Abstracts

Medical Images Edge Detection via Neutrosophic Mathematical Morphology

A.A.Salama[2,c], S.A.El-Hafeez[2,d] Hewayda ElGhawalby[1,b]and Eman.M.El-Nakeeb[1,a]

[1]*Physics and Engineering Mathematics Department, Faculty of Engineering, Port Said University, Egypt*

[a]emanmarzouk1991@gmail.com
[b]*hewayda2011@eng.psu.edu.eg*

[2]*Department of Mathematics and Computer Science, Faculty of Science, Port Said University, Egypt*

[c]*drsalama44@gmail.com*
[d]*samyabdelhafeez@yahoo.com*

Abstract:
Detecting edges in medical images is a significant task for human organs recognition; moreover it is an essential pre-processing step in 3D reconstructing and in segment medical image. In the literature, there are several edge detection algorithms; for instance, the gradient-based algorithm and template-based algorithm. A main drawback of these algorithms is that they are not so efficient with noisy medical image. In this work, we propose a novel edge detection algorithm based on the concepts of neutrosophic set theory and operations combined with mathematical morphology. Experimenting the proposed method on lungs CT image, showed some promising results.

Neutrosophic Crisp Mathematical Morphology & Medical Images

A.A.Salama[2], S.A.El-Hafeez[2,d] Hewayda ElGhawalby[1,b]and Eman.M.El-Nakeeb[1,a]

[1]*Physics and Engineering Mathematics Department, Faculty of Engineering, Port Said University, Egypt*

[a]emanmarzouk1991@gmail.com
[b]*hewayda2011@eng.psu.edu.eg*

[2]*Department of Mathematics and Computer Science, Faculty of Science, Port Said University, Egypt*

[c]*drsalama44@gmail.com*
[d]*samyabdelhafeez@yahoo.com*

Abstract

In this paper, we aim to apply the concepts of the neutrosophic crisp sets and its operations to the classical mathematical morphological operations; introducing what we call "Neutrosophic Crisp Mathematical Morphology". Several operators are to be developed, including the neutrosophic crisp dilation, the neutrosophic crisp erosion, the neutrosophic crisp opening and the neutrosophic crisp closing. Moreover, we extend the definition of some morphological filters using the neutrosophic crisp sets concept. For instance, we introduce the neutrosophic crisp boundary extraction, the neutrosophic crisp Top-hat and the neutrosophic crisp Bottom-hat filters. The idea behind the new introduced operators and filters is to act on the medical image in the neutrosophic crisp domain instead of the spatial domain.

Retract Neutrosophic Crisp Information Systems

A.A.Salama[2], Hewayda ElGhawalby[1] and Asmaa.M.Nasr[1]
[1] Port Said University, Faculty of Engineering, Physics and Engineering MathematicsDepartment, Egypt.
somanasr06@gmail.com
hewayda2011@eng.psu.edu.eg
[2]Port Said University, Faculty of Science, Department of Mathematics and Computer Science, Egypt.
drsalama44@gmail.com

Abstract

In this paper, we aim to develop a new type of neutrosophic crisp set called the retract neutrosophic crisp set. The introduced set is a retraction of any triple structured crisp set. Whereas, the retract set deduced from any neutrosophic crisp set is coincide its corresponding star neutrosophic crisp set defined in by Salama et al. [6]. Hence we construct a new type of neutrosophic crisp topological spaces, called the retract neutrosophic crisp topological space as a retraction of the star neutrosophic topological space. Moreover, we investigate some of its properties. Possible applications to nursing data research are touched upon.

Medical Image Retrieval via Neutrosophic Domain

A.A.Salama[1], Mohamed Eisa[2], Hewayda ElGhawalby[3,] and A.E.Fawzy[4]

1Port Said University , Faculty of Science, Department of Mathematics and Computer Science
drsalama44@gmail.com
2,4Port Said University , Higher Institute of Management and Computer, Computer Science Department
mmmeisa@yahoo.com
ayafawzy362@gmail.com
[3]Physics and Engineering Mathematics Department, Faculty of Engineering, Port Said University, Egypt.
Hewayda2011@eng.psu.edu.eg

Abstract

In this paper, we propose a two-phase Content-Based Retrieval System for medical images embedded in the Neutrosophic domain. In this first phase, we extract a set of features to represent the content of each medical image in the training database. In the second phase, a similarity measurement is used to determine the distance between the image under consideration (query image), and each image in the training database, using their feature vectors constructed in the first phase. Hence, the N most similar images are retrieved.

