

Fuzzy Graph Theory Studies In Fuzziness And Soft

Handbook of Research on the Applications of Neutrosophic Sets Theory and Their Extensions in Education
 Constant single valued neutrosophic graphs with applications
 Decision Making in Manufacturing Environment Using Graph Theory and Fuzzy Multiple Attribute Decision Making Methods
 Weighted and Fuzzy Graph Theory
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 Picture Fuzzy Logic and Its Applications in Decision Making Problems
 A Study of Regular and Irregular Neutrosophic Graphs with Real Life Applications
 Model Analyses and Guidance Beyond
 Neutrosophic Graph Theory and Algorithms
 Single Valued Neutrosophic Graphs
 Fuzzy Mathematics
 Metric Number In Dimension
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KEIRA OSBORNE

Handbook of Research on the Applications of Neutrosophic Sets Theory and Their Extensions in Education

Physica
 This book provides an examination of major problems facing the world using mathematics of uncertainty. These problems include climate change, coronavirus pandemic, human tracking, biodiversity, and other grand challenges. Mathematics of uncertainty is used in a modern more general sense than traditional mathematics. Since accurate data is impossible to obtain concerning human tracking and other global problems, mathematics of uncertainty is an ideal discipline to study these problems. The authors place several scientific studies into different mathematical settings such as nonstandard analysis and soft logic. Fuzzy differentiation is used to model the spread of diseases such as the coronavirus. The book uses fuzzy graph theory to examine the problems of human tracking and illegal immigration. The book is an excellent reference source for advanced under-graduate and graduate students in mathematics and the social sciences as well as for researchers and teachers.

Constant single valued neutrosophic graphs with applications Springer

In this research book, there are some research chapters on “Model Analyses and Guidance Beyond”. With researches on the basic properties, the research book starts to make Model Analyses and Guidance Beyond more understandable. Some studies and researches about neutrosophic graphs, are proposed as book in the following by Henry Garrett (2022) which is indexed by Google Scholar and has more than 2498 readers in Scribd. It’s titled “Beyond Neutrosophic Graphs” and published by Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United State. This research book covers different types of notions and settings in neutrosophic graph theory and neutrosophic SuperHyperGraph theory. [Ref] Henry Garrett, (2022). “Beyond Neutrosophic Graphs”, Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United States. ISBN: 978-1-59973-725-6 (<http://fs.unm.edu/BeyondNeutrosophicGraphs.pdf>). Also, some studies and researches about neutrosophic graphs, are proposed as book in the following by Henry Garrett (2022) which is indexed by Google Scholar and has more than 3218 readers in Scribd. It’s titled “Neutrosophic Duality” and published by Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. This research book presents different types of notions SuperHyperResolving and SuperHyperDominating in the setting of duality in neutrosophic graph theory and neutrosophic SuperHyperGraph theory. This research book has scrutiny on the complement of the intended set and the intended set, simultaneously. It’s smart to consider a set but acting on its complement that what’s done in this research book which is popular in the terms of high readers in Scribd. [Ref] Henry Garrett, (2022). “Neutrosophic Duality”, Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. ISBN: 978-1-59973-743-0 (<http://fs.unm.edu/NeutrosophicDuality.pdf>). \section{Background} There are some researches covering the topic of this research. In what follows, there are some discussion and literature reviews about them. \ First article is titled “properties of SuperHyperGraph and neutrosophic SuperHyperGraph” in \textbf{Ref.} \cite{HG1} by Henry Garrett (2022). It's first step toward the research on neutrosophic SuperHyperGraphs. This research article is published on the journal “Neutrosophic Sets and Systems” in issue 49 and the pages 531-561. In this research article, different types of notions like dominating, resolving, coloring, Eulerian(Hamiltonian) neutrosophic path, n-Eulerian(Hamiltonian) neutrosophic path, zero forcing number, zero forcing neutrosophic- number, independent number, independent neutrosophic-number, clique number, clique neutrosophic-number, matching number, matching neutrosophic-number, girth, neutrosophic girth, 1-zero-forcing number, 1-zero- forcing neutrosophic-number, failed 1-zero-forcing number,

