

1Email: rathyah@yahoo.com, 2noor.ajaafer@gmail.com
University of Kufa/ Faculty of Science/ Department of Physics

Abstract:

In this work, the effect of annealing temperature T_a on the structural and optical properties of SnO_2 nanostructure prepared by spray pyrolysis method was investigated. SnO_2 films prepared on glass substrate with thickness 250 nm by dissolved 2.2563 g of $SnCl_2.2H_2O$ in 100 ml of ethanol then added 60 drops from concentrated hydrochloric acid (HCl) . After that the films were annealed at various temperatures (573, 673 and 773 K). X-ray diffraction studies show that the structure of all SnO_2 films is polycrystalline with tetragonal rutile crystalline structure with preferential orientation in the (200) direction.

The optical measurement showed that the nature of the optical transition has been direct with average band gap energies have tendency to decreases from 3.98 eV to 3.73 eV with increasing of T_a. The extent and nature of transmittance and optimized band gap of the material assure to utilize it for photovoltaic applications.

Keywords: Annealing; Band gap; grain size;; Spray pyrolysis; tetragonal; transmittance.

Measurement of Hearing Ability of Persons of Different Age Groups

Bashar Taha Jawad Al-Hamzawi[1], khelfa fadel shedhan muselmawe[2], Mohammed Yahya Hadi[3], Mohammed Abdul kadhim Hadi Al_ Sadi[4], Ali Hussein F Alnasraui[5].

1,2Directorate General of Education in Babylon Governorate
3,5College of Biotechnology, Al- Qasim Green University, Iraq.
4Collage of Environmental sciences, Al- Qasim Green University
5Ali.hussein@biotech.uoqasim.edu.iq . 5alialnasraui@gmail.com

Abstract :

The human ear is most sensitive. Hearing problems increases with age as well as sound pollution. In today's life, due to noise pollution or some reasons, per year, many people undergo from the problem of tentative hearing loss. In this experiment, 16 patients of different ages were taken, ranging from 20 years to 55 years of both sexes and we studied hearing sensitivity and it was compared between the right and left ears of each patient, as well as the comparability of hearing for different ages taken in this research.

Keyword: Audiometer, Rinne's test , Triveni , Weber's test , Tympanometry Test

Preparation and characterization of (WO$_3$:Co$_3$O$_4$) nano catalyst for fuel cell application

Haleemah J. Mohammed

Ministry of Science and Technology, Baghdad, Iraq
alhamdaniya2003@yahoo.com.

Abstract:

This research focused on preparing the (WO$_3$: Co$_3$O$_4$) nano catalyst by an electrochemical deposition technique, the electrochemical deposition cell consists of (WO$_3$: Co$_3$O$_4$) electrode as an anode, mesh stainless steel electrode as a cathode and an aqueous solution as an electrolyte. (WO$_3$: Co$_3$O$_4$) were grown on mesh stainless steel electrode, and XRD was used for characterization of nano catalyst, the topography properties were studied by atomic force microscopy (AFM), study the characterization of the electrochemical parameters. For this cell in terms of the impact of hydrogen volume on current, voltage, As well as the study of the effective results of the different concentration electrolyte arrangements extending from 0.14 M to 0.28 M KOH.

Utilizing k-means clustering to extract bone tumor in CT scan and MRI images

Widad Dhahir Kadhim[1], and Rabab Saadoon Abdoon[2]

1University of Babylon, College of Science, Department of Physics, Iraq
2University of Babylon, College of science, Department of Physics, Iraq
* widaddhahir9@gmail.com

Abstract:

Segmentation is one of the most significant parts of medical image processing. In image segmentation, the digital image is part of multiple sets of pixels. Magnetic Resonance Imaging, MRI and CT scanning is very important imaging techniques to explore the inner physiological constructions of the body noninvasively. A bone tumor is one of more life-threatening diseases, so exact detaching of the tumor regions is a pressing need. In this work, the K-means algorithm is employed on six MRI and CT scan images with different numbers of clusters. As well as many morphological operations like opening and dilation were applied after extract the fine tumor areas effectively. The results and the calculated surface areas of the separated tumor regions were compared to the radiologist delineation and the percent relative differences were found ranged from (0.63-1.75) % for MRI images and (0.34-1.51) % for CT scan images. This result indicates the high-quality performance of the adopted segmentation clustering-based method.