Abstracts

Formulation of the classical probability and some probability distributions via Neutrosophic logic and its impact on Decision Making

Rafif Alhabib [1], Moustafa Mzher Ranna [2] , Haitham Farah[3] and A.A.Salama[4]

[1,2] Department of Mathematical Statistics, Faculty of Science, Aleppo University, Syria
Rafif.alhabib85@gmail.com

[3] Department of Mathematical Statistics, Faculty of Science, ALbaath University, Syria
[4] Department of Mathematics and computer science, Faculty of Science, Port Said University, Egypt
drsalama44@gmail.com

Abstract

In this paper, we introduce and study the concept of classical events probability according to Neutrosophic logic. After giving the fundamental definitions and operations, we study its properties and view some important theories which are related to it .We also introduce random variables and some probability distributions according to Neutrosophic technique, after that we compare the reached results using Neutrosophic probability with that of classical probability. Finally, we introduce and study the effect of using Neutrosophic probability on decision making.

The Classical Probability and its Properties via Neutrosophic Crisp Set Theory

Rafif Alhabib [1] , Moustafa Mzher Ranna [2] , Haitham Farah[3] and A.A.Salama[4]

[1,2] Department of Mathematical Statistics, Faculty of Science, Aleppo University, Syria
Rafif.alhabib85@gmail.com
[3] Department of Mathematical Statistics, Faculty of Science, ALbaath University, Syria
[4] Department of Mathematics and computer science, Faculty of Science, Port Said University, Egypt
drsalama44@gmail.com

Abstract

This paper deals with the application on Neutrosophic Crisp Set (which is a generalization of crisp set) on the classical probability, from the construction of the Neutrosophic crisp sample space to the Neutrosophic crisp events reaching the definition of Neutrosophic classical probability for these events.

Then we offer some of the properties of this probability, in addition to some important theories related to it. We also come into the definition of conditional probability and Bayes theory according to the Neutrosophic Crisp Set Theory, and eventually offer some important illustrative examples. Possible applications to nursing database are touched upon.

Security of Cloud-based computing in Nursing Information Systems

Aya Y. Alkhamese[1], Wafaa R. Shabana[1] and Ibrahim M.Hanafy[2]

[1]*Physics and Engineering Mathematics Department,Faculty of Engineering, Port Said University, Egypt*
ayakout144@gmail.com
wafaa.rezk@eng.psu.edu.eg
[3]*Department of Mathematics and Computer Science, Faculty of Science, Port Said University, Egypt*
Ihanafy@hotmail.com

Abstract:

Cloud computing is one of the largest developments occurred in the field of information technology during recent years. It has become more desirable for all institutions, organizations and also for personal use as it provides a flexible, scalable and reliable infrastructure and services. Recently cloud computing has its potential in healthcare information technology especially Nursing Information Systems as it ensures that data is available and accessible everywhere. This technology needs proper security principles and mechanisms to eliminate nurses' concerns and increase their security. Protection of data is a big problem that can be achieved by encryption techniques or by using data hiding techniques. Steganography is the art of hiding secret information in a cover media in such a way that it is not detectable to anyone. Owing to their easy availability and popularity on internet, digital images are most commonly used as coverage medium in steganography. There exist a number of image steganography techniques for hiding secret information in images. The development and implementation of computing–based Nursing system and its security using steganograhic techniques, in time-domain as well as frequency domain, is addressed and presented. Possible application of the proposed techniques in neutrosophic information systems is also addressed.

Keywords:

Cloud computing – Hiding techniques – Nursing Information Systems - Steganography

Neutrosophic Graph Image Representation

Shimaa Fathi Ali[1], Hewayda ElGhawalby[2] and A.A. Salama[3]

[1,2]*Egypt, Port Said University, Faculty of Engineering, Physics and*

Engineering Mathematics Department

Shaimaa_ f_a@eng.psu.edu.eg,

hewayda2011@eng.psu.edu.eg

[3]*Egypt,Port Said University, Faculty of Science, Department of Mathematics and*

Computer Science

drsalama44@gmail.com

Abstract

We transform the intensity (greyscale)image as mathematical object (Spatial Domain) wherean image mathematically represented by an m$\times$ n matrix $I = \left[g_{ij}\right]_{m \times n}$, with entities g (i, j) corresponding to the intensity to the given pixel located at the node (i, j) to the neutrosophic graph $G_N = <V, E, T_e, I_e, F_e, T_v, I_v, F_v>$, with its components $T_e, I_e, F_e, T_v, I_v \text{ and } F_v$ are very useful in medical diagnoses and medical rays from its medical images and possible applications to nursing research data.