failed 1-zero-forcing neutrosophic-number, global- offensive alliance, t-offensive alliance, t-defensive alliance, t-powerful alliance, and global-powerful alliance are defined in SuperHyperGraph and neutrosophic SuperHyperGraph. Some Classes of SuperHyperGraph and Neutrosophic SuperHyperGraph are cases of research. Some results are applied in family of SuperHyperGraph and neutrosophic SuperHyperGraph. Thus this research article has concentrated on the vast notions and introducing the majority of notions. \ The seminal paper and groundbreaking article is titled “neutrosophic co-degree and neutrosophic degree alongside chromatic numbers in the setting of some classes related to neutrosophic hypergraphs” in \textbf{Ref.} \cite{HG2} by Henry Garrett (2022). In this research article, a novel approach is implemented on SuperHyperGraph and neutrosophic SuperHyperGraph based on general forms without using neutrosophic classes of neutrosophic SuperHyperGraph. It's published in prestigious and fancy journal is entitled “Journal of Current Trends in Computer Science Research (JCTCSR)” with abbreviation “J Curr Trends Comp Sci Res” in volume 1 and issue 1 with pages 06-14. The research article studies deeply with choosing neutrosophic hypergraphs instead of neutrosophic SuperHyperGraph. It's the breakthrough toward independent results based on initial background. \ The seminal paper and groundbreaking article is titled “Super Hyper Dominating and Super Hyper Resolving on Neutrosophic Super Hyper Graphs and Their Directions in Game Theory and Neutrosophic Super Hyper Classes” in \textbf{Ref.} \cite{HG3} by Henry Garrett (2022). In this research article, a novel approach is implemented on SuperHyperGraph and neutrosophic SuperHyperGraph based on fundamental SuperHyperNumber and using neutrosophic SuperHyperClasses of neutrosophic SuperHyperGraph. It's published in prestigious and fancy journal is entitled “Journal of Mathematical Techniques and Computational Mathematics(JMTCM)” with abbreviation “J Math Techniques Comput Math” in volume 1 and issue 3 with pages 242-263. The research article studies deeply with choosing directly neutrosophic SuperHyperGraph and SuperHyperGraph. It's the breakthrough toward independent results based on initial background and fundamental SuperHyperNumbers. \ In some articles are titled “Closing Numbers and Super-Closing Numbers as (Dual)Resolving and (Dual)Coloring alongside (Dual)Dominating in (Neutrosophic)n-SuperHyperGraph” in \textbf{Ref.} \cite{HG4} by Henry Garrett (2022), “1-Zero-Forcing Number in Neutrosophic Graphs” in \textbf{Ref.} \cite{HG5} by Henry Garrett (2022), “Extreme SuperHyperClique as the Firm Scheme of Confrontation under Cancer’s Recognition as the Model in The Setting of (Neutrosophic) SuperHyperGraphs” in \textbf{Ref.} \cite{HG6} by Henry Garrett (2022), “Uncertainty On The Act And Effect Of Cancer Alongside The Foggy Positions Of Cells Toward Neutrosophic Failed SuperHyperClique inside Neutrosophic SuperHyperGraphs Titled Cancer’s Recognition” in \textbf{Ref.} \cite{HG7} by Henry Garrett (2022), “Neutrosophic Version Of Separates Groups Of Cells In Cancer’s Recognition On Neutrosophic SuperHyperGraphs” in \textbf{Ref.} \cite{HG8} by Henry Garrett (2022), “The Shift Paradigm To Classify Separately The Cells and Affected Cells Toward The Totality Under Cancer’s Recognition By New Multiple Definitions On the Sets Polynomials Alongside Numbers In The (Neutrosophic) SuperHyperMatching Theory Based on SuperHyperGraph and Neutrosophic SuperHyperGraph” in \textbf{Ref.} \cite{HG9} by Henry Garrett (2022), “Breaking the Continuity and Uniformity of Cancer In The Worst Case of Full Connections With Extreme Failed SuperHyperClique In Cancer’s Recognition Applied in (Neutrosophic) SuperHyperGraphs” in \textbf{Ref.} \cite{HG10} by Henry Garrett (2022), “Neutrosophic Failed SuperHyperStable as the Survivors on the Cancer’s Neutrosophic Recognition Based on Uncertainty to All Modes in Neutrosophic SuperHyperGraphs” in \textbf{Ref.} \cite{HG11} by Henry Garrett (2022), “Extremism of the Attacked Body Under the Cancer’s Circumstances Where Cancer’s Recognition Titled (Neutrosophic) SuperHyperGraphs” in \textbf{Ref.} \cite{HG12} by Henry Garrett (2022), “(Neutrosophic) 1-Failed SuperHyperForcing in Cancer’s Recognitions And (Neutrosophic) SuperHyperGraphs” in \textbf{Ref.} \cite{HG13} by Henry Garrett (2022), “Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer’s Neutrosophic