Keywords: K-means, Segmentation, MRI, CT scan, Bone tumor.

Distribution of Radon Concentration in Farmland Soil Samples in Al-Shamiyah City, Al-Qadisiyah, Iraq

Amer Y. Kadhim[1, 2], Khalid H. Al-Ataya[1], Murtadha Sh. Aswood*[2]

1Department of Physics, College of Science, University of Babylon.
2Department of Physics, College of Education, University of Qadisiyah
*Corresponding author e- mail: murtadhababylon@gmail.com

Abstract:

Radon concentration has determined in 46 samples collected from farmland soil of Al- Shamiyah city, Al-Qadisiyah, Iraq with alpha-emitters records their out of radon in nuclear track detector (CR-39). The results showed the maximum concentration of radon is 13.02 Bq/m^3 and the minimum concentration of radon is 0.12 Bq/m^3, with a mean value of 6.48 ± 0.77 Bq/m^3. Results reveal that the exhalation radon mass varied from 4.271 to 6.004 mBq/kg.h. The results explained the radon concentrations in farmland soil were less than 200 Bq/m^3 that it is recommended by UNSCEAR. On the other hand, the results observed that the samples do not create any impact on humans.

Structural ,Optical and Sensing properties of ZnO:Cu films prepared by pulsed laser deposition

Saleem Azara Hussein*, Awatif Jabbar Radi , FirasA.Najim, Mohamed A.Shaheed

Department of Physics , College of Education, University of Al-Qadisiyah,Iraq.
*Saleem.hussain@qu.edu.iq

Abstract:

This paper aims to study the effect of doping on the structural, optical and allergic properties of ZnO membranes prepared by pulsed laser deposition technique deposited on glass bases. The results of the diffraction spectrometry of the plasticized membranes were that the membranes had a compact polycrystalline hexagonal structure, the membranes had a high permeability of 80% and the energy gap was 3.35eV. The greatest sensitivity in the tinged membrane by (7%).

Investigate the structural and optical properties of Nickel Phthalocyanine (NiPc) thin film prepared by chemical spray pyrolysis method

Sura Noaman Tarrad1 , Saleem Azara Hussain2 , Falah H. Al-asady1

1 Department of Physics ,College of Science , University of Thi-Qar .
2 Department of Physics ,College of Education , University of Al-Qadisiyah
saleem.hussain@qu.edu.iq , suranoaman@gmail.com , Drfh24@yahoo.com

Abstract:

Chemical spray pyrolysis (CSP) technique has been employed to deposit Nickel Phthalocyanine (NiPc) on different substrate types at temperatures 150oC to investigate their structural, X-ray diffractograms and Scanning Electron Micrographs (SEM) and optical properties. The results of X-ray diffraction show that the powder structure is polycrystalline with monoclinic structure, and the results of XRD for thin film of NiPc shows polycrystalline with a fairly weak degree of crystallization, the results of SEM showed that the surface of the films is usually homogeneous, the roughness of NiPc films were determined using AFM technique and the analysis of the results showed that the grain size increases with increasing of concentration. The optical measurement using UV-Visible Spectra showed that the NiPc thin films have a direct energy gap (Eg) for all samples. Also the optical constants such as the absorption coefficient.

Key words: Organic semiconductor , Nickel Phthalocyanines , structural and optical properties.

Study of the structural and optical properties of pure copper Sulfide (CuS) films prepared by pulsed laser evaporation (PLD)

Saleem Azara Hussain,   Meriam Khaled Chloob

Saleem-az68@yahoo.com   mmkk909084@gmail.com

Abstract:

In this research, thin film copper sulfide (CuS) were prepared by the pulse laser deposition (PLD) on glass substrate with different thicknesses .The structural and optical properties of copper sulfide thin films were studied and the results of X-ray diffraction (XRD) were analysis. It was found that CuS films have a polycrystalline structure with hexagonal system. The optical properties of the CuS films were studied by measuring and calculating Transmittance and absorbance spectrum respectively within the wavelength range (300-1100) nm. The results of the absorbance spectrum showed that absorbance of the films increase with an increase in the number of pulses (increasing thickness) and that the type of the electronic transition are allowed direct type. The energy gap values between (2.2-2.9) eV, and the it decrease with an increasing of thickness.