Recognitions In Special ViewPoints" in \textbf{Ref.} \cite{HG14} by Henry Garrett (2022), ``Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond" in \textbf{Ref.} \cite{HG15} by Henry Garrett (2022), ``(Neutrosophic) SuperHyperStable on Cancer's Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs " in \textbf{Ref.} \cite{HG16} by Henry Garrett (2022), ``Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints" in \textbf{Ref.} \cite{HG12} by Henry Garrett (2022), ``Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs" in \textbf{Ref.} \cite{HG17} by Henry Garrett (2022), ``Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic 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Neutrosophic SuperHyperGraphs" in \textbf{Ref.} \cite{HG27} by Henry Garrett (2023), ``Perfect Directions Toward Idealism in Cancer's Neutrosophic Recognition Forwarding Neutrosophic SuperHyperClique on Neutrosophic SuperHyperGraphs" in \textbf{Ref.} \cite{HG28} by Henry Garrett (2023), ``Demonstrating Complete Connections in Every Embedded Regions and Sub-Regions in the Terms of Cancer's Recognition and (Neutrosophic) SuperHyperGraphs With (Neutrosophic) SuperHyperClique" in \textbf{Ref.} \cite{HG29} by Henry Garrett (2023), ``Different Neutrosophic Types of Neutrosophic Regions titled neutrosophic Failed SuperHyperStable in Cancer's Neutrosophic Recognition modeled in the Form of Neutrosophic SuperHyperGraphs" in \textbf{Ref.} \cite{HG30} by Henry Garrett (2023), ``Using the Tool As (Neutrosophic) Failed SuperHyperStable To SuperHyperModel Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs" in \textbf{Ref.} \cite{HG31} by Henry Garrett (2023), ``Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints" in \textbf{Ref.} \cite{HG32} by Henry Garrett (2023), ``(Neutrosophic) SuperHyperStable on Cancer's Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs" in \textbf{Ref.} \cite{HG33} by Henry Garrett (2023), ``Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond" in \textbf{Ref.} \cite{HG34} by Henry Garrett (2022), ``(Neutrosophic) 1-Failed SuperHyperForcing in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs" in \textbf{Ref.} \cite{HG35} by Henry Garrett (2022), ``Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs" in \textbf{Ref.} \cite{HG36} by Henry Garrett (2022), ``Basic Neutrosophic Notions Concerning SuperHyperDominating and Neutrosophic SuperHyperResolving in SuperHyperGraph" in \textbf{Ref.} \cite{HG37} by Henry Garrett (2022), ``Initial Material of Neutrosophic Preliminaries to Study Some Neutrosophic Notions Based on Neutrosophic SuperHyperEdge (NSHE) in Neutrosophic SuperHyperGraph (NSHG)" in \textbf{Ref.} \cite{HG38} by Henry Garrett (2022), there are some endeavors to formalize the basic SuperHyperNotions about neutrosophic SuperHyperGraph and SuperHyperGraph. \ Some studies and researches about neutrosophic graphs, are proposed as book in \textbf{Ref.} \cite{HG39} by Henry Garrett (2022) which is indexed by Google Scholar and has more than 2732 readers in Scribd. It's titled ``Beyond Neutrosophic Graphs" and published by Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United State. This research book covers different types of notions and settings in neutrosophic graph theory and neutrosophic SuperHyperGraph theory. \ Also, some studies and researches about neutrosophic graphs, are proposed as book in \textbf{Ref.} \cite{HG40} by Henry Garrett (2022) which is indexed by Google Scholar and has more than 3504 readers in Scribd. It's titled ``Neutrosophic Duality" and published by Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. This research book presents different types of notions SuperHyperResolving and SuperHyperDominating in the setting of duality in neutrosophic graph theory and neutrosophic SuperHyperGraph theory. This research book has scrutiny on the complement of the intended set and the intended set, simultaneously. It's smart to consider a set but acting on its complement that what's done in this research book which is popular in the terms of high readers in Scribd. --

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\textit{Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs}"', Preprints 2023, 2023010105 (doi: 10.20944/preprints202301.0105.v1). \bibitem{HG18} Henry Garrett, \textit{Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints}"', Preprints 2023, 2023010088 (doi: 10.20944/preprints202301.0088.v1). \bibitem{HG19} Henry Garrett, \textit{(Neutrosophic) SuperHyperModeling of Cancer's Recognitions Featuring (Neutrosophic) SuperHyperDefensive SuperHyperAlliances}"', Preprints 2022, 2022120549 (doi: 10.20944/preprints202212.0549.v1). \bibitem{HG20} Henry Garrett, ``\textit{(Neutrosophic) SuperHyperAlliances With SuperHyperDefensive and SuperHyperOffensive Type-SuperHyperSet On (Neutrosophic) SuperHyperGraph With (Neutrosophic) SuperHyperModeling of Cancer's Recognitions And Related (Neutrosophic) 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Decision Making in Manufacturing Environment Using Graph Theory and Fuzzy Multiple Attribute Decision Making Methods Springer Science & Business Media

Decision Making in Manufacturing Environment Using Graph Theory and Fuzzy Multiple Attribute Decision Making Methods presents the concepts and details of applications of MADM methods. A range of methods are covered including Analytic Hierarchy Process (AHP), Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), Višekriterijumsko KOmpromisno Rangiranje (VIKOR), Data Envelopment Analysis (DEA), Preference Ranking METHod for Enrichment Evaluations (PROMETHEE), ELimination Et Choix Traduisant la Realité (ELECTRE), COMplex PROportional Assessment (COPRAS), Grey Relational Analysis (GRA), UTility Additive (UTA), and Ordered Weighted Averaging (OWA). The existing MADM methods are improved upon and three novel multiple attribute decision making methods for solving the decision making problems of the manufacturing environment are proposed. The concept of integrated weights is introduced in the proposed subjective and objective integrated weights (SOIW) method and the weighted Euclidean distance based approach (WEDBA) to consider both the decision maker's subjective preferences as well as the distribution of the attributes data of the decision matrix. These methods, which use fuzzy logic to convert the qualitative attributes into the quantitative attributes, are supported by various real-world application examples. Also, computer codes for AHP, TOPSIS, DEA, PROMETHEE, ELECTRE, COPRAS, and SOIW methods are included. This comprehensive coverage makes Decision Making in Manufacturing Environment Using Graph Theory and Fuzzy Multiple Attribute Decision Making Methods a key reference for the designers, manufacturing engineers, practitioners, managers, institutes involved in both design and manufacturing related projects. It is also an ideal study resource for applied research workers, academicians, and students in mechanical and industrial engineering.

Weighted and Fuzzy Graph Theory Springer Nature

The notion of interval valued neutrosophic sets is a generalization of fuzzy sets, intuitionistic fuzzy sets, interval valued fuzzy sets, interval valued intuitionistic fuzzy sets and single valued neutrosophic sets. We apply for the first time to graph theory the concept of interval valued neutrosophic sets, an instance of neutrosophic sets. We introduce certain types of interval valued neutrosophic graphs (IVNG) and investigate some of their properties with proofs and examples.

Weighted and Fuzzy Graph Theory Infinite Study

Fuzzy sets have experienced multiple expansions since their conception to enhance their capacity to convey complex information. Intuitionistic fuzzy sets, image fuzzy sets, q-rung orthopair fuzzy sets, and neutrosophic sets are a few of these extensions. Researchers and academics have acquired a lot of information about their theories and methods for making decisions. However, only a small number of research findings discuss how neutrosophic sets theory and their extensions (NSTEs) are used in education. The Handbook of Research on the Applications of Neutrosophic Sets Theory and Their Extensions in Education implements fresh scientific approaches to enhance the quality of decisions under neutrosophic environments, particularly within education. Covering key topics such as data modeling, educational technologies, decision making, and learning management systems, this major reference work is ideal for instructional designers, researchers, academicians, scholars, practitioners, instructors, and students.

Picture Fuzzy Logic and Its Applications in Decision Making Problems Springer Science & Business Media

This book constitutes the refereed proceedings of the 9th Dortmund Fuzzy Days, Dortmund, Germany, 2006. This conference has established itself as an international forum for the discussion of new results in the field of Computational Intelligence. The papers presented here, all thoroughly reviewed, are devoted to foundational and practical issues in fuzzy systems, neural networks, evolutionary algorithms, and machine learning and thus cover the whole range of computational intelligence.

A Study of Regular and Irregular Neutrosophic Graphs with Real Life Applications Springer Science & Business Media

In this research book, there are some research chapters on "Collections of Articles". With researches on the basic properties, the research book starts to make Collections of Articles more understandable. Some studies and researches about neutrosophic graphs, are proposed as book in the following by Henry Garrett (2022) which is indexed by Google Scholar and has more than 2498 readers in Scribd. It's titled "Beyond Neutrosophic Graphs" and published by Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United State. This research book covers different types of notions and settings in neutrosophic graph theory and neutrosophic SuperHyperGraph theory. [Ref] Henry Garrett, (2022). "Beyond Neutrosophic Graphs", Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United States. ISBN: 978-1-59973-725-6 (http://fs.unm.edu/BeyondNeutrosophicGraphs.pdf). Also, some studies and researches about neutrosophic graphs, are proposed as book in the following by Henry Garrett (2022) which is indexed by Google Scholar and has more than 3218 readers in Scribd. It's titled "Neutrosophic Duality" and published by Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. This research book presents different types of notions SuperHyperResolving and SuperHyperDominating in the setting of duality in neutrosophic graph theory and neutrosophic SuperHyperGraph theory. This research book has scrutiny on the complement of the intended set and the intended set, simultaneously. It's smart to consider a set but acting on its complement that what's done in this research book which is popular in the terms of high readers in Scribd. [Ref] Henry Garrett, (2022). "Neutrosophic Duality", Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. ISBN: 978-1-59973-743-0 (http://fs.unm.edu/NeutrosophicDuality.pdf). \section{Background} There are some researches covering the topic of this research. In what follows, there are some discussion and literature reviews about them. \ First article is titled ``properties of SuperHyperGraph and neutrosophic SuperHyperGraph" in \textbf{Ref.} \cite{HG1} by Henry Garrett (2022). It's first step toward the research on neutrosophic SuperHyperGraphs. This research article is published on the journal ``Neutrosophic Sets and Systems" in issue 49 and the pages 531-561. In this research article, different types of notions like dominating, resolving, coloring, Eulerian(Hamiltonian) neutrosophic path, n-Eulerian(Hamiltonian) neutrosophic path, zero forcing number, zero forcing neutrosophic- number, independent number, independent neutrosophic-number, clique number, clique neutrosophic-number, matching number, matching neutrosophic-number, girth, neutrosophic