Keyword: copper sulfide , thin films , pulsed laser deposition

Next Generation of High-Speed Optical Communications Networks Using OFDM Technology

Atta Takhum Jaber[1], Soudad S. Ahmed[2], and Shehab Ahmed Kadhim[3]

"[1,2]Department of Physics, College of Science, University of Baghdad, Baghdad, Iraq".
"[3] Ministry of Science & Technology".
toatt.711@gmail.com

Abstract:

Optical communication relies on sending data from one region to another on optical fibers for having a high bandwidth and low attenuation. With the increasing need over the days to transfer a high data rate of 100Gbit / s or more due to the requirements of different users in the domain of communications, it is necessary to provide bandwidth. OFDM is one of the most promising and reliable technologies in this field. It is one of the most used technologies in modern optical communication. It can provide direct detection and coherent detection Orthogonal-Frequency-Division-Multiplexing(OFDM). It also has the capability to beat incarcerations appearing when using optical fibers in communications such as chromatic-dispersion and polarization-mode-dispersion(PMD).

Since wavelength-division-multiplexing (WDM) is characterized by the use of multiple wavelengths through a single fiber as well as it increases the capacity of the data rate and improves it. For high bandwidth, large data rate, and high spectral efficiency, coherent detection optical-OFDM is used with WDM. The aim of the present study is to implement this.

Keywords: DD-OOFDM, CD-OOFDM), Integration of CD-OOFDM with WDM for long haul high data rate transmission**.**

Thermal analysis for stability of nanocrystals ZnSe(diamantane)

H A T Al-Ogaili

Department of Physics, College of Science, Wasit University, Kut –Iraq.
e-mail: hananabd81@gmail.com

Abstract:

The chalcogenide structures are studied at nano scale theoretically , Znic Selenium is one of these structures studied theoretically by DFT, once as a diamantane(Zn_7Se_7 as cubic in solid state) or again diamondoids ($Zn_7S_7H_{14}$),where similarity in formula but different from wurtziod(Zn_7Se_7) in stoichiometry at nano-limited , the molecules ZnSe diamantane are formed from change size. However both of the spectra and electronic properties of molecules ZnSe diamantane are calculated. In this work, used RB3LYP/3-611 G(p,d) as a base set, it can note that the blue shift of the Raman spectra, the energy gap 2.767 eV for ZnSe diamantane approach to the experimental values , the longitudinal optical of same structure is 208 cm^{-1} , also maximum force and displacement of atoms are investigated .In this research, bond length is 2.46 Å, also investigated the effects on the surfaces of molecules.

Key words: diamantane ZnSe, DFT, Chalcogenide, GFE, ZnSe, II-VI, stability

Electrical Characterization of Thin Films (TiO$_2$: ZnO)$_{1-x}$ (GO)$_x$ / FTO Heterojunction Prepared by Spray Pyrolysis Technique.

M J Alsultani[1] , H H Abed[2] , R A Ghazi[3] and M A Mohammed[4]

1 Department of environmental health, Al Qasim Green University, Iraq.
2 Physics Department, University of Babylon, Iraq.
3 Department of Medical Physics, AL- Mustaqbal University College, Iraq.
4 Department of Soil Science & Water Resources, University of Al-Qadisiyah, Iraq

Abstract:

Thin films from (TiO$_2$: ZnO)$_{1-x}$(GO)$_x$ (x=0.2, 0.4, 0.6, 0.8) ml have been prepared by spray pyrolysis technique through depositing on FTO coated glass substrates. Electrical characteristic was investigated by current-voltage (I–V) , capacitance-voltage (C–V) measurements. The (I-V) measurement showed that heterojunction from symmetric type (isotope), Ideality factor (β) value increased from1.63 to 2.48 where (β) > 1 the recombination current was dominates, rectification ratios increased from 30.62 to 77.43 because of reduction in the depletion layer from 127nm to 56.4nm which investigated by (C-V) measurements, as well as the built-in voltage (V$_{bi}$) and the barrier height Ø$_B$ decreased from 1.42 V to 0.65 V and 1.62 to 0.79eV respectively. The increase in graphene oxide ratio lead to increase in the majority carriers in turn leads to reduction in Fermi levels . Such tests showed that the electrical properties of the prepared thin films improved and indicated that GO acts as a semiconductor and can be used for flexible and transparent optical-electronic devices.