girth, 1-zero-forcing number, 1-zero- forcing neutrosophic-number, failed 1-zero-forcing number, failed 1-zero-forcing neutrosophic-number, global- offensive alliance, t-offensive alliance, t-defensive alliance, t-powerful alliance, and global-powerful alliance are defined in SuperHyperGraph and neutrosophic SuperHyperGraph. Some Classes of SuperHyperGraph and Neutrosophic SuperHyperGraph are cases of research. Some results are applied in family of SuperHyperGraph and neutrosophic SuperHyperGraph. Thus this research article has concentrated on the vast notions and introducing the majority of notions. \ The seminal paper and groundbreaking article is titled ``neutrosophic co-degree and neutrosophic degree alongside chromatic numbers in the setting of some classes related to neutrosophic hypergraphs" in \textbf{Ref.} \cite{HG2} by Henry Garrett (2022). In this research article, a novel approach is implemented on SuperHyperGraph and neutrosophic SuperHyperGraph based on general forms without using neutrosophic classes of neutrosophic SuperHyperGraph. It's published in prestigious and fancy journal is entitled "Journal of Current Trends in Computer Science Research (JCTCSR)" with abbreviation ``J Curr Trends Comp Sci Res" in volume 1 and issue 1 with pages 06-14. The research article studies deeply with choosing neutrosophic hypergraphs instead of neutrosophic SuperHyperGraph. It's the breakthrough toward independent results based on initial background. \ The seminal paper and groundbreaking article is titled ``Super Hyper Dominating and Super Hyper Resolving on Neutrosophic Super Hyper Graphs and Their Directions in Game Theory and Neutrosophic Super Hyper Classes" in \textbf{Ref.} \cite{HG3} by Henry Garrett (2022). In this research article, a novel approach is implemented on SuperHyperGraph and neutrosophic SuperHyperGraph based on fundamental SuperHyperNumber and using neutrosophic SuperHyperClasses of SuperHyperGraph. It's published in prestigious and fancy journal is entitled "Journal of Mathematical Techniques and Computational Mathematics(JMTCM)" with abbreviation ``J Math Techniques Comput Math" in volume 1 and issue 3 with pages 242-263. The research article studies deeply with choosing directly neutrosophic SuperHyperGraph and SuperHyperGraph. It's the breakthrough toward independent results based on initial background and fundamental SuperHyperNumbers. \ In some articles are titled ``0039 | Closing Numbers and Super-Closing Numbers as (Dual)Resolving and (Dual)Coloring alongside (Dual)Dominating in (Neutrosophic)n-SuperHyperGraph" in \textbf{Ref.} \cite{HG4} by Henry Garrett (2022), ``0049 | (Failed)1-Zero-Forcing Number in Neutrosophic Graphs" in \textbf{Ref.} \cite{HG5} by Henry Garrett (2022), ``Extreme SuperHyperClique as the Firm Scheme of Confrontation under Cancer's Recognition as the Model in The Setting of (Neutrosophic) SuperHyperGraphs" in \textbf{Ref.} \cite{HG6} by Henry Garrett (2022), ``Uncertainty On The Act And Effect Of Cancer Alongside The Foggy Positions Of Cells Toward Neutrosophic Failed SuperHyperClique inside Neutrosophic SuperHyperGraphs Titled Cancer's Recognition" in \textbf{Ref.} \cite{HG7} by Henry Garrett (2022), ``Neutrosophic Version Of Separates Groups Of Cells In Cancer's Recognition On 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SuperHyperStable To SuperHyperModel Cancer's Recognition Titled (Neutrosophic) SuperHyperGraphs" in \textbf{Ref.} \cite{HG31} by Henry Garrett (2023), ``Neutrosophic Messy-Style SuperHyperGraphs To Form Neutrosophic SuperHyperStable To Act on Cancer's Neutrosophic Recognitions In Special ViewPoints" in \textbf{Ref.} \cite{HG32} by Henry Garrett (2023), ``Neutrosophic SuperHyperStable on Cancer's Recognition by Well-SuperHyperModelled (Neutrosophic) SuperHyperGraphs" in \textbf{Ref.} \cite{HG33} by Henry Garrett (2023), ``Neutrosophic 1-Failed SuperHyperForcing in the SuperHyperFunction To Use Neutrosophic SuperHyperGraphs on Cancer's Neutrosophic Recognition And Beyond" in \textbf{Ref.} \cite{HG34} by Henry Garrett (2022), ``Neutrosophic 1-Failed SuperHyperForcing in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs" in \textbf{Ref.} \cite{HG35} by Henry Garrett (2022), ``Basic Notions on (Neutrosophic) SuperHyperForcing And (Neutrosophic) SuperHyperModeling in Cancer's Recognitions And (Neutrosophic) SuperHyperGraphs" in \textbf{Ref.} \cite{HG36} by Henry Garrett (2022), ``Basic Neutrosophic Notions Concerning SuperHyperDominating and Neutrosophic SuperHyperResolving in SuperHyperGraph" in \textbf{Ref.} \cite{HG37} by Henry Garrett (2022), ``Initial Material of Neutrosophic Preliminaries to Study Some Neutrosophic Notions Based on Neutrosophic SuperHyperEdge (NSHE) in Neutrosophic SuperHyperGraph (NSHG)" in \textbf{Ref.} \cite{HG38} by Henry Garrett (2022), there are some endeavors to formalize the basic SuperHyperNotions about neutrosophic SuperHyperGraph and SuperHyperGraph. \ Some studies and researches about neutrosophic graphs, are proposed as book in \textbf{Ref.} \cite{HG39} by Henry Garrett (2022) which is indexed by Google Scholar and has more than 2732 readers in Scribd. It's titled ``Beyond Neutrosophic Graphs" and published by Ohio: E-publishing: Educational Publisher 1091 West 1st Ave Grandview Heights, Ohio 43212 United State. This research book covers different types of notions and settings in neutrosophic graph theory and neutrosophic SuperHyperGraph theory. \ Also, some studies and researches about neutrosophic graphs, are proposed as book in \textbf{Ref.} \cite{HG40} by Henry Garrett (2022) which is indexed by Google Scholar and has more than 3504 readers in Scribd. It's titled ``Neutrosophic Duality" and published by Florida: GLOBAL KNOWLEDGE - Publishing House 848 Brickell Ave Ste 950 Miami, Florida 33131 United States. This research book presents different types of notions SuperHyperResolving and SuperHyperDominating in the setting of duality in neutrosophic graph theory and neutrosophic SuperHyperGraph theory. This research book has scrutiny on the complement of the intended set and the intended set, simultaneously. It's smart to consider a set but acting on its complement that what's done in this research book which is popular in the terms of high readers in Scribd. --

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Model Analyses and Guidance Beyond Infinite Study

One of the most preeminent ways of applying mathematics in real-world scenario modeling involves graph theory. A graph can be undirected or directed depending on whether the pairwise relationships among objects are symmetric or not. Nevertheless, in many real-world situations, representing a set of complex relational objects as directed or undirected is not sufficient. Weighted graphs offer a framework that helps to overcome certain conceptual limitations. We show using the concept of an isomorphism that weighted graphs have a natural connection to fuzzy graphs. As we show in the book, this allows results to be carried back and forth between weighted graphs and fuzzy graphs. This idea is in keeping with the important paper by Klement and Mesiar that shows that many families of fuzzy sets are lattice isomorphic to each other. We also outline the important work of Head and Weinberger that show how results from ordinary mathematics can be carried over to fuzzy mathematics. We focus on the concepts connectivity, degree sequences and saturation, and intervals and gates in weighted graphs.

Neutrosophic Graph Theory and Algorithms Fuzzy Graph Theory

Neutrosophic graph (NG) is a powerful tool in graph theory, which is capable of modeling many real-life problems with uncertainty due to unclear, varying, and indeterminate information. Meanwhile, the fuzzy graphs (FGs) and intuitionistic fuzzy graphs (IFGs) may not handle these problems as efficiently as NGs. It is difficult to model uncertainty due to imprecise information and vagueness in real-world scenarios. Many real-life optimization problems are modeled and solved using the well-known fuzzy graph theory.