Experimental investigation of uranium content in urine samples of cancer patients in Al-Diwaniyah Governorate, Iraq

Zahraa Q. Rahman1, Anees A. Al-Hamzawi1*

1Department of Physics, College of Education, University of Al-Qadisiyah, Al-Diwaniyah-Iraq
* E-mail: aneesphys@gmail.com; anees.hassan@qu.edu.iq

Abstract:

In the current study, the neutron activation technique of the nuclear track detectors (CR-39) has been applied to determine the content of uranium in human urine samples. This study involved two groups of male and female subjects, the first group is cancer patients and the second group is healthy subjects. The urine samples of cancer patients and healthy subjects have been collected from Al- Diwaniyah governorate, southern Iraq. The maximum concentration of uranium for cancer patients was 5.52 μg/l to male, 35 years old, from AL-Hamzah, infected with leukemia, and the minimum concentration was 2.34 μg/l to male, 56 years old, from Al-Sudair, infected with the stomach cancer. In the healthy subjects, the maximum uranium content was 4.63 μg/l to male, 35 years, from Shamiya, and the lower uranium content was 1.02 μg/l to female, 43 years, from Sumer. Uranium content has been found to be significantly higher in cancer patients than those of the healthy subjects. The influence between the concentration of uranium and gender, smoking habit was studied.

Physicochemical Characteristics of Nanocomposite Elastomer prepared for Rubber O Rings.

Nasser A. Habib1,2, Ahmed S. Jabbar1, Nik I. Intan3

1 Applied Sciences Department – University of technology – Baghdad, Iraq
3 Malaysian Rubber Board, Stesen Penyelidikan RRIM, 47000 SG Buloh, Selangor, Malaysia.

1 Correspondence: Nasser Habib 100365@uotechnology.edu.iq

Abstract:

Nanocomposites rubber is being developed in the field of nanomaterials as it has low weight and high properties compared to the conventional rubber. Acrylonitrile butadiene rubber (NBR) is used in automobile parts due to its ability to resist oil. In this research, nano carbon black (NCB) type FEF N550 was used to reinforce this rubber to reduce the swelling ratio. Therefore, physicochemical characteristics were investigated for five different samples of vulcanized NCB/NBR nanocomposites with 0, 0.25, 0.5, 1 and 1.25 phr of NCB using solution mixing method. The homogeneity of these nanocomposites was evaluated by Scanning Emission Microscopy (SEM) and X-ray Diffraction (XRD). Furthermore, the influence of different contents of NCB on the tensile strength was analyzed. The results showed that the crosslinking density in the NCB/NBR nanocomposite structure has been improved compared with the neat vulcanized NBR. It's an essential result to prepare washers "O" rings resists against oils for several applications.

Keywords: Carbon black; Nitrite Butadiene Rubber (NBR); (NCB/NBR) rubber nanocomposite; rubber swelling test.

Structural ,Morhological and Electrical Properties of PVDF/Lithium Iron Oxide nano-composites

Ruqaya Fouad Kadhim and Zainab Raheem Muslim

University of Baghdad, College of Science, Physics Department
Ruqia.f.k@gmail.com

Abstract:

Lithium Iron Oxide, $LiFeO_2$ (LFO) powder has been successfully prepared by sol-gel method. The structure, morphology electrical and dielectric properties were investigated ,cubic structure for LFO was characterized by X-ray diffraction (XRD). AFM result shows a nano LFO powder. PVDF polymer was added to the LFO to prepare composites with different percentages (1,2,3 and 4) wt.%. The results shows that A.C.Conductivity is found to increase with the increasing frequency. The dielectric properties reveals that the C value decrease with the increasing frequency. The values of the ε' and ε'' are found to decrease with the increasing frequency.

Structural Properties and Characterization of Lithium Olivine Compounds

Z R Muslim1 and A Q Kadhum2

1 University of Baghdad, College of Science, Department of Physics, Iraq

2Ministry of Industry, Al-Rasheed Factory, Baghdad, Iraq

Zainabraheem2018@yahoo.com

Abstract:

Lithium Nickel Phosphate LiNiPO4 and compounds were prepared by addition of some metals precursors like Silver, Carbon and Aluminum to be doped in net powder using "sol-gel "process. The analysis of structural peak intensity with morphology of powders was studied by" XRD, EDX, AFM and SEM". Heat treatment for materials was performed in temperature in (800) C° in several hours. XRD reveal the olivine structure of LiNiPO4 .Morphology were done using SEM photo images, this assisted by AFM test. .EDX shows the elements of Ni, O, C, Ag and Al.