Single Valued Neutrosophic Graphs Springer Nature

The notion of single valued neutrosophic sets is a generalization of fuzzy sets, intuitionistic fuzzy sets. We apply the concept of single valued neutrosophic sets, an instance of neutrosophic sets, to graphs. We introduce certain types of single valued neutrosophic graphs (SVNG) and investigate some of their properties with proofs and examples.

Fuzzy Mathematics Springer Science & Business Media

Graph theory is a specific concept that has numerous applications throughout many industries. Despite the advancement of this technique, graph theory can still yield ambiguous and imprecise results. In order to cut down on these indeterminate factors, neutrosophic logic has emerged as an applicable solution that is gaining significant attention in solving many real-life decision-making problems that involve uncertainty, impreciseness, vagueness, incompleteness, inconsistency, and

indeterminacy. However, empirical research on this specific graph set is lacking. Neutrosophic Graph Theory and Algorithms is a collection of innovative research on the methods and applications of neutrosophic sets and logic within various fields including systems analysis, economics, and transportation. While highlighting topics including linear programming, decision-making methods, and homomorphism, this book is ideally designed for programmers, researchers, data scientists, mathematicians, designers, educators, researchers, academicians, and students seeking current research on the various methods and applications of graph theory.

Metric Number In Dimension Springer

Since its inception 20 years ago the theory of fuzzy sets has advanced in a variety of ways and in many disciplines. Applications of this theory can be found in artificial intelligence, computer science, control engineering, decision theory, expert systems, logic, management science, operations research, pattern recognition, robotics and others. Theoretical advances, too, have been made in many directions, and a gap has arisen between advanced theoretical topics and applications, which often use the theory at a rather elementary level. The primary goal of this book is to close this gap - to provide a textbook for courses in fuzzy set theory and a book that can be used as an introduction. This revised book updates the research agenda, with the chapters of possibility theory, fuzzy logic and approximate reasoning, expert systems and control, decision making and fuzzy set models in operations research being restructured and rewritten. Exercises have been added to almost all chapters and a teacher's manual is available upon request.

Handbook of Research on Advanced Applications of Graph Theory in Modern Society Springer Nature

This monograph discusses decision making methods under bipolar fuzzy graphical models with the aim of overcoming the lack of mathematical approach towards bipolar information—positive and negative. It investigates the properties of bipolar fuzzy graphs, their distance functions, and concept of their isomorphism. It presents certain notions, including irregular bipolar fuzzy graphs, domination in bipolar fuzzy graphs, bipolar fuzzy circuits, energy in bipolar fuzzy graphs, bipolar single-valued neutrosophic competition graphs, and bipolar neutrosophic graph structures. This book also presents the applications of mentioned concepts to real-world problems in areas of product manufacturing, international relations, psychology, global terrorism and more, making it valuable for researchers, computer scientists, social scientists and alike.

Applications of Mathematics of Uncertainty Infinite Study

This book examines some issues involving climate change, human trafficking, and other serious world challenges made worse by climate change. Climate change increases the risk of natural disasters and thus creates poverty and can cause situations of conflict and instability. Displacement can occur giving traffickers an opportunity to exploit affected people. In the fuzzy graph theory part of the book, the relatively new concepts of fuzzy soft semigraphs and graph structures are used to study human trafficking, as well as its time intuitionistic fuzzy sets that have been introduced to model forest fires. The notion of legal and illegal incidence strength is used to analyze immigration to the USA. The examination of return refugees to their origin countries is undertaken. The neighborhood connectivity index is determined for trafficking in various regions in the world. The cycle connectivity measure for the directed graph of the flow from South America to the USA is calculated. It is determined that there is a need for improvement in government response by countries. Outside the area of fuzzy graph theory, a new approach to examine climate change is introduced. Social network theory is used to study feedback processes that effect climate forcing. Tipping points in climate change are considered. The relationship between terrorism and climate change is examined. Ethical issues concerning the obligation of business organizations to reduce carbon emissions are also considered. Nonstandard analysis is a possible new area that could be used by scholars of mathematics of uncertainty. A foundation is laid to aid the researcher in the understanding of nonstandard analysis. In order to accomplish this, a discussion of some basic concepts from first-order logic is presented as some concepts of mathematics of uncertainty. An application to the theory of relativity is presented.

Fuzzy Graph Theory IGI Global

This book reports on advanced concepts in fuzzy graph theory, showing a set of tools that can be successfully applied to understanding and modeling illegal human trafficking. Building on the previous book on fuzzy graph by the same authors, which set the fundamentals for readers to understand this developing field of research, this second book gives a special emphasis to applications of the theory. For this, authors introduce new concepts, such as intuitionistic fuzzy graphs, the concept of independence and domination in fuzzy graphs, as well as directed fuzzy networks, incidence graphs and many more.

13th International Conference on Theory and Application of Fuzzy Systems and Soft

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Computing — ICAFS-2018 Springer Nature

This book builds on two recently published books by the same authors on fuzzy graph theory. Continuing in their tradition, it provides readers with an extensive set of tools for applying fuzzy mathematics and graph theory to social problems such as human trafficking and illegal immigration. Further, it especially focuses on advanced concepts such as connectivity and Wiener indices in fuzzy graphs, distance, operations on fuzzy graphs involving t-norms, and the application of dialectic synthesis in fuzzy graph theory. Each chapter also discusses a number of key, representative applications. Given its approach, the book provides readers with an authoritative, self-contained guide to – and at the same time an inspiring read on – the theory and modern applications of fuzzy graphs. For newcomers, the book also includes a brief introduction to fuzzy sets, fuzzy relations and fuzzy graphs.

Advanced Topics in Fuzzy Graph Theory Springer Nature

In the world of mathematics and computer science, technological advancements are constantly being researched and applied to ongoing issues. Setbacks in social networking, engineering, and automation are themes that affect everyday life, and researchers have been looking for new techniques in which to solve these challenges. Graph theory is a widely studied topic that is now being applied to real-life problems. The Handbook of Research on Advanced Applications of Graph Theory in Modern Society is an essential reference source that discusses recent developments on graph theory, as well as its representation in social networks, artificial neural networks, and many complex networks. The book aims to study results that are useful in the fields of robotics and machine learning and will examine different engineering issues that are closely related to fuzzy graph theory. Featuring research on topics such as artificial neural systems and robotics, this book is ideally designed for mathematicians, research scholars, practitioners, professionals, engineers, and students seeking an innovative overview of graphic theory.

Neutrosophic Graphs: A New Dimension to Graph Theory Springer

This book presents the proceedings of the 13th International Conference on Application of Fuzzy Systems and Soft Computing (ICAFS 2018), held in Warsaw, Poland on August 27–28, 2018. It includes contributions from diverse areas of soft computing such as uncertain computation, Z-information processing, neuro-fuzzy approaches, evolutionary computing and others. The topics of the papers include theory of uncertainty computation; theory and application of soft computing; decision theory with imperfect information; neuro-fuzzy technology; image processing with soft computing; intelligent control; machine learning; fuzzy logic in data analytics and data mining; evolutionary computing; chaotic systems; soft computing in business, economics and finance; fuzzy logic and soft computing in the earth sciences; fuzzy logic and soft computing in engineering; soft computing in medicine, biomedical engineering and the pharmaceutical sciences; and probabilistic and statistical reasoning in the social and educational sciences. The book covers new ideas from theoretical and practical perspectives in economics, business, industry, education, medicine, the earth sciences and other fields. In addition to promoting the development and application of soft computing methods in various real-life fields, it offers a useful guide for academics, practitioners, and graduates in fuzzy logic and soft computing fields.

Handbook of Research on Advances and Applications of Fuzzy Sets and Logic Infinite Study

In the mid-1960's I had the pleasure of attending a talk by Lotfi Zadeh at which he presented some of his basic (and at the time, recent) work on fuzzy sets. Lotfi's algebra of fuzzy subsets of a set struck me as very nice; in fact, as a graduate student in the mid-1950's, I had suggested similar ideas about continuous-truth-valued propositional calculus (inffor "and", sup for "or") to my advisor, but he didn't go for it (and in fact, confused it with the foundations of probability theory), so I ended up writing a thesis in a more conventional area of mathematics (differential algebra). I especially enjoyed Lotfi's discussion of fuzzy convexity; I remember talking to him about possible ways of extending this work, but I didn't pursue this at the time. I have elsewhere told the story of how, when I saw C. L. Chang's 1968 paper on fuzzy topological spaces, I was impelled to try my hand at fuzzy algebra. This led to my 1971 paper "Fuzzy groups", which became the starting point of an entire literature on fuzzy algebraic structures. In 1974 King-Sun Fu invited me to speak at a U. S. - Japan seminar on Fuzzy Sets and their Applications, which was to be held that summer in Berkeley.

Advanced Topics in Fuzzy Graph Theory Elsevier

Fuzzy graph theory is a useful and well-known tool to model and solve many real-life optimization problems. Since real-life problems are often uncertain due to inconsistent and indeterminate information, it is very hard for an expert to model those problems using a fuzzy graph. A neutrosophic graph can deal with the uncertainty associated with the inconsistent and indeterminate information of any real-world problem, where fuzzy graphs may fail to reveal satisfactory results.